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Spe Salvi: Assessing the Aerodynamic Soundness of Our Civilizational Flying Machine

Jim Wishloff

University of Lethbridge, jim.wishloff@uleth.ca

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INTRODUCTION

In his very popular book *Ishmael*, author Daniel Quinn questions the sustainability of our civilization in a thought-provoking way. Quinn does this by asking the reader to consider the early attempts to achieve powered flight, and, more specifically, to imagine someone jumping off in “one of those wonderful pedal-driven contraptions with flapping wings.”¹ At first, all seems well for the would-be flyer but, of course, in time he crashes. This is his inevitable fate since the laws of aerodynamics have not been observed. Quinn uses this picture to get us to assess whether or not we have built “a civilization that flies.”² The symptoms of environmental distress are evident, so much so that U.N. Secretary General Ban Ki-Moon puts us on a path to “oblivion.”³ Add to this the economic and cultural instability in the world and it is hard not to acknowledge that the ground is rushing up at us. Can we elevate ourselves by pedalling a little harder and flapping our wings a little faster? Is our civilizational craft aerodynamically sound or is it carrying us onto the rocks?

Answering these questions requires an examination of the philosophy that gave birth to our social order and now upholds it. In his encyclical on Christian hope, *Spe Salvi*, Pope Benedict XVI does just this. Pope Benedict pinpoints the central role that Francis Bacon played in launching our technological civilization and goes on to discuss Karl Marx’s ill-fated attempt to preserve the new faith in progress by political revolution.

This paper takes the basic analysis provided by *Spe Salvi* and expands upon it to get back to the basics of business ethics. Francis Bacon’s influence in transforming philosophy in the 17th century and giving birth to the modern spirit is traced out. Included in this is a look at his utopian vision, the *New Atlantis*. This leads to a consideration of the essential elements of the technocratic complex that embraces contemporary human life and an assessment of the promise technocracy offers for humanity. What this means for the proper conduct of business enterprises is then considered.

Jim Wishloff, an Assistant Professor and award-winning teacher at the University of Lethbridge in Edmonton, Alberta, has published in the *Journal of Business Ethics*, the *Journal of Business Ethics Education*, *Teaching Business Ethics*, and the *Review of Business*. He holds a B.Sc. (Engineering) and an MBA from the University of Alberta and a Ph.D. from Case Western Reserve University in Cleveland, Ohio.

¹ Daniel Quinn, *Ishmael: An Adventure of Mind and Spirit* (New York, NY: Bantam, 1995), 105.

² *Ibid.*

³ United Nations News Centre, speech given December 11, 2007.

A CIVILIZATION LOSING ALTITUDE:
ALARMING SYMPTOMS OF COLLAPSE

[the bourgeoisie], through their inexhaustible dealing and developing, hurtle masses of men, materials and money up and down the earth, and erode or explode the foundations of everyone's lives as they go...behind their facades, they are the most violently destructive ruling class in history.⁴

[at Belshazzar's Feast] a human hand appeared and began writing on the plaster of the wall of the royal palace...And this is the writing that was inscribed: MENE, MENE, TEKEL, and PARSIN. This is the interpretation of the matter: MENE, God has numbered the days of your kingdom and brought it to an end; TEKEL, you have been weighed on the scales and found wanting; PERES, your kingdom is divided and given to the Medes and Persians.⁵

The thoughtful observer of our world today must find the story out of the book of Daniel haunting. Could our own civilization fall victim to the same hubristic overreaching that doomed ancient Babylon? Is the writing on the wall for us as well? The symptoms of sociocultural, political, economic, and environmental collapse are becoming increasingly evident.

The integrity of the ecosystems of the Earth, the connected webs that support all life on the planet, is being threatened by human action. This unravelling of the tapestry of nature on a global scale threatens the sustainability of our society. Estimates are that the world's developed countries, representing only one-sixth of the world's population, are already by themselves using more than 100 percent of the Earth's sustainable output. The developing countries place demands for a further 30 percent of the ecosystem services available. Given this reality, it doesn't seem conceivable that the developing world can ever reach the levels of consumption of the industrialized North. Indeed, a retrenchment in the overall human draw on the environment would appear to be imperative. The writing on the wall could not be clearer. Since 1970, 30 percent of the natural world has been destroyed.

More specifically, the exponential growth of humanity's use of the Earth's resources is leading to a sixth great extinction of life families. As many as one-half to two-thirds of all species existing today could be lost before this human induced biological impoverishment is concluded. Population pressures in the biologically rich tropics, habitat destruction and fragmentation, and the introduction of invasive species are all contributing factors.

⁴ Marshall Berman, *All That is Solid Melts Into Air: The Experience of Modernity* (New York, NY: Viking Penguin, 1988), 100.

⁵ Daniel 5:5, 25–28

There are a number of negative consequences associated with the burning of fossil fuels. The most publicized of these is, of course, global warming. A scientific consensus has built around the case that the scale with which carbon is being released into the atmosphere is altering the biogeochemical balance of the planet and with this, the Earth's climate patterns. The likely impacts include droughts and fires, the spread of disease, storms and floods, and greater stress on animal populations as their habitat changes or shrinks. Less noticed is the fact that the use of fossil fuels for electricity generation, transport, industry and housing is already sickening or killing millions of people throughout the world. Urban air pollution problems are reaching crisis dimensions in many of the megacities of the developing world. Some countries issued gas masks to their athletes attending the Beijing Olympics.

Unlike carbon, which is a naturally occurring element, toxins generated by industrial activity are being released into the environment. The scale of the pollution is such that the effects are felt globally. Dioxins have been found in the breast milk of nursing mothers in the most remote areas of the world. High levels of dissolved pesticides have been discovered in rain falling in Switzerland. Even these two examples, out of the many, many that could be cited, raise the question of the wisdom of subjecting entire populations to a vast toxicological experiment.

Natural resources are also being lost or depleted to an extent that can only be termed alarming. Tropical deforestation occurs at the rate of some 12 million hectares per year. By 2050, tropical forests will exist virtually nowhere outside of protected areas such as national parks and wildlife refuges. The boreal forest of the Northern hemisphere is suffering the same fate. Equally significant is the spectre of soil erosion and desertification. An estimated 26 billion tons of topsoil are lost in excess of new soil formation every year. Some 6 million hectares of new desert, an area the size of the state of Indiana, are formed annually by land mismanagement.

Water hasn't been treated with the reverence due it as the basis of all human life. Diminishing water availability and quality is bringing about a time of reckoning, however. If present consumption patterns continue, two out of every three persons on Earth will live in water-stressed conditions by the year 2025.

The lack of prudence being shown is staggering in some instances. The great aquifers of the world, a potentially renewable resource, are essentially being mined. Several of the world's famous fishing banks are idled, bankrupt of fish. Four barrels of oil are extracted for every barrel of oil that is found making the decline of supply inevitable. More than ½ billion barrels of oil are required to keep the global economic system in motion for just one week. Just like the Babylonian feast, the party is coming to an end.

The crisis is not restricted to the physical realm. The economic, political, social, and cultural challenges facing humanity at the dawn of the 21st century are

enormous. Market volatility and the astronomical level of debt assumed by the United States of America, the world's largest economy, threatens the stability of the global economic system. The maldistribution of the world's resources points out the fundamental injustice of the system. One quarter of the world's population is experiencing an opulence never known before while three quarters of the people in the world lack enough to fulfill their distinctly human capacities, with a good percentage of these living in conditions of utter deprivation. How long can the world careen along with such gross disparities?

The privileged quarter suffer physical ill-health from their overabundance. Obesity, diabetes, stroke, and heart attack are largely the diseases of affluence. Symptoms such as drug and alcohol abuse and suicide bespeak of a cosmic alienation in many individuals. Attempts to heal our existential anxiety by having more only make our condition worse.

Finally, there seems to be no relief from war and the preparations for war. The 20th century lurching from armed ideological conflict to armed ideological conflict continues on after the millennium, entire generations having now lived with the possibility of a nuclear holocaust. The raw exposure to evil presented by the terrorist attacks of September 11, 2001 made everyone with any moral sensibility shudder.

Will we renew our mental and moral health in time? Will life or death prevail? The stakes really do seem to be this high. This leads us to another line of questioning about our condition. What launched our civilizational flying machine? What is its intellectual derivation? Who were the molders of the modern mind?

FRANCIS BACON AND THE SPIRIT OF MODERNITY: THE CONQUEST OF NATURE FOR THE RELIEF OF MAN'S ESTATE

The End of our Foundation is the knowledge of causes, and secret motions of things; and the enlarging of the bounds of Human Empire, to the effecting of all things possible.⁶

The slenderest knowledge that may be obtained of the highest things is more desirable than the most certain knowledge obtained of the lesser things.⁷

Ideas, broadly considered as the concepts, beliefs, desires, expectations, aims, etc. of an age, are the true moving force of history. Pope Benedict points to

⁶ Francis Bacon, "New Atlantis," in *Great Books of the Western World (Vol. 30)*, Robert M. Hutchins, ed., (Chicago, IL: Encyclopaedia Britannica, 1952), 210.

⁷ St. Thomas Aquinas, *Summa Theologica* [S.T. Ia., q.1, a.5]. http://www.ccel.org/ccel/aquinas/summa.FP_Q1_A5.html.

the person of Sir Francis Bacon (1561–1626) as the key figure in understanding the ideas which chart the course of our civilization. “The foundations of the modern age...appear with particular clarity in the thought of Francis Bacon...[he inspired] the intellectual current of modernity.”⁸

Francis Bacon is the first and quintessential modern mind. Bacon’s seminal vision *is* the modern vision⁹, something that largely escapes our consciousness, immersed as we are in our times. Reflection on Bacon’s grandiose project is thus imperative.

Francis Bacon was born into English privilege in an age characterized by religious conflict, technological invention, and the exploration of new continents. He entered Cambridge University at age twelve but left without completing his studies. Incredibly, by age fourteen, Bacon had already concluded, after what could only have been a brief introduction to Aristotle and Aquinas, that the classical tradition had little or nothing to offer. Already, at this very young age, his vision existed germ-like in his mind. The dominating motive of his intellectual life, a complete reformation of learning, is already propelling his thoughts.

Bacon studied law and went on to become an influential lawyer and politician. All the time, however, he was devoted to what he esteemed as his great work, an instauration or transformation of all that had been said and thought before him. At 31 years of age, he wrote in a letter, “I have vast contemplative ends...I take all knowledge to be my province.”¹⁰ When he suffered political ruin and ignominy later in life he used it as an opportunity to work on establishing the eternal legacy he sought for himself as a result of his ideas.

When Bacon’s purpose is disclosed, one can only gasp at the extent of it. He set out to do nothing less than restore humanity to the Paradise they enjoyed before the Fall. Bacon thought that his proposal would bring about “a restoration and reinvesting (in great part) of man to sovereignty and power ...which he had in the first state of creation.”¹¹ What is critical to note is that this restitution does not come about by God’s grace as Christianity would have it but by human will and more specifically by science. The Fall would be reversed by human beings taking on the powers of God. The new power would come from scientific discovery and

⁸ *Spe Salvi*, #25

⁹ “[Bacon’s] programmatic vision has determined the trajectory of modern times.” (*Spe Salvi*, #17)

¹⁰ Francis Bacon, *The Letters and the Life of Francis Bacon*, 7 Vols., 1961–1974, James Spedding, ed., London: Longman, 1974), 109.

¹¹ Francis Bacon, “Valerius Terminus”, in *The Works of Francis Bacon*, Vol. 6, James Spedding, Robert L. Ellis & Douglas D. Heath, eds., (London: Longman and Company, 1974), 34.

resultant technological invention, using Bacon's *Novum Organum* (new method).¹²

Christian hope is abandoned and the Aristotelian, scholastic ideal of the contemplative life as the perfect activity and final good of rational man is also rejected. The task is to regain man's "empire over creation."¹³ This will be done by "the arts and sciences"¹⁴ *alone*. Bacon's endeavour is to "renew and enlarge the power and empire of mankind in general over the universe"¹⁵ and contemplation simply does not contribute to this. Knowledge is not about receiving and accepting reality. Knowledge is power. Reality can be taken possession of and manipulated at will. The mind can direct and control the material world by experimentation. Truth is not an affirmation of being, of what is, not an understanding of "the order of things."¹⁶ Truth and utility are "perfectly identical."¹⁷

It was not enough for Bacon to issue his radical call. He had to persuade others to accept his vision of a sovereign science that would remedy all our woes. *Bacon was conducting an experiment in civilization making* and the experiment could only be truly run if his world view became dominant. He employed his considerable rhetorical skill to this end.

The *New Atlantis* is Bacon's culminating work. In it, we see Bacon's picture of the future of humanity, we see the vision that informs and drives his zeal. The *New Atlantis* is above all a work of conversion.

The book is written in the form of an adventure story. A storm tossed ship lands on the island of Bensalem. Who are these travellers? Why are they in need? What do they find on the island?

Bacon explicitly identifies the seafarers as Christian Europeans and as such pre-scientific. That is, they do not yet hold the hope that underlies and animates the civilization Bacon wants constructed, the confident expectation that

¹² Pope Benedict summarizes the "disturbing step" that has been taken: "up to that time, the recovery of what man had lost through the expulsion from Paradise was expected from faith in Jesus Christ: herein lay 'redemption'. Now this 'redemption', the restoration of lost "Paradise" is no longer expected from faith, but from the newly discovered link between science and praxis." (Spe Salvi, #17)

¹³ Francis Bacon, "Novum Organum II, 52", in *Great Books of the Western World (Vol. 30)*, Robert M. Hutchins, ed., (Chicago, IL: Encyclopaedia Britannica, 1952), 195.

¹⁴ *Ibid.*

¹⁵ Francis Bacon, "Novum Organum I, 129", in *Great Books of the Western World (Vol. 30)*, Robert M. Hutchins, ed., (Chicago, IL: Encyclopaedia Britannica, 1952), 135.

¹⁶ James V. Schall, *The Order of Things* (San Francisco, CA: Ignatius Press, 2007)

¹⁷ Francis Bacon, "Novum Organum I, 124", in *Great Books of the Western World (Vol. 30)*, Robert M. Hutchins, ed., (Chicago, IL: Encyclopaedia Britannica, 1952), 133.

by the means of science and technology a particular world or way of life is attainable. The travellers, representing Christendom, are afloat in the “wilderness waters of the world,”¹⁸ a world unconquered by man, a world hostile to man’s needs and desires. They are lost, without hope, at the mercy of natural forces. The best they could do is lay up provisions but even doing this leaves them in the grip of nature’s power. Wherein does their salvation lie?

Fortunately, they have reached Bensalem, an extremely compelling place to the travellers. The conversion of Christian Europeans is effortless in the story, as Bacon believed it would be in history, because the luxury enjoyed in Bensalem simply bedazzles. The travellers are beside themselves with joy at the experience of this civilization. What else would one expect? In Bacon’s narrative, they had before them “a picture of our salvation in Heaven.”¹⁹ They had come into a “land of angels.”²⁰

Who or what is responsible for the “happy and holy ground”²¹ of Bensalem where peace has reigned for 1900 years? Bensalem’s secret is that it is home to a properly instituted and successfully pursued Baconian science. The island’s distinctive feature is Solomon’s House, a scientific and technological institute that is the “lantern of this kingdom”²² and whose members rule Bensalem. A Father of Solomon’s House, one of the scientists working there, arrives to a pomp and reverence usually reserved for a person of the highest political or ecclesiastical authority. The scientific community at Solomon’s House determines what inventions will be introduced into society and which principal inventors will have statues erected to their honour. So important is technological advance that scientists are sent abroad to conduct industrial and scientific espionage.

In disclosing the true state of Solomon’s House in the story, Bacon anticipates many of the technological developments which distinguish our age. Airplanes, submarines, and even genetic engineering are mentioned. At Solomon’s House there is research into the cure of disease, the preservation of health, and the prolongation of life. Work is done in agriculture, metallurgy, meteorology, and military weaponry. Resources are devoted to the development of things that comfort and bring pleasure such as food, drinks, clothes, and perfumes.

¹⁸ Francis Bacon, “New Atlantis”, in *Great Books of the Western World (Vol. 30)*, Robert M. Hutchins, ed., (Chicago, IL: Encyclopaedia Britannica, 1952), 199.

¹⁹ *Ibid.*, 202

²⁰ *Ibid.*

²¹ *Ibid.*

²² *Ibid.*, 206

The last blessing the Father of Solomon's House gives the travellers is for them to take the good news of the new science to the world. In other words, the hope it offers is for everyone. A new universal civilization is being born and the more people that can be roused to participate in its development, the better. It is enlightening to compare this to the Great Commission Jesus gives his disciples (Mt 28:19–20), for Bacon is offering nothing less than a new salvation story.

The besetting human problem is not alienation from God. It is the preservation of the body against decay and destruction. It is science which saves us from this condition, not religion which can only get in the way and really should step aside. The kingdom of God over souls should yield to the kingdom of man over nature.²³

Bensalem is the new holy land ruled by a scientific priesthood. Salvation is now in human hands. It comes from the riches of Solomon's House. Having tasted what Baconian science makes possible, the travellers can never go back to their Christian outlook. Their thoughts are now earthward—focussed on bodily well-being in this world. Science is to be trusted for a happy, never-ending life, not the providential care of a Triune God. Nature, not sin, is humanity's greatest enemy and source of grief, but it can be conquered by the “noblest foundation...that was ever upon the earth.”²⁴

Bacon was aware of what this must mean, however. Death must be defeated. Mere comfort does not ultimately relieve our estate. There is no mention of a cemetery on Bensalem. It is the height of irony then that it was Bacon's scientific exuberance that would kill him. Exiting his carriage to stuff a chicken with snow to see if flesh could be preserved he fell ill from exposure to the cold. A few days later, he died. His disciple Thomas Hobbes followed Bacon's remains to the grave.

There can be little disputing that Bacon, who saw himself as the herald of a new age, succeeded. Quite simply, we live in the world he envisioned. The

²³ Pope Benedict's encyclical is on the loss and the recovery of the theological virtue of hope in the modern world. It is not surprising then that he returns to the issue of Christian hope and what replaced it in several of *Spe Salvi's* articles. “[T]hrough the interplay of science and praxis, totally new discoveries will follow, a totally new world will emerge, the kingdom of man” (#17) “Our contemporary age has developed the hope of creating a perfect world...thanks to scientific knowledge...Biblical hope in the Kingdom of God has been displaced by hope in the kingdom of man. (#30)

²⁴ Francis Bacon, “New Atlantis”, in *Great Books of the Western World (Vol. 30)*, Robert M. Hutchins, ed., (Chicago, IL: Encyclopaedia Britannica, 1952), 206.

Baconian project is our living religion.²⁵ We are shaped fundamentally by our commitment to, our hope in, our dependence upon science and technology.

What are the characteristics or essential elements of our technological civilization? What has sustained our belief in the inherent soundness of this civilization? What has compelled us to follow its logic?

TECHNOLOGICAL CIVILIZATION: ESSENTIAL ELEMENTS

In every relation of instrumentality a special problem may result from the weight of the instrument. A good instrument is one that is obediently traversed by the power of the principal agent. If there is a question of repairing a watch, a heavy tool can easily defeat the skill of the craftsman. The difficulties caused by the weight of the instrument are frightful in the case of the techniques that we have created to make ourselves masters and possessors of physical nature. Man is often dragged, by the sheer heaviness of his techniques, where he does not want to go.²⁶

This quote from the outstanding 20th century philosopher, Yves Simon, provokes the questions that this section will address. Why do our instruments carry the weight that they do? What are the implications of the reality of this weightiness? Where are we being dragged to? Is it possible to have a technological world of lighter weight?

Man has always been *homo faber*. We have always had to win our way in the natural world and we have, quite expectedly, tried to devise means to lighten our load in doing so. It is part of our human nature to invent and use tools.

The tool-using culture that arises out of this need is the world of the artisan or the craftsman. As per Simon's insight above, the tools are subordinate to the principal agent which means they must be of a scale that allows the human agent to control them. The mind of each artisan is essential in the production of an artefact (e.g., an exquisitely handcrafted piece of furniture). Human inspiration is present and can be discerned.

²⁵ Ehrenfeld distinguishes between decaying religions and vital ones. In the former, rituals may still be observed but the creed does not influence the daily life of believers. The actual or living religion of these people is something else. Ehrenfeld's thesis is that humanism is the dominant religion of our time. He gives as its articles of faith: 1) All problems are soluble by people. 2) Those problems that are not soluble by technology, or by technology alone, have solutions in the social world (of politics, economics, etc.) 3) When the chips are down, we will apply ourselves and work together for a solution before it is too late. 4) Some resources are infinite; all finite or limited resources have substitutes. 5) Human civilization will survive. David W. Ehrenfeld, *The Arrogance of Humanism* (New York, NY: Oxford University Press, 1978), 17.

²⁶ Yves R. Simon, *Practical Knowledge* (New York, NY: Fordham University Press, 1991), 155. I wish to express my thanks to Ernest Pierucci for pointing this work out to me.

There are self-imposed limits on technology in these cultures. Tools are limited in power (so that expertise still matters) and in application (tools do not apply to every domain of life). New tools are adopted but this change is balanced by stability. That is, there is a convention around the use of tools and this state of technology practice is accepted as the norm of the culture. The practical arts are instrumental and the evolution of new instruments or tools centers on the use to be made of them, the end to be pursued.

The power for the process comes from man and the directing of nature's forces. The rhythms of nature are sensed and cooperated with. Individuals experience living in the biosphere, and are subject to the changes, the floods, the storms, the temperature movements of the natural world, although *techne*, properly developed, can adequately deal with nature's variations.

Human beings have always had the practical arts and tool-using cultures can still be found in existence. But our instruments do not carry this weight today. A civilization, unique in history, has arisen. Automobiles, airplanes, computers, televisions, nuclear weapons et cetera have never existed before. Since ideas ground artefacts, what must be uncovered is the mindset or worldview of the first half of the 17th century that gave rise to our technological civilization and sustains it. A revolution in thought, the birth of modern science, some four centuries ago resulted in technological civilization, a social order radically distinct from any and all tool-using cultures.

Science is a particular way of thinking, a particular way of investigating. The genesis of the inductive arm of this mental model gets credited to Bacon. The deductive side of the arch of knowledge goes to Rene Descartes (1596–1650), French mathematician and scholar and the other great inaugurator of our age. What is of critical importance to note however is the starting point of both these thinkers. Both Bacon and Descartes began in their minds with a method and not with things in reality as the classical realists had done. This seemingly innocent step meant that the congress between the mind and reality was simply lost.

Recall that Bacon's one aim was to return humanity to the Garden of Eden, to the material paradise enjoyed before the Fall.²⁷ This was no small endeavour but he thought he could do it by trying "the whole thing anew upon a better plan and to commence a total reconstruction of sciences, arts, and all human knowledge raised upon the proper foundations."²⁸ Human thinking was to

²⁷ "Bacon's vision...the new correlation between science and praxis would mean that the dominion over creation—given to man by God and lost through original sin—would be re-established." (*Spe Salvi*, #16)

²⁸ Francis Bacon, "The Great Instauration", in *The Works of Francis Bacon, Vol. 8*, James Spedding, Robert L. Ellis & Douglas D. Heath, eds., (London: Longman and Company, 1974), 18.

be restricted to the “one path which is alone open to the human mind”.²⁹ *All* thought was to be conducted on the terms he set out in his new method of studying material nature through observation and experiment.

This necessarily means the loss of a contemplative approach to reality. Restricting the use of the mind in this way means there is no place for speculation into the nature or essence of things. There can be no considering of what things *are*. There can be no meditation on or settling down into reality. The search for truth, goodness, and beauty has been dispatched forever. The branches of knowledge that deal with such momentous matters, philosophy and theology, are not a part of Solomon’s House. Whatever is not disclosed by an analysis of matter in motion simply vanishes from our conceptual maps as Nature’s mysteries are vanquished.

Descartes sought the certainty he had found in mathematics with his philosophy. With his famous starting point, “I think therefore I am,” Descartes created a self-conscious subject whose essence was ontologically prior to its sensible perceptions and essentially independent of them. Thought becomes the “warden of being”³⁰ and all attempts to bring what exists into conformity with conceptual patterns and frameworks are validated. The only world left is the world we make with our ideas.

The interest is in *how* things work or more accurately how things, how everything outside the mind, can be made to work with mathematical certainty. The physical world is to be bent to human desire using the findings of this powerful new scientific approach. Human greatness comes from the capacity to dominate nature not from any intrinsic essential dignity to just *being* human. In equation form: Knowledge => power => control => security.

The essential aspects of the scientific method are measurement and experimentation. To proceed, the approach must produce a world of quantifiable entities. Ideas or concepts are generated that no longer refer to really existing things but merely to the mathematical abstractions that make science possible. What is real is what can be measured. Biological, social, even anthropological phenomena are reduced to measurable terms in order to be studied. The method can be (and is) applied just as readily to human action. In this case, the scientist does not purport to be explaining *human* behaviour but only the movement of the organism.

Assigning method (epistemology) primacy over being (ontology) makes it easy to dispense with the notions of final causes, autonomy, quality, spiritual

²⁹ Ibid.

³⁰ Raimundo Pannikar, *Some Theses on Technology*, Maurice M. Belval, S. J. Trans., *LOGOS* Vol. 7 (1986), 121.

consciousness, and anything supernatural. All that is left to do in this field of objects is to manipulate them to get at what is constant and unchanging. With contemplation set aside for good, action takes the initiative. Experimental intervention, fundamental to the advance of science, rules the day.

The knowledge accumulated by science is used to develop specific technological applications. With reality rendered mutable and mathematicized, techniques of an entirely different order than the tools of *homo faber* are brought into being. The human mind of the artisan is replaced by the mathematical precision of scientific calculation. Machines which operate with this mathematical regularity are introduced to a degree that they become indispensable. At this point, human beings become servants of the very machines they have developed. Work that was once dignified becomes labour, something to be endured for the sake of creating a good human life beyond the factory. The more minimal the human presence the better, as this new machine world cranks out ever greater quantities of material goods. Yield or efficiency is everything. The power to run those machines cannot be provided by the energy of the human beings tending them. It must come from an external source and since the total energy needs are huge, nature must be transformed to supply them (e.g., fossil fuels burned, atoms split).

The key to understanding technological civilization is to get beyond looking at each device as a tool and see the nature of the system that generates all these instruments and realize that the expansion of this system is an end in itself. What is important is to reflect on the weight of the technological system and where it is dragging us. Technological civilization is not just an extension of tool-using culture. We have entered a world of means.

To make this point, consider what it takes for me to travel to a conference. In my situation, which is not out of the ordinary, I use my automobile to get to the airport, and then I fly on an airplane to my destination. What is involved in making my trip possible in this way? The automobile must be constructed. Materials made use of include metals (chassis), cloths (upholstery), rubber (tires), and glass (windshield). Add to this the sophisticated electronics (computer technology) of the contemporary auto. All these materials must be sourced and the component parts put together. This is not a local process to say the least. The vehicle is gasoline powered but oil must be drilled for, refined, and distributed to a society-wide system of fuelling stations if I am to have the motor power I need. Travel is upon roads that once again came about because of an elaborate systematic process of construction and regulation. As a further institutional overlay, there is the vast financial system involved. Airplane construction and use is even more complex.

The technological system being referred to is this total ensemble of techniques which envelop our lives, for the system itself requires multiplicity. A single car, a single airplane, a single computer is not viable. There *must* be

millions of cars, driven by millions of users, on millions of miles of roads, using many millions of gallons of fuel that goes back millions of years geologically. These require a certain socio/political institutional world, so ethical evaluation of technological choice can never be just a matter of how the technology is being used. The system is self-augmenting as technical rationality is applied to ever more areas of life and technological solutions are sought for the negative consequences of prior technological development. The end is no longer meeting human need but the maintenance of the system. Technological devices are created before uses of them are considered. The search is then conducted for applications. The means go out searching for ends as it were. Since the technological system has lodged itself in the world of the quantitative more, those living in technological civilization will experience their lives moving at an ever faster pace. The time in which the human person experiences life is subject to acceleration as well.

Having freed ourselves from the vagaries of nature, we find ourselves subject to the constraints imposed on us by the technosphere encompassing us. Our values, our forms of thinking, our lifestyles are dictated to us by the technological system. To survive, one must conform to the regulations and rules of the technological complex. To get at the regimentation of our lives as a result of our great man-built machine, think of the first scene depicting industrial civilization in the enjoyable movie, *“The Gods Must Be Crazy.”* In the film, the commentator, taking the role of naïve observer of the culture, intones that when a box (a digital clock) shows 8:00 everyone must look busy. When the box shows 10:00 everyone can stop being busy for a while.

Finally, technological civilization is now in the process of swamping all other cultures. That is, even though it arose out of certain understandings of a certain culture at one historical moment, it claims universality. The global reach of technological civilization means that cultures which rest on different visions of reality are threatened with extinction. Figure 1 summarizes the ideas of this section.

Traditional Technique(s) [Tool-using Culture]	Contemporary Technology [Technological Civilization]
<ul style="list-style-type: none"> Makes use of the tool [produced by human ingenuity]; tool is subordinate to man, directed by its user 	<ul style="list-style-type: none"> Calculation (abstract quantifiability) is introduced into technique to produce the machine to which man must yield
<ul style="list-style-type: none"> Needs presence of man 	<ul style="list-style-type: none"> Desires absence of man
<ul style="list-style-type: none"> Man as artisan/craftsman 	<ul style="list-style-type: none"> Man as labourer/tender of machines
<ul style="list-style-type: none"> Artefacts are unique e.g., possible to make one chair to be used 	<ul style="list-style-type: none"> Demands many multiples of product e.g., impossible to build and operate

	(use) a single gasoline powered automobile
<ul style="list-style-type: none"> Limited in power; expertise still counts 	<ul style="list-style-type: none"> No limits to the power taken on e.g., engineering life itself
<ul style="list-style-type: none"> Local cultural limitations exist =>difficult to export 	<ul style="list-style-type: none"> Possibility alone constrains =>reach is global
<ul style="list-style-type: none"> Applies to only a few of life's domains; still live in the biosphere =>natural pace to life 	<ul style="list-style-type: none"> All-encompassing; now live in the technosphere =>inhuman speed up of life
<ul style="list-style-type: none"> Low to moderate energy demands; makes use of directed nature e.g., windmill, water wheel 	<ul style="list-style-type: none"> Massive energy demands; source of energy is transformed nature e.g., atomic power, chemical reactions
<ul style="list-style-type: none"> Techniques (tools) are a means; adoption based on their suitability to achieve the ends desired 	<ul style="list-style-type: none"> Technical expansion is an end in itself; self-augmenting nature of the system

Figure 1: The Characteristics of Technological Civilization

What does technological civilization portend? Where will its logic take us?

INEVITABLE PROGRESS:
THE FUTILITY OF THE FORWARD STAMPEDE

We humans seem to be increasing our grip on the cosmic pulse at this moment ...we have managed to make quite a mark for ourselves. The future going will no doubt be even tougher and more treacherous, but the fact is we have yet to meet our match.³¹

What we call Man's power over Nature turns out to be a power exercised by some men over other men with Nature as its instrument.³²

As can be detected in Levinson's thoughts in the first quote above, the faith in technological civilization runs deep, but how much sense does Baconian hope make? Is it reasonable to expect that death can be defeated? Can we "successfully colonize the cosmos"³³ with our healthy, never-diminishing, immortal bodies?

³¹ Paul Levinson, "Technology As the Cutting Edge of Cosmic Evolution," Paul T. Durbin ed., *Research in Philosophy & Technology, Volume 8*, (Greenwich, CT: JAI Press Inc., 1985), 173.

³² C. S. Lewis, *The Abolition of Man* (New York, NY: MacMillan, 1947) 69.

³³ Levinson, 166.

Why haven't we experienced the several centuries of peace prophesized by Bacon? Is it too just around the corner in technological civilization?

Are there good reasons for concluding that we are headed for a crash upon the rocks? Was Bacon's project of civilization building doomed to failure from the start?

First of all, Bacon was naïve about the human capacity for wilful wrongdoing.³⁴ Science and technology are not limited to good uses. Indeed, the more accurate assumption is that of Lord Acton, that power corrupts and Baconian science seeks to take on absolute power. To avoid having to look realistically at the human heart, Bacon sets Bensalem as an island. But in fact, as the poetic language of John Donne tells us, "no man is an island." We are social and political beings by nature. There is not just one Bensalem and one Solomon's House that everyone defers to, but many and each is capable of perfecting its armaments until we get to the appropriately named state of M. A. D. (ness) [mutually assured destruction].

Secondly, material expansion in itself does not bring moral progress. Technical perfection does not result in human moral excellence as a matter of course. Once again the fantasy world that Bacon was living in becomes apparent. His dream of having technological systems so good we would not have to be good ourselves is still very much with us.³⁵ But wishing away any engagement in moral formation because the process is demanding only makes our condition more perilous. According to Pope Benedict, we are threatened by our technological progress because it has not been accompanied by a corresponding "ethical formation ... [and] inner growth".³⁶ The one-sided nature of our formation has been observable for some time. "It is a monstrous masterpiece of this age to have transformed man, as it were, into a giant as regards the order of nature, yet in the order of the supernatural and the eternal, to have changed him into a pygmy."³⁷

Bacon's hope that material prosperity will solve all human and societal difficulties rests on a fundamentally flawed anthropology. The human person is

³⁴ This naïveté continued on with Karl Marx whose legacy has been a "trail of appalling destruction". Marx's deep error was that he "forgot that man always remains man. He forgot man and he forgot man's freedom. He forgot that freedom always remains also freedom for evil." (*Spe Salvi*, #21)

³⁵ "The right state of human affairs, the moral well-being of the world can never be guaranteed simply through structures alone." (*Spe Salvi*, #24)

³⁶ *Spe Salvi*, #22.

³⁷ Pope John XXIII, *Mater et Magistra*, 1961, Para. 243.

not just a belly, and one of “infinite distention”³⁸ at that, as Bacon would have it. *Human* life cannot be ordered by only the base concern for bodily well-being.

Bacon’s reductionistic view of human nature lopped off the traditional candidates for the *summum bonum* (love, wisdom, God) truncating human purpose to comfort in the here and now. He also cut ethical evaluation of technology out of the picture completely. Recall that the end of Solomon’s House was “the effecting of all things possible.” Technological possibility and not morality directs the course of human action. In the words of renowned scientist Robert Oppenheimer, “when you see something that is technically sweet, you go ahead and do it and you argue about what to do about it after you have had your technical success.”

The dropping of morality from the picture should have been entirely foreseeable. In insisting on all knowledge being filtered through and derived from his one method, Bacon waged a war precisely against the application of religion, philosophy, and ethics to society. Bacon deprived science of its ethical foundations by shoving aside as useless or worse all other human inquiry and belief. If religion was to retain any standing at all, it would be as a handmaiden of science.

But science is inherently incapable by its basic nature to inform us of normative values, purposes, existential meanings, and the qualitative dimensions of being. It does not possess, nor can it yield, any transcendent standards of obligation.

Our condition then is indeed dire. We have committed to Bacon’s campaign for a human empire that will never rest, that seeks to advance from power to power. At the same time we have accepted Bacon’s condemnation of the ethical and the spiritual as sterile.³⁹ We are left to shiver in the nihilism of our near omnipotence and our near emptiness. At the same time we have taken on the greatest technological prowess ever we have perhaps the least understanding of what it must ultimately be for.

A worldview acts as a destiny. Once the fundamental theological and philosophical ideas are sufficiently laid down and become the accepted, taken for granted understanding about the way things are, the track is set for the course to

³⁸ Robert P. Adams, “The Social Responsibilities of Science in Utopia, New Atlantis and After,” *Journal of the History of Ideas* 10, no. 3 (Apr. 1949), 387.

³⁹ Pope Benedict makes clear that when goodness has been rejected all that remains is the fulfillment of individual desire. “If my own well-being and safety are ultimately more important than truth and justice, then the power of the stronger prevails, then violence and untruth reign supreme.” (*Spe Salvi*, #38) There can be no hope in such a terrifying state. “A world which has to create its own justice is a world without hope.” (*Spe Salvi*, #42)

be run. A full half century ago C. S. Lewis made the argument that this path must logically end in our abolition.⁴⁰

Lewis is talking about what man's conquest of nature must always and essentially be not about any moral failure on the part of those holding power. His point is that in order to dominate a thing and use it for our convenience we reduce it analytically or by abstraction to a quantifiable object. We conquer it by treating it as mere nature. But this adds to nature's domain. The fatal step is when we apply this same method to ourselves, when we reduce the human species to the level of mere nature. What we don't get to retain when we do this is our very humanity. If we treat ourselves as one more artefact, then that is what we will be. If we look on ourselves as raw material to be manipulated, then what makes us human will be lost, for the conditioners and the conditioned alike. All that will be left to guide us is mere appetite. Natural moral law can't be called upon. It just doesn't apply to objects in nature.

Lewis wrote this important work just after the eugenics movement was in its heyday. He died in 1963 as the research into the human genome was just beginning. All the labour that has gone into genetic engineering since that time puts us on the verge of entering the world he feared, the world of post humanity.

There is no road back, no hope for sustaining our civilization without a restoration of philosophical reflection to its fullness. The laws of aerodynamics of any civilization are the purposes, meanings, and values derived from first philosophy. Efficient causes cannot replace final causes.⁴¹

Can the Christian worldview be of value here? What does it say about the meaning of the human adventure? What are the implications of this for the ethics of commercial enterprise? What should the means of production be? What ought to be produced? What basic human values and impulses should be encouraged?

⁴⁰ Pope Benedict provides a succinct restatement of Lewis' position: "this hope [of creating a perfect world through science and praxis] is opposed to freedom, since human affairs depend in each generation on the free decisions of those concerned. If this freedom were taken away, as a result of certain conditions or structures, then ultimately this would not be good, since a world without freedom can by no means be a good world." (*Spe Salvi*, #30). "If there were structures which could irrevocably guarantee a determined—good—state of the world, man's freedom would be denied, and hence they would not be good structures at all." (*Spe Salvi*, #24)

⁴¹ Pope Benedict starkly points out the implications of the modern mind's constriction of reason. "Let us put it very simply: man needs God, otherwise he remains without hope...There is no doubt, therefore, that a 'Kingdom of God' accomplished without God—a kingdom therefore of man alone—inevitably ends up as the 'perverse end' of all things as described by Kant: we have seen it, and we see it over and over again." (*Spe Salvi*, #23) ... "certainly we cannot 'build' the Kingdom of God by our own efforts—what we build will always be the kingdom of man with all the limitations proper to our human nature." (*Spe Salvi*, #35) ... "A world without God is a world without hope." (*Spe Salvi*, #44)

BACK TO THE BASICS OF BUSINESS ETHICS:
CHRISTIAN HOPE AND THE PROPER CONDUCT OF ENTERPRISE

Man closed the gates of Heaven against himself and tried, with immense energy and ingenuity, to confine himself to the Earth. He is now discovering that the Earth is but a transitory state, so that a refusal to reach for Heaven means an involuntary descent into Hell.⁴²

Wisdom is supreme; therefore get wisdom. Though it cost you all you have, get understanding.⁴³

The true morality of Christianity is love.⁴⁴

The critical step in any change effort or strategy is to make a proper diagnosis. Effects can only be changed by changing causes and knowing why something is happening at the most basic level provides the opportunity to generate a genuine or lasting solution to the problem, i.e., an effective prescription follows from an adequate diagnosis.

Our situation is gravely parlous: we face a “colossal wreck,”⁴⁵ because in its quest for unlimited material abundance technological civilization simply left ultimate reality behind. In a word, Bacon got his wish. God was shuttled aside and the human individual was left alone on stage as creator *and* creature. Bacon’s utopia ceased to exist in no place because succeeding generations dedicated themselves to the realization of his vision. It could only end “in ruin,”⁴⁶ however, since its insistence that truth was limited to that which could be grasped experimentally meant that humanity was certain to lose metaphysical clarity and with it the wisdom needed to rightly order the world’s goods. The thought that we could will into being any idea we had about our nature and the nature of the world we find ourselves in was tragically misguided from the outset. Such a view was bound to carry us onto the rocks.

Getting back to the basics of business ethics means regaining our footing in what is real. Primary in this is a reconsideration of our rejection of the Being at the centre of reality. “God is the issue. Is he real, reality itself, or isn’t he? Is he good,

⁴² E. F. Schumacher, *A Guide for the Perplexed* (New York, NY: Harper and Row, 1978), 139

⁴³ Proverbs 4:7

⁴⁴ Benedict XVI, *Jesus of Nazareth* (New York, NY: Doubleday 2007), 99.

⁴⁵ J. Carroll, *The Wreck of Western Culture* (Wilmington, DE: ISI Books 2008), 1.

⁴⁶ Benedict XVI, *Jesus of Nazareth*, 96.

or do we have to invent the good ourselves? The God question is the fundamental question.”⁴⁷

The challenge is to once again ask the questions of metaphysical and moral realism⁴⁸ and to follow the answers where they lead us. When this search is engaged, what truths about our being and our actual position in the order of existence does Christianity propose?

The Christian worldview is theocentric. At its heart is an acknowledgement that we are not the cause of our existence but that we are brought into being, as is all of creation, by the loving action of a Triune God. The important distinction to note is that God has necessary existence while our existence is contingent. “God is all complete, existing with an inner Trinitarian life that needs no world, no man, no angel.”⁴⁹ It is out of sheer goodness that God, infinitely perfect and blessed in himself, chose to create.

Human beings are the crowning glory of God’s creative work in the universe. We are the only creatures on Earth that God has willed for its own sake and everything has been created by God for us. In a word, man has been willed into existence by God, formed in the very likeness of God, and deliberately designed as male and female.

The vocation of being human is to come to the fullest development of the distinctive human powers of intellect and will by knowing truth and loving goodness. The supreme truth is God and the supreme goodness is God. Therefore, the ultimate purpose is to know and love God, and since our imperishable soul destines us eternally, to enjoy God forever. In short, God made human beings for loving fellowship with himself.

If God was to relate to us in love, however, he had to leave us free to reject our divine destiny. The doctrine of original sin says that our first parents tragically decided to do just this and that their fall from goodness has been transmitted to all subsequent generations. God’s purpose in creation was to have human beings share his inner life of self-giving love. But God could not compel this association. It had to be freely chosen.

Pride turns us away from God but God does not leave us in this lapsed state. In another act of absolute love God provides the way by which we can reach the ultimate end for which he created us. God sends his Son, the second person of

⁴⁷ Ibid., 29

⁴⁸ Etymologically, philosophy is the “love of wisdom.” It begins in wonder. That is, whenever human beings have wondered about their existence, they have philosophized. Reality confronts us with questions, as it were. Why is there something rather than nothing? Why is what exists as it is and not something else? How do I conform my soul to reality?

⁴⁹ James V. Schall, *On the Unseriousness of Human Affairs*, Wilmington, DE: ISI Books, 2001), 135.

the Trinity, Jesus Christ as Redeemer and Saviour. In Jesus, God puts himself into human hands and suffers a humiliating death on the Cross to bear humanity's transgressions. Jesus' resurrection completes God's saving plan. God's shocking response of love enduring to the end reveals his essence.

It remains for human beings to accept God's invitation to a new life of grace lived in intimacy with the Holy Spirit. It is this relationship to God in love that sustains the Christian in his existence and elevates his nature to a supernatural level.

In sum, Christian hope is grounded in God.⁵⁰ God is the ultimate source of our being and our end. We come from God and our destiny is to return to God. "We are called wayfarers by reason of our being on the way to God, Who is the last end of our happiness."⁵¹ Only sanctity can bring us to this home. We *cannot*, as Bacon hoped, redeem ourselves purely by creating a more favourable external environment.⁵²

The Christian story is indeed "good news" to all who face the facts of our existence.⁵³ But the Christian message must be "performative" not only "informative."⁵⁴ Faith, if it is to be real or substantial, must be life-changing. Having been granted the gift of a new life, the Christian must live differently. One's freedom is to be directed by the indwelling Spirit of God. The goal is to become nothing less than Christ-like.

⁵⁰ "Man's great, true hope which holds firm in spite of all disappointments can only be God—God who has loved us and who continues to love us 'to the end'." (*Spe Salvi*, #27) "God, who encompasses the whole of reality...is the foundation of hope: not any god, but the God who has a human face and who has loved us to the end, each one of us and humanity in its entirety." (*Spe Salvi*, #31)

⁵¹ St. Thomas Aquinas, *Summa Theologica* [S.T. IIae, q.24, a.4]. http://www.ccel.org/ccel/aquinas/summa.SS_Q24_A4.html

⁵² "It is not possible to redeem him [man] purely from the outside by creating a favourable economic environment." (*Spe Salvi*, #21) "Man can never be redeemed simply from outside... [the protagonists of modernity] were wrong to believe that man would be redeemed through science." (*Spe Salvi*, #25) "It is not science that redeems man: man is redeemed by love." (*Spe Salvi*, #26)

⁵³ C. S. Lewis begins his apologetic for Christianity by putting the reality of the human condition in front of the reader. "These, then, are the two points I wanted to make. First, that human beings, all over the earth, have this curious idea that they ought to behave in a certain way, and cannot really get rid of it. Secondly, they do not in fact behave that way. They know the Law of Nature; they break it. These two facts are the foundation of all clear thinking about ourselves and the universe we live in." (C.S. Lewis, *Mere Christianity* New York, NY: MacMillan, 1943), 7.

⁵⁴ *Spe Salvi*, #2.

In Christ, we have God loving human beings to death, literally. God's love is universal, active, pursuing, personal, substantial, and sacrificial. Christians are called to just that kind of love. In imitating Jesus, they must be prepared to take up the Cross.

The point is that Christian discipleship is a radical undertaking. It is not just about being a trustee or manager of God's resources by making good moral choices. The rich young man had done this and it wasn't enough. Jesus wants his followers to do more by risking more. He wants his disciples to seek intimacy and restored relationships with each other and the whole of creation. The basic endeavour is to recreate community by establishing relationships that are transformative and healing, risking all and trusting God in doing it. Life is to be lived in thanksgiving and without fear because of God's Providence.⁵⁵

One example of Christian economics in practice is the tremendously successful housing ministry Habitat for Humanity. Founded without fanfare in rural Georgia in 1976 Habitat for Humanity is now the world's largest home builder operating in more than one hundred countries. Its moral vision of eliminating poverty housing attracts millions of people all over the world to labor for an end to inadequate shelter. All of this is accomplished by gift. People are transformed by the experience of *agape* love and are given a wise, just, and honourable way to divest of their surplus. The investment of sweat equity by home owners teaches them valuable life skills and gives them a real stake in the outcome. Homes are made affordable by selling the property to the homeowner at cost on a long term no interest mortgage.

No matter what one's profession, the Christian vocation is a vocation to love. This is no less so for the person in business. His life too is a gift from God which is fully realized in the giving of himself to God, the Author of his being, and to other human persons similarly constituted. The twofold commandment to love⁵⁶ is to be fulfilled in enterprise as well. Business is a forum or arena in which to live

⁵⁵ The hope of those closest to Christ, the martyrs and the saints, is a source of hope for the world. ... "in martyrdom, ... people resist the overbearing power of ideology and its political organs and, by their death, renew the world." (*Spe Salvi*, #8) "We can open ourselves and the world and allow God to enter: we can open ourselves to truth, to love, to what is good. This is what the saints did, those who, as 'God's fellow workers', contributed to the world's salvation." (*Spe Salvi*, #35)

⁵⁶ "Teacher, which commandment in the law is the greatest?" He said to him, "you shall love the Lord your God with all your heart, and with all your soul and with all your mind." This is the greatest and first commandment. And the second is like it: "you shall love your neighbour as yourself! On these two commandments hang all the law and the prophets." (Matt. 22:36-40)

out our divinely given calling to perfect charity. It is thus rightly seen as a channel of public service, as a way to will the good of others.⁵⁷

Understanding what this entails begins with an appreciation of the dignity of the human person. Once this is noted, it can be seen that the subject and end of every social institution, including economic enterprise, is the human person. Institutions exist to elevate the human person because of our grandeur. In the Christian worldview human beings are a high and holy mystery, God's own children. As such they are infinitely more worthy than any material goods that might be produced or the organizational entities created to generate that production. Catholicism's belief that human beings are endowed with a spiritual and immortal soul is the safeguard against totalitarianism, including the totalitarian tendencies of expansive commercial enterprise. Long after organizations and nations have died, the soul of each human being will exist.

So while profitability is a necessary condition of the firm, it is not a sufficient one. The justification of the enterprise is the correspondence of the economic activity with God's plan for man. The practice of management must be an art of love which means that the actions taken cannot be inimical to the dignity and integral vocation of the human person.

Primary in this is the matter of *what* is being produced or supplied. What the institution of business is uniquely situated to do is to provide the material goods and immaterial services that people need to live full human lives. Enterprises ought to make a contribution to human flourishing. They ought to serve the properly human *telos* by what they bring into being.

Material goods are meant to be a means to our sanctification. What we have should help us to be more, should help us to realize our destiny which is spiritual not material. Though we are in the world we are not of it having been created for eternal happiness with God.⁵⁸ Economic production ought to serve this end. Spiritual and moral goods should not be sacrificed to material interests. The want structure encouraged by enterprise should serve good moral formation. Just because something can be made and sold doesn't mean that it should be. Society doesn't need an institution that makes it hard for people to be good. Product safety and the social effects of introducing the product must be given the attention they deserve. In sum, the goods and services provided by commerce should *really* be goods and services, and not bads and disservices, when human well-being in its totality is considered.

⁵⁷ St. Thomas Aquinas, *Summa Theologica* [S.T. IIae, q.23]. http://www.ccel.org/ccel/aquinas/summa.SS_Q23_A2.html

⁵⁸ *Catechism of the Catholic Church* (Ottawa, ON: Canadian Conference of Catholic Bishops, 1992), 1817.

It is possible for a company to use the very goodness of the products it offers as a powerful motivational tool. Medtronic Inc., the world's leading maker of medical devices, is one such company. Each year they bring a group of people who have benefitted from the company's stents and pacemakers to their Minneapolis headquarters. Medtronic scientists, engineers, and factory workers meet these patients who owe their physical well-being and sometimes even their lives to the work these employees do every day in designing, developing, making, and delivering Medtronic's life-giving devices.

The proper objective of marketing is to identify the people who would benefit from the enterprise's goods and services and provide them with the information they need to make prudent decisions. If the truth about a firm's product cannot be communicated honestly and openly, then it is almost certain that the firm is treading on thin ice ethically. But promotional efforts need to do even more today. They need to encourage people to simplify their lives both to reduce the environmental impact of consumption and to help people have a place for prayer and contemplation in their lives.

Johnson & Johnson's handling of the Tylenol crisis in 1982 is regarded as a model of responsible corporate action. Certainly, withdrawing potentially cyanide-laced capsules from store shelves without hesitation and at great cost demonstrates sincere concern for the well-being of everyone in society. What perhaps hasn't been emphasized enough in this case is the openness and transparency the company exhibited with the public, the medical community, and the respective governmental authorities. In a word, the truth about the situation was what mattered and the decision makers at Johnson & Johnson were determined to get it out.

Goods and services are produced by human beings using material means. Labour takes precedence over capital in the process because of human dignity. That is, labour can never be looked on as another commodity to be bought and sold at the service of capital expansion. To do so is a basic moral perversion. It is to give dead capital priority over sacred human personhood.

In 1995 Malden Mills, the maker of Polartec fleece and the largest employer in Lawrence, Massachusetts, suffered a horrendous fire which consumed three-quarters of the company's buildings and devastated the company's employees. The response of company president Aaron Feuerstein was extraordinarily magnanimous. Not only did he declare immediately that he would rebuild, despite being seventy years old at the time, but that he would pay all his workers' full salary and medical benefits until the plant was again operational, a pledge that ended up costing him \$15 million. More significant is the world view or philosophy of management behind his actions. He viewed the people at Malden Mills as ends in themselves and deserving of respect. This allowed him to acknowledge that it was the employees that had made the company what it was. It

also illuminated his own duty. These people who had built Malden Mills were now counting on him to renew the opportunity they had. The money that came with the insurance settlement was to be used instrumentally in the service of the human worker.

People ought to be given meaningful work that utilizes and develops their higher faculties. Responsibility for managing the enterprise would be broadly diffused. Employees would rightly be seen as associates or partners in the venture sharing in the administration and the profits of the organization.

Square D, a major manufacturer of electrical equipment transformed the standard assembly line in its factory in Lexington, Kentucky expressly to harness the creative energies of its employees. The eight hundred workers at this facility were reorganized into teams of twenty to thirty people. Each team operates as a business run by the workers themselves. Responsible for the product from start to finish and for customer relations organizational members, who had previously been responsible for only a miniscule assembly task on the line, undertake extensive training in team building, problem resolution, mechanics, and customer service. The respect shown by Square D for the dignity of its workforce has given the company a competitive advantage in the marketplace.

All necessary steps should be taken to provide the conditions for an authentic human ecology in the workplace. This is to say that work practices in regards to things like hours of work required, physical demands put on the worker, safety measures in place should be humane. Love can never countenance work environments that are harmful to the physical health and moral integrity of the people working in them. "Business is responsible for the divine lives of those in its employ."⁵⁹

PCL Construction is one of North America's largest construction companies. The 100-year-old firm has been employee owned since 1977 and is an employer of choice in the markets it operates in. PCL's success is predicated on its ownership culture and its commitment to the safety and development of its people. It is not by chance that PCL's safety record is two and three times better than the industry average. People receive the orientation, training, and equipment they need to perform their work safely. There is an attitude, deeply held throughout the organization, that the time and money needed to complete the job safely is always available. As one member of the executive team summed it up: "Everybody has to go home from work unhurt and feel safe while they are working." The leadership at PCL has an even more audacious goal than this, however. In setting for itself the target of zero accidents, PCL seeks to raise the bar on safety across the entire

⁵⁹ L. Sandelands, "The Business of Business is the Human Person: Lessons from the Catholic Social Tradition," *Journal of Business Ethics* 85, no. 1 (March 2009), 95.

construction industry. They see their safety aim as being not unlike the four minute mile standard, at one time viewed as an unbreakable barrier. The thought is that achieving accident-free jobsites will change the consciousness about what is possible.

PCL's learning culture has made it one of the most admired companies in Canada and one of the most stable. Turnover rates are negligible (<4%) and there is a history of long-term service in the company—people who are able to realize their dreams and aspirations stay. This reality too has not come about by accident but is an outworking of a managerial philosophy that understands the importance of people. In the words of a senior manager, "Anybody can buy a crane but when we are growing the best people, then we will be the best construction company." Each employee is given a yearly learning hour budget. The company has its own college of construction where the best practices from its regional offices across North America can be shared. When it came time to celebrate the company's centennial, the choice was to construct a new 30,000 square foot Learning Center. Comprehensive internal surveys are done every three years to target areas of corporate improvement. A competency development planning system is in place to ensure that succession needs are met but beyond the formalization, the continual development of people is ingrained in the way the company operates.

An executive describes the cultural reality at PCL in this way: "Our strength is that everybody views it as their responsibility to pay it forward because someone mentored them. We bring people along. We encourage people to ask questions. We do whatever we can to develop employees by teaching them what we know. It's just embedded."⁶⁰

People are owed a living wage from their work.⁶¹ It is only in families that the human race perpetuates itself so families must, at a minimum, have their material needs met. Parental needs ought to be accommodated to the greatest extent possible. The aim should be to work flexibly with each individual and family to seek personal and working relationships that make a good life for them and their families possible, thereby contributing to the building up of the basic social structures of our existence.

⁶⁰ All quotes regarding PCL are taken from interviews of PCL executives done by the author.

⁶¹ The position that a just wage is one which provides for a man's life and that of his family has been a central tenet of Catholic moral theology from at least the time of Pope Leo XIII with his publication of the encyclical *Rerum Novarum* in 1891. For a fuller discussion of Catholic Social Thought and business ethics see Jim Wishloff, "The Seventh Commandment: Prescriptions for Business," *Social Justice Review* Vol. 100, no. 7–8 (July–August, 2009), 109–118.; Jim Wishloff, "Catholic Social Thought and Business Ethics: The Application of 10 Principles," *Review of Business* 25, no. 1 (Winter 2004), 15–26.

An exemplary organization in this regard is Greyston Bakery in Yonkers, New York. In conjunction with the Greyston Foundation, the bakery has taken the entrepreneurial spirit that led to its commercial success and applied it to family and community development. Since its inception in 1982, Greyston Bakery has always had as its policy the creation of jobs for the hard to employ, including those with a history of incarceration or substance abuse, on a first come, first hired basis. What was realized early on is that even this high moral ideal is not enough in the absence of family and community support. The Foundation was established in 1993 to oversee an expanded social mission for the bakery. The bakery contributes a portion of its earned income to the Foundation and the Foundation provides services such as healthcare, childcare, housing, and technology education to those employed at the bakery. People are helped to move their lives and their families forward and in the process the community is renewed.

Those using their creativity and resourcefulness to exploit the earth's productive potential should be ever mindful of the fact they are using God's original gift of creation.⁶² Human beings have the obligation to be good stewards of the natural world, caring for it, maintaining it in its integrity, and perfecting it by opening it up to God through their own divinization. That is, attempting to overcome the world with our saintliness rather than raw physical conquest will serve to protect the ultimate sources of life and production.

Greater humility will have to be shown in the exercise of our dominion. We must quickly come into the possession of the wisdom needed to say no to the things we should be repulsed by (e.g., human cloning). The power we take on needs to be restricted to that which we can responsibly wield. Technological choice must be subjected to a more expansive assessment. We can still ask the purely functional question of the practical benefits and economic contribution of any proposed technology. Additionally, however, if we want to build a world that helps us to become what we ought to become, a world that suits our highest purpose and gives us a means or manner of life to journey to that end over time, then we will also need to ask the following:

- Where has this technology come from? Who wants to introduce it and why?
- What kind of world will it build? What qualities of social, moral, and political life will be created? Will it build a world friendly to human sociability or not?
- How will the technology change work, family life, leisure, art? How will it alter our experience of everyday life?

⁶² Pope Benedict, alert to the potential destructiveness of our technological age to the natural world, brings the environment into ethical view. "We can uncover the sources of creation and keep them unsullied, and in this way we can make right use of creation, which comes to us as a gift, according to its intrinsic requirements and ultimate purpose." (*Spe Salvi*, #35)

- Will it change our concepts of self, community, politics, nature, time, and distance? If so, how? Is this change for the better?
- What institutions will these new instruments make? What political world is embodied in them?
- What will this technological change mean for:
 - i) the power arrangements in society (does it have a centralizing or decentralizing tendency?)
 - ii) the optimal size for units of organized social activity (does it support gigantic, intermediate, or small groupings?)
 - iii) social diversity (does it serve to homogenize cultures or maintain diversity?)
 - iv) distributive justice (who gains and who loses from this change?)
 - v) social participation (do all parties likely to be affected by the change get to have a say in what the change will be like?)
- How will this technique influence how we learn, what we know, and what we are capable of knowing?
- What are the long-term implications for human health and disease, and the environment?

CONCLUSION

Business as an institution is a noble calling. As human beings we must continually use our rationality to win our way in the natural world we find ourselves dependent upon. We must provision for ourselves and we are called by God to be enterprising to accomplish this.

This provisioning problem can never be “solved” if we lose sight of the truth of our being. Business, the operational arm of technological civilization, cannot be just about accumulating more since we were made by love and for love, not for this world.

A myriad of Baconian men will no doubt continue their work of conquering nature apace. Nothing that happens in the world can convince them that their civilizational craft is unsound. All arguments to that affect will be dismissed out of hand as Luddism.

Pope Benedict XVI courageously offers a “trustworthy⁶³, life-changing and life-sustaining⁶⁴” hope that transcends the ideologies that plague us. To accept this gift we must release ourselves from the tyranny of method.

⁶³ *Spe Salvi*, #2

⁶⁴ *Spe Salvi*, #10