



PROMOTING LEADERSHIP IN THOUGHT
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From Epicurus to Maslow: Happiness Then and Now and the Place of the Human Being in Social Theory

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Πάντων χρημάτων μέτρον άνθρωπος Πρωταγόρας
The human being is the measure of all things
- Protagoras

Abstract

Protagoras said, “The human being is the measure of all things”. This implies, among other things, that language, science and religion are human inventions, as are economics, money, efficiency, race, conflict, etc. As symbol-using animals, we have created these concepts to serve our purposes. But as our societies have increased in size and our concepts have become more abstract, there is a danger that we will forget our authorship and reify these symbols. This inhibits change in the way we name things, so we are always in danger of misunderstanding the reality we are describing. We seem to be at such a stage now as we employ 18th and 19th century theories to describe and, more importantly, create 21st century reality. One such idea has to do with human needs. Influenced by the abstract (economic) concepts we use, we have lost our sense of what we truly need. Epicurus and Maslow may help to review and reassess those concepts. Epicurus, by suggesting that our material needs are quite simple but that emotional and spiritual need satisfaction requires a small scale loving community, free from fear, and Maslow, by suggesting that our emotional development is age-related, which, besides therapy, may help in suggesting revisions in socioeconomic theory that would ensure the social conditions that would allow this development to take place successfully.

1. Three Challenges Facing Humanity Today

Humanity is faced with three major and interrelated challenges in the 21st century, all of which are derived in part from outdated assumptions, or metaphysical beliefs, as E.F. Schumacher called them in 1973 in his classic book, *Small is Beautiful*.¹ These are assumptions about nature, and about human beings and their societies that we have inherited from the past. They are found embedded especially in current mainstream economics, the (self designated) ‘queen’ of the social sciences, and continue to have effect because of an indifference to the message of Heraclitus that, “We cannot enter the same river twice”, often rendered as, “τα πάντα ρει” – “all things change (flow)”, a metaphor expressing, among other things, the idea that we are always in danger of applying obsolete ideas to new circumstances.

The challenges of the 21st century, themselves, are economic, environmental and in particular, philosophical (psychological). Mainstream economists derive their assumptions about the economic system, about nature and about humans from the beliefs and conditions that were prevalent in the 18th and 19th centuries. More specifically, these assumptions were designed to liberate humans from the religious dogma that constrained the freedom of thought and behavior at that time. In the place of an (angry) God, they substituted, on the one hand, a reductionist and mechanistic interpretation of Newtonian physics, which assumed that the universe was like a giant autonomous clockwork, such that if we reduced it to its smallest parts and understood the initial conditions and causal relationships between those parts we could “reconstruct” that universe or parts of it to our own advantage through engineering. This Newtonian framework could then, according to economists and other positivist social scientists, be carried over onto society so that it too could be “reconstructed” through *social* engineering, with the difficult question of *who* was to do the engineering usually left vague, if not completely unanswered. In any case, for the scientist, it was not to be God or any of his earthly representatives who would conduct any part of this cosmic ‘orchestra’.

On the other hand, this assumption was accompanied by the necessary Cartesian belief in the separation of the mind and body, this having to do especially with the relationship between the “objective”, “value-free” scientist, and the social and/or natural reality under study. It was seen as necessary that scientists and engineers be untainted by religious or other dogma and *apart* from the reality under study, though their discoveries might allow them to seek to control it by exploiting its basic laws. Humanists and humanistic social scientists, while seeking objectivity, have never believed themselves to be *apart from* the reality they were studying, and now quantum physics believes that this is not even true for those studying the elements of nature, particularly at the sub-atomic level, and probably at larger levels as well.² In other words, in the quantum world scientists and engineers are now seen as a *critical* part of the physical reality they study, with their thoughts and actions potentially altering that reality. How much more would this be true for social scientists, especially economists, who are advising governments and businesses all over the world?!

At the same time, the 18th-19th century economic theorists were living in a smaller scale society and the relatively under-exploited nature that existed at that time. Their assumptions were thus based upon different kinds of human relationships and a different kind of environment. And furthermore as we question the extreme Cartesian belief, as stated above, we may now suppose that the effects of those assumptions (and the resulting theories), themselves, have contributed to a change in that reality, making it something quite different in the 21st century! Thus, those assumptions may have been useful then but are clearly less supportable today. So from Protagoras’ wise saying that “Humans are the measure of all things”, we arrive at the 18th and 19th centuries and beyond to the assumption that, “Money (or Newtonian science) is the measure of all things”, and *in the process have pretty much lost all idea of the human measure*.

In other words, matching the well-known structural crises of the economy and the environment, there is also a philosophical crisis related to how we think about and conceptualize these crises, for, indeed, ‘the body and the mind’, as well as all things in the universe,

are now seen by quantum physics to be connected. This philosophical crisis ranges from how to address the rather limited epistemological axioms of positive science, especially in the social world, to questions about how we are now to understand ourselves collectively, and how we are to set and evaluate goals for a future that would be free from these structural crises. Specifically, what are human needs, and how can they be satisfied? How can we best organize society and establish systems of social control to meet these needs? How do we establish moral values for behavior? In what sort of social environment can we begin to answer these questions? etc.

2. The Economic Crisis

Looking first at a key assumption of mainstream economic theory, it has been obvious for many years now that, among other things, the so-called 'free' market system composed of isolated decision-makers cannot (automatically) solve the imbalance between production and consumption. Nor could it ever; 17th and 18th century economic theorists, working within a deterministic Newtonian framework, couldn't have appreciated this. Looking beyond economics, we might find quite a number of different understandings of such an assumption. For example, in physics it would appear that the idea of a system composed only of *isolated* elements would be something close to entropy (or the end state of our solar system some billions of years from now). In literary history the outstanding example we could find of the detached decision-maker, aside from the occasional hermit, would be that of Homer's one-eyed Cyclops, a primitive creature who lives in a cave isolated from all other creatures and with no sense of the meaning of community, laws or society. As for the biologist, who works with *living systems*, such an anarchic situation would likely signal a spontaneous evolutionary move to create greater order, as a logical response to such a state of crude disarray.³

Indeed, in an economic system, a truly free market would be anathema to most businessmen, and they would likely seek to establish order by reducing the number of independent decision units through merger and takeover, which is exactly what has happened historically. Thus, in today's reality the term 'free market' has come to be used throughout the world as a cover for this actual process of consolidation, where larger economic units move in to take over smaller ones, particularly in less developed economies. To what extent economists themselves are aware of this deception is hard to tell, given that they are working within a 19th century idealist (mathematical) framework that 'proves' that such a market system is 'efficient' in this respect.

At the same time, larger production units can take advantage of economies of scale, while also exerting greater control over the conditions of the market. One long-term result of this has been a chronic tendency to overproduction in the industrial countries (the system produces more goods than consumers can consume, especially with the income available to them). As a consequence of this trend there has been a tremendous effort by capital, for over a century now, to interfere with the free market by stimulating an increase in consumption through any means possible, i.e., through advertising, marketing, loans, credit cards, and even architecture and art, etc. rather than reduce its profitable production.^{4,5} One by-product of this effort was and is to distort the psychology of people, especially young people, with the

idea that only wealth and the consumption of goods could define the successful (and happy) human being. I need to stress that this portrait of success is the product of a **colossal human effort** by powerful commercial, industrial and financial interests, with considerable help from psychologists and artists, and **not** some inevitable ‘natural’ evolution of the social system, as is assumed in the mechanistic ontology of economic thinking.

The thought that a better distribution of wealth would give even a partial solution to this problem inspired Henry Ford (only briefly) in the 1920s. Economists and political leaders were also inspired (though not ultimately persuaded⁶) by this thought during the application of Keynesian theory in the decades from 1930 to 1970 in America, and in a more substantial form in the welfare states of Europe. However, with the rise of monopoly capitalism and its ‘globalization’ over the course of the 20th century, along with its new (old) ideology, neo-liberalism where privatization and the market are sacred, this option is no longer considered ‘fashionable’.

Another (unfortunate) result of the inability of the market to maintain a balance between production and consumption has been the shifting of capital from production (the real economy) to the financial sector (banks, stock markets, and other forms of gambling) for speculative investments, in spite of the increased risk associated with such investments. This form of investment is also accompanied by a certain mentality, that of the gambler, who is totally unaware and unconcerned with the broader human and social effects of his activity. To quote Marx, who is describing a similar situation in 19th century France:⁷

[They] . . . get rich not by production, but by pocketing the already available wealth of others. In particular there broke out, at the top of bourgeois society, an unbridled display of unhealthy and dissolute appetites, which clashed every moment with the bourgeois laws themselves, wherein the wealth having its source in gambling naturally seeks its satisfaction, where pleasure becomes crapuleux (debauched), where gold, dirt and blood flow together. The finance aristocracy is nothing but the resurrection of the lumpen proletariat at the top of bourgeois society.

“Every time a speculative bubble bursts, the absurd ‘logic’ of the basic assumptions of neo-classical economics and of capitalism becomes more obvious, and a more rational organization of the economic system with a more equitable distribution of wealth, more necessary.”

These capitalists are even more morally indifferent than the industrial capitalists, who must at least be somewhat concerned with their labor force, to say nothing of their customers. Given this casino atmosphere, the more profitable these investments are, even if only temporarily, the greater is the imbalance of wealth that is created, which tends to exacerbate the problem of under-consumption – overproduction, etc. As a result of this mentality, we also see a chronic tendency towards an over accumulation of capital among the wealthy.

The system becomes even more unstable, as profit is increasingly based on lending (i.e., for consumption and not for productive investment) and on fly-by-night speculation. Every time a speculative bubble bursts, as we see all too frequently, the absurd 'logic' of the basic assumptions of neo-classical economics and of capitalism becomes more obvious, and a more rational organization of the economic system with a more equitable distribution of wealth, more necessary.

3. The Environmental Crisis

The environmental crisis, in the meantime, is much more serious than the economic crisis, which can in time be reversed, whereas the changes that are occurring in nature are likely to become increasingly irreversible.⁸ Capital and the neoclassical/neoliberal approach for the most part ignore this crisis, believing, it seems, that, "Après moi le deluge" (after me the deluge), or, in another version, that science and technology will in time solve all such problems. It should be emphasized that most economic theories of the 18th and 19th centuries saw nature as an open system, which one could exploit *ad infinitum*, such that it enters economic calculations as *income* and not as *capital*. And this assumption still characterizes capitalism, but also, unfortunately, to a large degree, 'socialist' systems, insofar as they are also directed to infinite growth, with the same deleterious effects on the environment. Today, more and more people are coming to understand the limitations of this assumption, except, unfortunately, for most corporate executives and mainstream economists, whose ideology inhibits them from acknowledging the problem. As for politicians, journalists and many scientists, we hear them repeating the 'mantra' of growth, as if this had nothing to do with the environmental crisis. Part of this mentality is the belief (and desire) that we could solve the problem of inequality only through growth, rather than through a radical change in the socio-economic structure.

Here we are reminded of the Greek myth of Erysichthon. In his insatiable desire for power and control (not unlike that of today's bankers, technocratic planners and politicians), he was willing to sacrifice nature, represented in the myth by his cutting down of the forests, including the sacred tree of Demeter, the goddess of the harvest or more literally, "Mother Earth". As punishment he was cursed with a hunger so ravenous that he ate everything in sight . . . until he finally ended up eating his own flesh! We can only hope that today's corporate and political leaders, and economic theorists will realize their folly before they have consumed everything in sight, they, themselves included.

But to solve the global environmental problem would require some sort of full and genuine democratic socio-political cooperation, something that has only been rarely seen in humans except among hunters and gatherers. The moral emphasis on 'possessive individualism', which we have also inherited from the 18th-19th century, along with its predatory competitiveness, does not serve us well with respect to this question.⁹ Also, the over accumulation of capital and the ever greater emphasis on large scale corporations, technology and financial entities that follow from this, do not allow much freedom for more creative and flexible thoughts and actions in the dialectic between humans and nature. Nature, however, has

limits beyond which Homo sapiens cannot survive; one can only hope that we will recognize this critical problem before it is too late.

Meanwhile, there are, of course, many, including economists, who are concerned with environmental problems and who offer thoughts on solutions and strategies for the future.¹⁰
¹¹ The most important thing to realize is that it is absolutely necessary to reorient most of the assumptions about political-economic systems, about society and nature that we have inherited from the recent past when capitalist-directed science and technology flourished unabated.

4. The Philosophical Challenge

The first philosophical assumption that we must question is that nature and society are the same. We need to understand that social theories based on a mechanistic Newtonian-Cartesian science and those that ignore human consciousness and intention, *do great harm in their application to society*. Without humanity and ethics, both missing in natural science, these theories and the mindset that accompanies them tend towards a fully controlled ‘brave new’ technocratic society. This leads to increasing despair and nihilism in humans where the only ‘freedom’ is to be found in the phantasmagorical reality of television, on the one hand, and consumerism, on the other.^{12, 13} The future, if we are to survive, must be built upon love and cooperation, on equality, on respect for nature, and on a substantial reduction in the demand for material goods, especially those that consume large amounts of energy to produce.¹⁴ This implies a qualitative shift towards a balance between the physical to the spiritual needs of humans, which in turn will require a significant change in the education of the young and old alike, so that we can learn to live as self-determined people and not as slaves to advertising and technocracy.

“Social theories based on a mechanistic Newtonian-Cartesian science and those that ignore human consciousness and intention, do great harm in their application to society.”

“Economics would like to see itself as a natural science (physics, preferably) being applied to society, and thereby assume that human consciousness and intention play no role in the events that are observed and measured in the social context.”

It is worth reflecting here on a statement by Robert Kuttner, co-editor of the magazine *American Prospect*, as referred to in an article by Eamon Javers and Jim VandeHei,¹⁵ in support of the massive amounts of *public* money that must be given to the plutocrats in order to “solve” the financial crisis in America and Europe *that they themselves have created*. “This,” says Kuttner, “is not about ethics, it is about economics”. So if you believe Kuttner, economics is without ethics, is amoral, with the result that while economics can distinguish between rational and irrational, *it cannot distinguish between moral and immoral!* (This is

quite apart from the thoughts and actions of any specific economists; it is simply that they must find moral inspiration outside of their science, if they are interested).

Following Democritus, however, this moral indifference requires an explanation, and there appear to be several reasons. First of all, economics would like to see itself as a natural science (physics, preferably) being applied to society, and thereby assume that human consciousness and intention play no role in the events that are observed and measured in the social context. Actually, this is only partially true, because economics does assign consciousness and intention in the form of the “economic man”, a caricature of the human in the form of a ‘robotic’ rational man who thinks and acts in total isolation from his fellow human beings. Thus, moral concerns would play no role in such a construction.

“Human societies are based upon consciousness.”

Secondly, in a related way, as a natural science, economics is obliged to be ‘value free’, in part a residue from the (still) unresolved conflict between the spiritual and the material, in this case between science and religion.¹⁶ That greed, envy and fear, as mentioned below, are implied moral values in this construction is left unexamined for obvious reasons.

Third, when Keynes (and Roosevelt) threatened the orthodoxy of mainstream economics in the 1930s, with a macroeconomic theory not built up from reductionist individualism, there was a small crisis in the science of economics. There was also a political crisis of sorts, as the moneyed classes rallied to cut back on the New Deal after the elections of 1936, thus sending unemployment shooting back up again. World War II interrupted and temporarily resolved this crisis by creating a military Keynesianism, which continues until today in much of the capitalist world.

Meanwhile, the McCarthy witch-hunt of the 1950s in the United States sent academics scurrying for cover. That is, any suggestion of government interference in the economy, as recommended by Keynes and carried out by Roosevelt, might be construed as ‘creeping socialism’. Most economists gladly (or reluctantly, as the case might have been) returned to the micro-economics based orthodoxy, and protected themselves with a wall of (mathematical) abstractions, often with little relation to reality, in order to prove their value-free ‘innocence’, a tendency that had earlier caused Keynes to say that:

Too large a portion of recent ‘mathematical’ economics are mere concoctions, as imprecise as the initial assumptions they rest on, which allow the author to lose sight of the complexities and interdependencies of the real world in a maze of pretentious and unhelpful symbols.^{17, 18}

However, human societies *are* based upon consciousness. The human mind contains logical, emotional and moral dimensions, and human actions that produce the social structure are always guided by these three parameters. Therefore, when Marshall celebrated the separation of economics from moral philosophy in London at the end of the 19th century, he heralded the growing irrelevance of economics to human society, *except*, of course, to the extent that its theories (and ideology) are continuously *imposed* upon society through

education and behavioral programs and policies. But, insofar as this is true, economics itself, becomes a part of the *social construction* of reality, and is no longer only theorizing about it.

In the final analysis, Marshall also heralded the likely disintegration of the capitalist system, if not human society, itself, as we now observe the degradation of nature that has followed. Unfortunately, it seems that most mainstream economists and businessmen then, as now, have not been able to appreciate that *no society could long survive without emotions and ethics*. This is what Plato meant with his saying that, "All science without justice and the other virtues must be seen as mere cunning and not wisdom". But that was at a time when science was still a branch of philosophy, unlike today when philosophy is considered by many scientists and engineers to be, at best, an interesting pastime.

Thus, a key philosophical challenge is to bring virtue or moral philosophy back into science. Not that science, especially economics, does not contain a moral and emotional framework; simply it is not very obvious, or discussed very much, given its claim to a 'value-free' status. Thus, this third challenge, which is closely related to that framework and, ultimately to the other two crises, is to define the place or role of the human being (including the scientist) in the socio-economic system. For the positive sciences, which have largely replaced religion and philosophy in social thought, the human being is little more than a cog in the Newtonian mechanistic world. In this world there is no place for emotion and ethics, two of the major non-material dimensions of human existence.

For economics this is especially important, since there are, indeed, emotional and moral dimensions implicit in economic theory. Here we refer to *greed and envy*, along with the necessary *fear* (of others) that accompanies such a value system as a means of social control. In this value system the mind must be focused on *cunning*, which, in this world view, is the only ability that humans need to be concerned about in life, a life that for mainstream economics, especially, is pretty much like a game of 'poker.' Thus the wiliest will be the most successful in life, and will represent the 'ideal man' in this philosophy, despite the degraded position assigned to him by Plato.

If economics, and science generally, did not play any significant role in society, this characterization of humans would simply be sad. But economics, and the 18th-19th century liberal 'philosophy' of the merchants, bankers and industrialists that still accompanies it, along with modern technology, largely determine our lives today. They restrict our daily lives to an inordinate degree, especially if we are unable to understand how crucial is their influence on our thoughts, both practically and theoretically.

This leads to the question about what should be, ultimately, the role of the human being in a more philosophical social vision. If Protagoras was right in believing that neither science nor religion but *the human being* should be the measure of all things, then how should we define humans and their needs? How should we define human happiness, especially if we believe that this is the ultimate goal of science? We should be able to improve on the strictly limited (and fabricated) *Social Darwinist* definition of humans that we have inherited from science, economic theory and political ideology of the recent past and, more specifically, the interpretation of this 'tradition' that characterizes contemporary socio-economic doctrine.

And, finally, could a deeper understanding of humans help in the solution to the other two crises that bedevil us so much today?

5. Happiness Then and Now

Two hundred years ago only a few people possessed the wealth and luxury that are now associated with modern living — whereas today. . . ? Of course, there is a substantial middle class in the developed countries that enjoys the material benefits of modern society, a class, which unfortunately is dwindling under the influence of the ‘New World Order’. This is true even in the U.S. where the median family income has not increased at all for more than thirty years, and has not actually declined because there are so many more women working now.¹⁹ But beyond this there is a worldwide alienation in this middle class that is not consistent with the material wealth and amenities that they enjoy. (On the other hand, does anyone truly believe that the very wealthy are happy, in spite of the persistent advertising about the ‘rich and the famous’ we see in the media?)

So, one must ask, with all the economic development and the evolution of science and technology in the last 200 years, what are we now able to offer to modern humans? First, throughout the whole world more than half of humanity has witnessed from very little to almost no improvement in their material lives during that time. Clearly, many people benefit from the wonders of medicine, and a minority enjoys progress in the use of energy, communications and transportation, and general comfort in everyday life. But is this minority happier now, even with these improvements and amenities? Perpetual war, crime and other sociopathic indices, e.g., divorce, drug abuse (including caffeine, nicotine and alcohol), prostitution and pornography, as well as bribes, kickbacks, patronage, fraud, theft, etc., which are common phenomena at every level of life today, altogether reflect a general collapse of the moral structure in today’s society. These findings would cause one to suppose that, no, today’s humans are not happier, despite the apparent progress in science and technology. And research that addresses directly the phenomenon of happiness draws the same conclusion.²⁰

We have no measurements of happiness from 200 years ago, although certainly there was much misery associated with the poverty that characterized the lives of most. Today’s worldwide poverty, meanwhile, still deprives many people of the basic needs for adequate food, clothing and shelter, and more than that there is still a general lack of some sort of security in life and the assurance that the few things that people have will not be taken away in one fashion or another, at any time that suits the ideological demands of the system — as we see in the recurrent financial crises that mark the history of the modern capitalist world. Of course this deprivation could lead to forms of sociopathic behavior then as now. But shouldn’t we have solved these problems by now? In any case, shouldn’t everyone be happier now? *Wasn’t this the promise of science and technology and free market capitalism in the 19th century?*

6. Economic Theory and Happiness

In a sense, poverty and insecurity should have been eclipsed long ago; because, for nearly a century now *we have a production capacity that could satisfy most of the basic material*

needs of all people. However, by the time we arrived at such a capacity both the politico-economic system and economic theory had become trapped in a severely limited perception of society and of human needs, as propagated by certain 18th-19th century philosophers and theoreticians. The result has been that 20th century corporate leaders have been ‘obliged’ to create (artificial) needs to fit this concept and this system of theory and practice. That is, the misery caused by poverty is an anachronism that requires an explanation, one, oddly enough, which is not far from the explanation for the unhappiness of the privileged few.

We start this explanation with a quote from Isaiah Berlin:²¹

The history of thought and culture is, as Hegel showed with great brilliance, a changing pattern of great liberating ideas, which inevitably turn into suffocating straitjackets, and so stimulate their own destruction by new emancipating, and at the same time enslaving conceptions.

We recognize here the basic dialectical insight of Heraclitus, as mentioned above, which Hegel and others have used to analyze the philosophical and socioeconomic systems of their time and ours. This dialectic refers here to the relationship between thought and behavior, between consciousness and being, between subjective and objective reality and even between conjectures and refutations, as Popper would have it. Kuhn has interpreted straitjackets as ‘anomalies’ that would lead to scientific revolutions, whereas Marx interpreted them as basic systemic contradictions that would provide clues for the next phase of human history.²² Thus, Marx, for example, began with an analysis of the subjective reality, i.e., the reality of ideas and thoughts, or the consciousness, that inspired the capitalist system at that time. This was a consciousness that made private ownership of the means of production sacred, that made workers selling themselves or their labor to those owners in order to survive seem natural, a consciousness that believed that everything, i.e., labor, nature, education, indeed, all of society, could be reduced to engineering, etc. Within a short period of time this consciousness resulted in the inescapable alienation of people, alienation from the products of their labor, from their communities, and from each other. Furthermore, the ideas that promoted this alienation, could, according to Alan Macfarlane, have begun as early as the 14th century in England.²³

Marx, however, did not start with Hegel, but with Epicurus. His doctoral dissertation was an analysis of the argument between Epicurus and Democritus about whether society is deterministic in the same sense as nature, that is, if there are any mechanisms that allow the prediction and control of society in the same way that current Newtonian/Cartesian science and technology seek to control nature. His conclusion was that the humanist Epicurus was right, that there are *no* deterministic social mechanisms, and from there came his respect for the dialectic and for the human participation in the construction of social reality. He was quite modest in his expressions about what exactly would be the next (socialist) phase of humanity, despite the ‘certainty’ that some of his followers showed in later writings, as they sought not to exclude themselves entirely from the deterministic ethos of the age.

With these considerations we can clarify some of the basic problems of western society today. Capitalism has liberated the enormous human resources that were hidden beneath the

various forms of despotism that lasted for 2000 years following the end of ancient Greek civilization. This liberation occurred in quite a 'natural' way as a result of the increase in commerce in the Mediterranean, aided in turn by the Renaissance that uncovered manuscripts preserved by the Arabs which revealed ancient Greek science and philosophy. The growth of commerce prompted the creation of industry and technology, which in turn contributed to an increase in the production of goods and the further development of trade, by now on an international scale.²⁴

The industrialization and urbanization that followed created a huge productive capacity, dependent, however, on a political-economic system based on the so-called free market and on an economic theory that rationalized it by focusing exclusively on production and investment for profit. (This emphasis on endless material production was true even in the communist Soviet Union).²⁵ Unfortunately, however, it ignores any human needs beyond those related to money, profit seeking and its mathematical theorization. Thus, if a need can be combined with a financial return, the system will offer an appropriate product or service; if not, it will simply not be met, at least not within the dominant politico-economic system. In theory and practice this system allows, though only grudgingly, a public sector to provide the necessary social and physical infrastructure to satisfy significant unmet needs, especially if their satisfaction would improve the productivity of the system in general. But again this is allowed only if it does not compete with the private sector. It is important to emphasize in this respect that with neo-liberalism in recent years the private sector has expanded enormously, while the public sector is increasingly being used as a conduit to channel public funds into the private sector, usually for excessively profitable activities.²⁶

When the system arrived in the late 19th century with a production capacity that could soon have satisfied the basic material needs of everyone, especially in the industrialized countries, and over time throughout the rest of the world, it did not follow the logical development of doing so because it was not 'profitable'. All of the subsequent evolution of capitalism and of mainstream economic theory since then has been characterized by this outdated 'logic'. Thus, in the less developed countries of the Third World colonial capital has sought cheap raw materials and cheap labor, and subsequently, to the extent possible, new markets (consisting mostly of the privileged few), which on the whole aids more in the underdevelopment and the continued deprivation of basic needs in these countries.²⁷ We must exclude, of course, certain countries of Asia, particularly China, which have to a large degree freed themselves from this colonial syndrome and where now the local ruling class, itself, has taken on the 'onerous' task of exploiting its own people in the name of 'development'.

During the same period, in the industrialized countries themselves corporations have learned to manipulate consumers' emotional and moral needs to increase consumption, so as to not reduce the production that was the source of their profit. In a sense it might have been more logical to increase the income of workers so that they could consume the increa-

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sed production, but this would have reduced profits. Caught in this contradiction, they have turned, on the one hand, to new forms of organization and technology to reduce production costs, ignoring the psychological and physical toll on employees and workers, as immortalized in Charlie Chaplin's 'Modern Times', and on the other, to advertising, credit, etc., as already mentioned, to increase the consumption of goods, including often those that are largely unnecessary, providing they yielded a profit. Meanwhile, the evolution of a technology that displaces workers further reduces purchasing power in the market. The combination of all these choices has contributed eventually to the current global socio-economic crisis.

The scientific, artistic and emotional manipulation of workers and consumers has reached a very sophisticated level today, forcing them to engage in a frantic but meaningless 'rat race', in which they work harder and longer hours to earn more money to buy goods they think they need, without a thought given to how these needs were created in the first place. Capitalism and mainstream economic theory and even liberal ideas about democracy are trapped in the 'straitjacket' of thought from the 19th century, and are unable to help the workers, citizens and consumers to free themselves from this impasse.^{28, 29}

7. 'New' Perceptions of Happiness

We know that in large social systems there are many unintended consequences of people's actions: we think we're doing one thing but it turns out that the effects are not what we expected. The feedback loops in large systems are very slow moving and often interpreted in terms of outdated conceptions, so that reality usually runs ahead of thought. Thus, it has taken until now for more and more people to understand that the 'liberating' theories and ideologies of the 19th century do not fit the realities of the 21st. There is now an effort to bring science closer to real people and real needs. There are thousands of students and professors of economics who are looking for new, more humane 'reality based' economic theories, reflecting today's circumstances.^{30, 31, 32} (See also www.paecon.net)

At the same time, in the larger industrial society there are millions of people seeking to satisfy non-material needs by fleeing the modern sector and the frenzied competition that characterizes it, living with smaller cars and simpler houses and consumer goods. They are seeking to reduce environmental pollution by using more 'friendly' technologies, and to eat fewer processed foods containing toxins from pesticides, fertilizers, etc., and generally to avoid the pressures for the 'good life' promoted by the media. In other words, they are seeking to create on a smaller scale a more moral and emotionally satisfying socioeconomic system to replace the large scale one that has now become so immoral and so irrational.^{33, 34}
³⁵ This is not, of course, to suggest in any way that the poverty-stricken people in the Third World should be denied access to those basic material goods and services that are so lacking there, to a large degree proportional to their over abundance in the First World.

It is not the first time, however, that people have realized that their society could not allow the fulfilment of important non-material human needs. Here we must mention one of the earliest and most important of such people, Epicurus, who left the city, not to avoid consumerism, but to find the essence of human life. Although the school of Epicurus lasted

much longer than all the schools of the other philosophers, his thoughts have been distorted and his concepts perverted more than those of any other philosopher. Why? Because Epicurus tried to free humans from every sort of unessential physical and psychological need that might derive from the socio-political system. This has not made him popular in any system of power, anywhere, ever.

This is because people in positions of power are always looking to devise emotional and ethical justifications to legitimize their power. The Greek word for (political) power is ‘ἐξουσία’, which means literally ‘outside the essence’. Insofar as the powerful are usually ‘outside the essence’ they seek those justifications outside the realm of the human and outside the essence of society, that is, in the realm of the metaphysical and in mechanisms beyond the human. When Nietzsche said, “God is dead”, he meant that the metaphysical symbolic system of religion had lost its grip on humans because it had been replaced by science. Now unfortunately, following the idea of the dialectic, science, or at least the language of science, is increasingly used for similar symbolic purposes (of ‘mystification’). Thus, for many people, including almost all businessmen, and the politicians who support them, as well as many economists, *economic theory and science generally play to a significant degree the social role of a metaphysical symbolic universe that legitimizes the power of the existing status quo.*³⁶

Meanwhile, there are many contemporary people, who, like Epicurus understand that modern society pushes one beyond and outside the essential, and that society, therefore, needs to be redefined. Such an effort requires reflection, time and quiet, something not to be found in the city. Hence, the movements mentioned above, which have different names: ‘cultural creatives’, ‘postmodern’, ecovillagers, transition towns, ‘harmonization movement’, even Epicureans, etc.^{37, 38, 39, 40, 41}

8. The Philosophy of Epicurus

How could Epicurus assist current Epicureans? What was the philosophy of Epicurus?⁴² A basic presupposition of Epicurus was that happiness begins at the level of human beings, and that they should be happy here and now (and not after death, for example). To be happy, one should avoid physical pain and mental distress (what today we call stress). But, according to Epicurus, one should seek to avoid physical pain and mental distress *through reason and logic and not through gluttony and greed*. That is, what all the agitated critics of Epicurus have done for two millennia now is to distort the meaning of ‘ἡδονή’ (hedonism) and to slander him by giving a totally opposite meaning to the word, all based on a big lie. *For Epicurus any pleasure of a given moment that would bring unhappiness to the next, either to one’s self or to others, should be rejected*. Thus, his true maxim was frugality, simplicity in food, in drink, in housing, in clothing and sex, i.e., ‘μέτρον ἄριστον’ (measure in all things), *not* the current tendency to overeating and dieting, drug abuse and detoxification, overconsumption and over indebtedness, etc.

There is modern scientific evidence to support this philosophy. For drug dependence there is no need for discussion. As far as overeating is concerned, experiments with animals

have shown that less food contributes to health and longevity. There was an impressive study of American Navy pilots who were imprisoned in North Vietnam (where they ate only rice and vegetables) compared with their fellow non-imprisoned pilots, which showed that in a whole range of body systems the prisoners were healthier than their colleagues who ate the usual meals of the American people!⁴³

Epicurus believed that to avoid psychological stress, the most important thing was to avoid fear. He believed that all psychological stress begins with fear, and furthermore, along with Aristotle, that fear is the chief weapon of power. Epicurus believed that fear is rooted in the fear of death, so he tried first of all to relieve people of this primal fear. It was also for this reason that his philosophy was in continuous conflict with western religions over the centuries that followed. He did not believe – as was also true of Thomas Paine⁴⁴ and other deists in the 18th century – in gods that would meddle in human affairs (supporting one or the other side in wars, sporting events, etc.), either before or after death. He believed that if such were true, gods would be human and not divine, thus disarming the power of all the religions that threaten humans with punishment through exile, excommunication, hell, or whatever. The same is true for all forms of power that use fear to control their subjects. Indeed, the more a system depends upon fear to govern, including fear of the enemy, of terrorism, of crime, of torture and execution, and in general fear of the ‘bogyman’, the further away it is from democracy, whatever label is used to define that system. Thus, Epicurus entreated his students to avoid the fear of God, the fear of authority and the fear of death, fears often generated by ritualistic and sociodramatic means such as staged terrorist events, the theater of violence in the mass media, overt demonstrations of power, victimage, mystification, etc.⁴⁵ but also the many writings of Kenneth Burke.⁴⁶

At the other end of the emotional spectrum Epicurus gave much importance to *friendship*, as he believed it was the most important basis of human happiness. He emphasized companionship, honesty, generosity, goodness and kindness to friends, along with prudence, self-sufficiency, serenity, simplicity and restraint. Because he appeared to give little importance to kinship or to society as a socially constructed reality, and as he believed in and supported the atomic theory of Democritus, he was compelled to find a social explanation for “the temporary association of individuals within larger systems characteristic of nature, where ‘everything flows’”. There may at some time be found a quantum explanation to complement the psychological importance we give today to the attraction between people that results in temporary communities or groups. Epicurus, however, offered friendship as the philosophical explanation for the role of such attraction. And in his garden, friendship was extended to all: to women, slaves, young and old. There, associations relied solely on human volition, rather than on coercion, and hence the importance of friendship to maintain the sense of cohesion.

In this context, without fear, and with equality and freedom and with the search for happiness based on wisdom, logic and simplicity, Epicurus saw no place for glory, for success and fame, for wealth and greed, or for power and conquest. “*Ἀάθη Βιώσας*” (Live inconspicuously, unobtrusively): avoid behavior and ambitions that bring only banalities and mental

distress. Live life here and now, with simplicity and respect for each other, but with joy and happiness.

How ironic! Almost the entire evolution of humanity since Epicurus has gone in the opposite direction, especially with the rise of economic theory, individualism and the technological society, which have brought a culture of egoism, competition, conquest and arrogance, and with ultimate consequences that may well circumscribe significantly, if not conclusively, human life on our planet. So it is not surprising that so many people today are looking to implement the values of Epicurus, with or without his name. There are scholars in all disciplines who are turning their attention towards the human and the spiritual, seeking to find a more reasoned philosophical and scientific approach to the current social reality.

9. Maslow's Developmental Theory of Human Needs

One such effort (without apparent reference to Epicurus), starting nearly half a century ago was that of Abraham Maslow,⁴⁷ who sought to formulate a theory of emotional needs as they develop throughout a normal (non-pathological) person's lifetime. In his well-known "hierarchy" he sought, through his clinical work, to develop an empirical theory that was dynamic and universal. He claimed that the first needs, first in importance and time, were the *physiological needs* of humans arising during infancy: needs for food, water, warmth, etc. These are the basic material needs, and essentially the only needs incorporated in economic theory where they are expressed solely in terms of money. Mainstream economic theory offers essentially no theoretical guidance as to how these needs would be insured for all people. The free market system has certainly not succeeded in doing this even in the advanced industrial countries, as the past 200 years have shown all too clearly. Surprisingly, they were not even identified as needs in scientific discussions and indices of development, including in the United Nations, until fairly recently, and only after a long campaign by Mahbub al Haq.^{48, 49}

The second developmental need is the emotional need for *safety*, which is very important during the childhood years of human beings. It is the need for security, protection, stability, dependency, freedom from fear, anxiety, and chaos, need for structure, order, law, and limits, etc. It is a need that is satisfied primarily within the context of the loving family, *but which presupposes the security of the family in the larger society*. Again mainstream economic theory offers no guidance here. It is also a need whose satisfaction is undermined by the violence that is a daily presence in the media, even in children's cartoons. This violence serves broader political purposes by creating fear, often subconsciously, important for social control as mentioned above, but also necessary to justify the militarization of the global politico-economic system in which military armaments are the number one world trade commodity according to statistics provided by the United Nations.

The third need in human psychological development is the need for *affiliation or friendship* within a group, a very important need during adolescence when the child begins the search for autonomy. It is the need to belong somewhere outside the family, the need for loving relationships with friends, which will subsequently evolve into similar relationships with spouses, children and community. It is a need which could be satisfied through youth

groups and clubs sponsored by schools, churches and other associations for young people. Among other things the young could discuss the ways in which the need for affiliation is much exploited in advertising, which is directed increasingly towards adolescents. Teenage children have a critical emotional need to belong to a reference group beyond the family and will do almost anything, which in current society, television, cinema and, in general, advertising, suggest are necessary to belong to such a group.

Later, during the early developmental years of adulthood people have an emotional need for esteem, specifically for self-esteem and social esteem. The first is expressed as a need for power, achievement, efficiency, ownership, capacity, confidence, independence and freedom, and the second for reputation, position, fame and glory, dominance, recognition, attention, importance, dignity and respect. Maslow's theory has been much used in management seminars and workshops in relation to this need, though how it can serve to counsel employees involved in a rapacious, predatory system where only the bottom line is of importance, remains a mystery.

It was also a need referred to by Adam Smith as approbation, though his examples reveal his failure to appreciate how different life in mass society would be from what he was experiencing during his time. One unfortunate development has been that most of the economists who have followed Smith have reduced the basis of such praise (often clouded by envy) to material or monetary terms, disregarding other forms of emotional and spiritual satisfaction sought by human beings. Unfortunately, Smith justified the search for approbation on the grounds that it would encourage people to continue to "cut the trees and plough the fields", with all the disastrous results we see today in the environment and in human psychology.

In any case, here it appears that Maslow diverges from Epicurus and his canon to live inconspicuously and unobtrusively. Or could it be that Epicurus understood something that Maslow did not take into account, i.e., that it is very difficult if not impossible to find real (authentic) esteem in a large-scale society? This is certainly true in the mass society of today, as evidenced by inquiries made on this topic. Current surveys show that few people express satisfaction in their work, which is, for the most part, the place where one must expect the need for esteem to be satisfied.⁵⁰

Parenthetically, one might add that the Soviet system also ignored these emotional needs in defining the new socialist world. Material needs were guaranteed, but were ultimately understood as they were defined in the capitalist world. Thus, continuous increases in consumer goods and the necessary increases in industrial production that this entailed were to be the defining purpose of the new socialist society, with the same resulting environmental problems that have marked the history of capitalism.

At the same time, development was seen as an engineering problem in the same mechanistic framework as employed by the capitalist system, and was to be realized through central control, in this case the state instead of the corporation. Work, while guaranteed for everyone, turned out to be the same mindless process as portrayed by Charlie Chaplin and formalized by Taylorism under capitalism.

Thus, esteem needs, which can only be realized through worker participation at every stage in the decision-making process, were as frustrated under Soviet socialism as under capitalism. Joshua Horn⁵¹ described the long painful process that worker participation entailed, based upon his experience in the post revolutionary medical system in China. But, if applied universally, this would have slowed down the accumulation of consumer goods that was to characterize the new utopia. Thus, apparently for this reason, it was rejected as 'inefficient' in the Newtonian framework that was employed in the centralized Soviet planning system.⁵²

"The academic and business world are still largely dominated by the mechanistic Newtonian vision of reality and the Cartesian separation of the spiritual and the material."

Meanwhile, the (illusion of) glory, much sought after by politicians and those who generally have a passion for money and power, cannot satisfy such needs. Is it perhaps that Epicurus believed that only in small-scale communities could one satisfy the need for esteem? Epicurus did not live in our present mass society, but he must have realized that it was necessary for people to know you well, and to truly respect you, so that you, yourself would realize that this was genuine esteem. And is this perhaps why so many people are now creating smaller communities in order to live a more fulfilling life?

At the final stage in one's emotional development, Maslow identified a higher need, the need for *self-actualization*. This is the need to become more and more idiosyncratically everything one is capable of becoming, from an ideal parent to an athlete, musician, carpenter or whatever. Normally, this need is met only very rarely in our contemporary society, according to Maslow, on the grounds that, apart from very exceptional people, most would have had to satisfy all the other developmental needs first in order to reach this level, and this would occur usually only after the age of fifty.^{53, 54}

Indeed, Maslow's hierarchy is characterized by the concept of 'prepotency', which means that it is an interdependent system where lower needs must be generally satisfied before higher needs even become relevant. Hence, ordinarily, if a lower need is not satisfied at the appropriate age it could very well remain dominant and prevent the emergence of higher needs later in life. Thus, if during the years of infancy persons have not satisfied their need for food, these people will tend to remain psychologically at this level, and food will persist as an obsessive need throughout their lives, inhibiting the emergence of other higher needs. The same applies to the need for security in childhood, or friendship and affiliation in adolescence. If any one of these needs is not met at the appropriate age, it will tend to persist as an unmet psychological need throughout a person's life and block the emergence of later needs for esteem and self-actualization.⁵⁵

With this in mind, the seemingly strange and erratic appearance of children's psychological needs, or lack of emotional intelligence according to Goleman,⁵⁶ in adult populations is explained. Different people have stayed at different stages in their psychological development, and hence the emotional immaturity characteristic of a significant proportion of the adult population, especially, the male need for power, perhaps because childhood safety

needs were not satisfied. And one reason for this is that socioeconomic conditions plus the lack of philosophy throughout the educational system, throughout science and throughout (the technological) society in general, do not give attention to normal psychological development. That is, if we want people to be happy we must at some point put emotional and moral development alongside, if not ahead of economic growth, which, if we did, would cause a tectonic shift in the current scientific understanding of what is important in human life.

Meanwhile, it is not that this shift has not already started to take place. Since the time of Maslow, there has been an enormous amount of research on human happiness and well-being, or eudaemonia, as the Greeks referred to it. Neuroscientists, psychiatrists, psychologists, geneticists, philosophers and even physicists have been conducting research on every facet of human well-being. Much of this research has been summarized recently by C. Robert Cloninger in his book, *Feeling Good, the Science of Well-Being*,⁵⁷ which also includes his own research on the multi-dimensional, including spiritual, characteristics of well-being. Unfortunately, the academic and business world are still largely dominated by the mechanistic Newtonian vision of reality and the Cartesian separation of the spiritual and the material, and where even basic physiological needs have only recently been recognized as worth reporting alongside GDP, per capita income, etc. It is for this reason that we must struggle to make known the insights of Maslow, Cloninger, and many other scholars who are working to incorporate the *total* (spiritual and material) human being into our philosophy of science and society.

10. What Can We Do To Save Humans With (and from) Science?

We must appreciate that Maslow's hierarchy is *not* a deterministic theory in the Newtonian sense, nor is it expected that people reading about his theory would not be affected by it, as Descartes would have imagined. Therefore, the idea of prepotency can be utilized and then overcome through reflection on the hierarchy during adulthood. Just knowing about it may free persons from its hold, in the same sense that physical reality in the quantum world may be altered by scientists who are observing it.

Maslow, in the meantime, adds two more needs outside the prepotency framework: cognitive needs and aesthetic needs. These needs appear in all societies and all epochs, and are probably the key thing to examine if we wish to extract ourselves from the impasse of our present existence. To create a better social system we must first understand the problems in the current system and then be able to envision, think about, and generally create an image of a new social structure.

Thus, Maslow's developmental theory may be used in two ways:

First, it may be used as an approach to individual psychological therapy as part of a quest for personal well-being. Here it can be used to identify inadequacies in psychological development arising from unmet needs during infancy, childhood and adolescence that constitute obstacles to satisfaction of esteem and self-actualization needs later in life. This is something which most of psychological therapy is directed towards, in any case, either

within similar or differing theoretical frameworks, including that of Dr. Cloninger, who has explored the need for cooperativeness and self-transcendence as necessary prerequisites not only to individual well-being but also to social well-being and, in the long run, the survival of our species.

Secondly, and equally important here, we must talk about the socioeconomic implications of Maslow's theory, and about the need to institutionalize, in the sociological meaning of the term, the satisfaction of these needs at the appropriate time in the emotional development of all members of society. Thus, our fixation on efficiency, productivity and growth in the material realm must give way to concern for growth in the emotional and spiritual realm. Instead of adding endless numbers of gadgets and widgets, especially of the military sort, we must seek to add more healthy and emotionally mature human beings. Epicurus' insights into happiness should also help to liberate us from this overbearing material realm, with additional untold benefits in our effort to stop degrading the environment (and each other).

Thus, economic theory must be directed to providing a minimum of food, clothing and shelter for all members of society, with the assurance that women (and men) will not be degraded socially for their absence from the "productive" sector during periods of early childhood development. The same requirement must apply to each stage in the emotional development of all persons such that the satisfaction of their need for security, love and affiliation is embodied in social institutions directed to that purpose. Here we must emphasize the importance of protecting the family where such needs are first and best satisfied, which would mean allowing flexible work schedules and avoiding punishment for either women or men who are engaged in this critical social function. At later stages, when esteem needs are relevant, work must be designed as an end in itself, and not just as a means to increase production and/or profit making. Obviously, questions of productivity and efficiency cannot be ignored in the work place, but they must be kept in perspective, not as ends in themselves, but as means to the greater well being of the overall population. Again, Epicurus, as well as the serious problem of environmental degradation, should help us to maintain a proper perspective on how much and what sorts of production of material goods and services are important to society. Finally, economists, themselves, will have to learn to arrange the numbers so that these radically different social goals can be achieved. It should be both a challenge and a great satisfaction as they relearn their science in the service of humankind, serving Apollo, the god of light and healing instead of Ares, the god of war.

Among other things, this will require a renewed understanding that all knowledge is relative. What we believe as true today may have been either unknown or fantasy yesterday, and may be either a falsehood or, more likely, only a partial truth tomorrow. This understanding of relativity has been increasingly more acceptable to science since the time of Einstein, Heisenberg and Bohr,⁵⁸ and in general has always been more or less known in the humanities and the arts. Indeed, the social role of art is to experiment with reality, opening prospects for other possible realities, either through criticism of the status quo, or through images of another, better reality.^{59, 60, 61} If ordinary people and even more scientists begin to accept the relativity of knowledge with all its implications, as Berlin indicated above, and to *know when liberating ideas have become suffocating straitjackets*, then we can begin to build a better

society. This is not, of course, to adopt the extreme relativist (often postmodern) position that implies that there is no such thing as true knowledge, and that, therefore, nothing matters. Newtonian physics has not been thrown out because of quantum physics; it still occupies an important, though now more limited position, which is the way of all growth: the more we know, the more we realize what we don't know.

As mentioned above, we live with a number of scientific and socio-political ideas from the 18th and 19th centuries. The liberating ideological and theoretical ideas of this era were the product of the efforts of merchants and industrialists to be freed from the control of landlords and kings, who claimed that they ruled with the blessing of divine right. Even the U.S. Constitution extended the idea of democracy solely to people with property! Only after prolonged struggles did workers acquire voting rights, and women only in the 1920s, and for blacks in America only in the 1960s, that is, just a few years ago! In spite of this, an American journalist has described the current U.S. system as still little more than a 'representative oligarchy', which is not far from the reality in Europe. If you look at the cost of elections around the world, for example, you will understand that only the rich or 'friends' of the rich, that is, of the oligarchy, may seek to become elected to higher political office. Many social scientists still insist on calling these systems 'democracies', disguising reality with such "Orwellian" euphemisms in their 'scientific' analyses.

Mainstream economic theory is even more disingenuous. It speaks of a 'free market' system that might have existed at some point in the 18th or 19th century before the inevitable effects of competition started producing winners and losers and 'the big fish began to eat the small'. The accumulated effect of these economic forces has produced ever fewer and larger firms, particularly in the developed countries and by extension in the rest of the world, as competitive capitalism has evolved into its present monopoly form.⁶² The term 'free market' is a euphemism that obscures, among other things, the economic disparity between developed and less developed countries, a disparity that allows monopoly capital to enter freely into the less developed economies and pillage their resources, as well as their means of production and distribution, creating a permanent dependent status for these countries. It also obscures the ability of these few companies to control the prices and general market conditions for the products or services they provide.

Finally, and more recently, it obscures the evolution of the shift in economic power from the industrial to the financial sector where 'the financial tail is now wagging the industrial dog', and the subsequent and inevitable extension of the severe economic crisis beyond the financial sector into a worldwide depression at least as great as that of the 1930s. There are many other examples of anachronisms in economic theory, as it struggles with the 'strait-jackets' of 19th century thought, without even mentioning the whole range of non-material human needs that do not appear anywhere in the economic and technocratic approach to the socioeconomic system.

11. Conclusion

Thus, to begin to change the system, humanism and philosophy would have to be rein-

roduced into society and science, that is into the educational system and the ‘theater’ of the media, where adult education takes place. With art, especially dramatic art, playing an important role, we can begin to envision a different reality where human beings and their emotional and moral needs would be given precedence, rather than our current preoccupation with profit making, consumerism, greed, jealousy, and fear. Not that we should ignore the positive values of science and economics, values such as logic, efficiency, rationality, etc. Simply, *these values should serve human needs rather than define them.*

Furthermore, we must seek to remove all the labels that we use, without thinking, to describe people and situations, labels that separate ‘us’ from ‘them’, even in the same society, the same city and the same neighborhood, cultivating hostility and intolerance, and creating a serious obstacle to a more humane society. This is likely a phenomenon that has derived, as Maslow might say, from the insecurity that ironically appears to have characterized the history of all the world since the acquisition of property accompanying the creation of surpluses provided by the domestication of plants and animals over the past 10,000 years, an insecurity that appears to have led to a craze for power and control that has characterized so many people (especially males) since that time.⁶³

Indeed, as humankind seeks to attain the next level of spontaneous evolution to manage its global complexity, it should be inspired by better knowledge of the stages that have come before. Unlike the social Darwinist inspired belief that random mutation, competition, and adaptation create survivors, it is now seen to be a more “intentional” process that is inherent in quantum nature itself. This process leads to the *increased cooperation* that has allowed adaptation and survival, which in turn explains the evolution from prokaryotic uni-cellular organisms to multi-cellular organisms to proto-hominids and then to our own self-conscious organisms.⁶⁴ The increased control fostered by increased complexity is not accomplished by dominance but by increased communication among specialized components of the system. The current urge for control, which characterizes the early Newtonian conception of the universe and which has been carried over into society, is not what has allowed us to evolve into the self-conscious organisms that we are today. If we are to survive as such, and given that we have increasing knowledge about how the quantum universe is organized, we should like all the other elements of that universe to use that knowledge to find new cooperative means of surviving at the global level.

Maslow describes the process whereby children can become integrated, self-actualized adults. We now need to participate in creating a society that would allow the satisfaction of *emotional* needs, as they appear at each stage in human life. Epicurus, at the same time, has described a more modest material environment in which this process could evolve in a natural way, where humans could find the biological and psychological security and respect that would allow them to form a non-hostile identity, an identity that would not be threatened when confronted with other people and other identities in the same or other geographic and social space. Such an identity would not be restricted to ‘us and them’, so that the inevitable conflicts that occur in human society could be solved without resorting to violence.

Unlike the Pythagorean communities, as well as most subsequent utopian religious communities, where obligations are institutionalized, all facets of membership in the ‘garden’ of Epicurus were voluntary, such that the bonds were based on emotion, not law. The contributions and sharing to create a more egalitarian and just community were done in a spirit of friendship and not obligation. This process was facilitated by the principles of frugality and lack of vanity, which allowed social status and respect to be achieved without resorting to material wealth and fortune. It is this combination of the maximization of pleasure in the context of austerity that would allow the need for self-awareness and self-actualization to be satisfied without undue reference to material goods, wealth and money. Such a philosophy is particularly necessary today, because it would not only facilitate true psychological development, but would do so at a much lower environmental cost.

The philosophy of personal greed, which inspired the rise of capitalism, has brought us to an impasse with nature and with ourselves. Thus, we return to Epicurus not only to see how he sought to satisfy human needs, but also especially how he sought to create a community (society) that resembled the more democratic societies of ‘hunters and gatherers’. There is no need to over-romanticize them, but at the same time these people had, for the most part, found ways to live modestly by sharing their limited wealth, without the need to create an identity so closely attached to property.⁶⁵ A ‘possessive’ identity arose with the domestication of plants and animals and with the idea of ‘private property’ (land and livestock), as mentioned above. Over time this definition of identity extended to larger geopolitical entities and led it towards a hostile dynamic with an extension from simple jealousy all the way to civil strife and eventually to international wars of conquest, thus turning it into a force for division rather than inclusion: ‘You’re either for us or against us’, where there is no ‘third way’ and no space for compromise.⁶⁶

Today, the courageous effort to create a common identity among all mankind is forced to struggle with the residue of human evolution over the past 10,000 years, to say nothing of the effects of a social Darwinist inspired predatory capitalist system and its economic theory institutionalized over the past several hundred years. This is a system where every thing and every person is an exploitable resource, and cooperative relations, even with nature, are very difficult, if not impossible to realize. It was precisely this hostility that Epicurus sought to combat with his emphasis on simplicity, equality and friendship in the garden, where property is something that we share as an outgrowth of people learning to develop faith in their fellow human beings.

Instead of helping us to use and develop our emotional and moral selves, mechanistic (social) science has tried to convince us that they are not necessary, that scientific logic would make them redundant, and that shrewdness would suffice. Instead of confronting the maxim of Plato, this science has sought to establish cunning as the highest human value. Can social scientists, especially economists, who have so much influence in today’s world, produce a theory for a system that would maximize *security, friendship, and love*? If they can, perhaps the effort to satisfy needs for esteem and self-realization could evolve naturally within the same framework.

So, let us try to look more closely at the meaning of happiness, something that the welfare states have tried to do, although, as seen above, the effort has been blunted by an economic view of the human being, even in the socialist countries.⁶⁷ But we must measure true need satisfaction, not some fabricated indices developed from existing data. We must ask the people, themselves, remembering that individual perspectives are always social in origin. Social scientists, psychologists and philosophers must all work together to create questionnaires and interview methods that can uncover true human feelings, and then develop indices that would measure such feelings. A significant change in scientific thought, and ultimately in society, would be required, if we were to succeed in such an effort. We need a new vision that would subordinate conventional economic signals to new human concepts. The beliefs of economists about efficiency would have to change to ‘improving not only the material, but also the *emotional and moral circumstances of one person without worsening the emotional and moral circumstances of anyone else*’. All this must refer to new and more humane societies, simply because existing thoughts and behaviors are leading us to a dead end. Indeed, mainstream economic theory is not able to guarantee any of the above-mentioned needs; it appears at this time, at least, to guarantee that all the wealth, property and power will float to the top 1% of the population!

“Individual perspectives are always social in origin.”

Often it is the more adventurous, the ‘marginal’, often younger scientists, who dare to risk their ‘reputation’ with such unorthodox thoughts and deeds. This, at least, is what the analysis by Thomas Kuhn⁶⁸ would predict when he speaks of ‘scientific revolutions’. It is the young scientists who can experience the quantum or Gestalt shift from an old paradigm to a new one without the excessive emotional cost that older scientists are likely to experience. And it characterizes the adventurous people who are leaving the modernist rat race for life in more cooperative settings, whether in large cities or small towns, as they seek to rediscover the emotional and social skills necessary for harmonious living in a return to the ‘Garden of Epicurus’. There they are seeking to find new ways of coexistence among themselves and with nature, ways necessary to found a new post-individualist society, where humans will be the measure, and money, science, mathematics, religion, etc., will be the lesser, though not unimportant means.

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Notes

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Steve Jobs: Nobel Laureate*

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Abstract

The remarkable achievements of one of the world's greatest entrepreneurs offer profound insights into the fundamental nature of economy and essential missing links in prevailing economic theory. The career of Steve Jobs dramatically illustrates the central importance of human capital in modern economy and the almost incalculable contribution that a single individual can make to technological advancement, social innovation and wealth creation, while enhancing the lifestyle of hundreds of millions of people. Jobs demonstrated that the real basis of economic value is providing valuable products and services that fulfill human needs and aspirations, not unregulated markets and financial speculation. His apparent failures point to the dual nature of uncertainty that presides over all human activity – both the ever present threat of error and the untold opportunities hidden behind the veil. Widely regarded as a genius for inventing better products, his greatest commercial achievement has been in recognizing the central importance of services in modern society and fashioning integrated social service systems within which products act as an enabling technology.

Eager to recognize Winston Churchill's outstanding service to humanity, the Nobel Committee could not bring itself to award the Peace Prize to a leader whose greatest achievement had been fighting and winning the Second World War. Instead they decided to award him the Nobel Prize in Literature for his "mastery of historical and biographical description as well as for brilliant oratory in defending exalted human values". A similar difficulty arises in conferring recognition on Steve Jobs for his remarkable contribution to our knowledge of Economics. Having dropped out of a liberal arts college six months into his freshman year and audited a course on calligraphy before setting off on a six-month trek to India in search of spiritual enlightenment, the idea of conferring on him the Nobel Prize in Economics sounds outlandish.

Indeed, it is very unlikely that Jobs ever read a textbook on economics, let alone intentionally contributed to the formulation of economic theory. Yet we can learn more from this barefoot entrepreneur – he literally went barefoot and bathed infrequently for years until his status as a corporate leader compelled him to don a more respectable garb – about the fundamentals of wealth creation, economic development, technological innovation, employment generation, entrepreneurship, creativity, management and accomplishment than from

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a whole pile of social science textbooks. A review of earlier economic prize awards, including many for work on minor esoteric issues and two for contributions to the development of computer algorithms responsible for financial speculation, should be sufficient evidence of the need to refocus economics on issues directly related to wealth creation and human welfare.

Steve Jobs' contributions to economy are unquestionable and unprecedented. Starting out in his garage with his partner Steve Wozniak and an initial investment of \$5000 in 1976, within a decade Jobs grew Apple Computers into a \$2 billion company with 4000 employees. Relieved of all management authority by a board of experienced corporate leaders after the launch of the Macintosh computer in 1984, Jobs left Apple. When he returned to Apple 12 years later, the company's market share had fallen from a high of 16% to just 4% and was still declining. Apple's prospects were so precarious that billionaire entrepreneur Michael Dell publically advised Jobs to close the company. Over the next fifteen years, Jobs transformed Apple into the fastest growing, most profitable consumer electronics company in history. By the time of his death in 2011, Apple was a \$156 billion corporation with 72,000 employees and ranked as the most valuable company in the world with market capitalization in excess of \$500 billion – 100 million times greater than his initial startup capital – an unparalleled example of economic growth and wealth creation.

“Jobs understood that economics is not a natural science of scarcity founded on unconscious mechanisms but rather a conscious human science of unlimited creative potential based on human choice.”

“Unlike great financial capitalists of the early 20th century such as J.P. Morgan and Rockefeller, Jobs was pre-eminently a human capitalist. Although he accumulated more than \$10 billion in personal wealth during his lifetime, he never valued or sought money for its own sake or based his decisions on profit-maximization.”

His astonishing accomplishments defy explanation by traditional economic theory. Had he been a theorist, he most certainly would have rejected the Newtonian concept of the economy as a machine tending always toward equilibrium between supply and demand. Jobs did not strive to discover or conform to universal laws of economics. He understood that economics is not a natural science of scarcity founded on unconscious mechanisms but rather a conscious human science of unlimited creative potential based on human choice. He did not commodify products to meet available demand or attempt to set prices at the equilibrium point. He invented new products to create new types of demand that never existed before and frequently sold them for prices far higher than experts predicted the market would bear. First to market a keyboard, microprocessor, display and operating system as an integrated personal computer ready to use out of the box, Apple's early models became the best-selling compu-

ters in America until behemoth IBM entered the fray with their MS-Dos based PC. Refusing to be brushed aside by his giant nemesis, Jobs then launched the user-friendly Macintosh as the first commercially successful PC with a graphic user interface, mouse, scalable fonts and networking – which became and continues to be the global industry standard.

1. Human Capitalist

The sheer magnitude of these achievements is sufficient to earn Jobs a place among the great entrepreneurs of the modern era, but hardly enough to substantiate his qualifications as a noteworthy economic theorist. It is rather the foundations of these accomplishments that reveal his profound contribution to our understanding of economy. His achievements contradict conventional wisdom in countless ways. His actions belied the traditional view that productivity is a function of natural resources, human labor, technology and capital. Unlike great financial capitalists of the early 20th century such as J.P. Morgan and Rockefeller, Jobs was pre-eminently a human capitalist. Although he accumulated more than \$10 billion in

“Jobs recognized the importance of a product’s physical and technical specifications, but gave equal or greater value to its social and psychological attributes.”

personal wealth during his lifetime, he never valued or sought money for its own sake or based his decisions on profit-maximization. He understood that human resourcefulness is the source of all innovation and discovery. It is the human mind alone that converts ordinary materials into productive resources. Technology itself is simply and solely a product of human invention. The resources he valued most and relied on throughout his life were creativity, intuition, adherence to high values and great personal dynamism.

Jobs’ single most striking personal endowment was intense, focused, overflowing human energy. Like other great entrepreneurs and high achievers in other fields, he exuded intense energy. He recruited bright, talented high energy people. He built a high energy company where people were motivated by a missionary zeal. Creative human energy rather than money or technology was the real fuel for his accomplishments. In whatever Jobs did, he focused and directed that energy with laser-like precision into a force to reckon with. Organization is the means for channeling human energy into productive work. But too often, the corporations of his time had become top heavy, bureaucratic and unresponsive to opportunity. Jobs helped fashion the prototype of a new kind of organization which gave unprecedented freedom for individual initiative and creativity. Apple was among the first to institute informal dress codes, flexible working hours and a flat organization where the best and brightest could rise quickly. The intensity of Apple and its young leader attracted top talent. It also attracted a younger generation of customers inspired by the individualistic values of the 1960s. To own an Apple product became a symbol of human supremacy over the machine.

Jobs’ view of the marketplace was as unconventional as his view of capital. As he believed in the unlimited capacity for enhancing the productivity of resources, he also believed in the unlimited capacity for market expansion. He perceived the market as an ascending hierarchy of human aspirations and expectations which are perpetually rising. He understood that

basic material needs may be limited, but human needs also encompass social and psychological dimensions which are inherently unlimited. He recognized the importance of a product's physical and technical specifications, but gave equal or greater value to its social and psychological attributes. He was a visionary and revolutionary at heart inspired to change the world for the better rather than merely satisfy its minimum needs. His mission was to convert impersonal machines that threatened to subordinate or replace human labor and dehumanize people into user friendly personal tools to empower the individual and liberate people from the specter of mechanization. His strategy was not to fill market needs but energize markets so that they continuously expand. He emphasized the subtle aura surrounding his products and took great efforts to "impute" value by the way products were packaged, presented and marketed. Apple's Superbowl ad of 1984 announcing the launch of the Macintosh was heralded as the greatest commercial of all time.

2. The Notion of Value and Values

Jobs rejected the traditional view that economic value is measured by efficiency and cost of production. For him, real economic value was a function of the perceived value of the product to customers, most especially its use value and utilization value over time. Throughout his career he defined value strictly in human terms as value to the user. He made ease of use a differentiating characteristic of every product, from the desktop metaphor that first appeared on the Mac to the elegant interface of touch screen iPods, iPhones and iPads. He learned the value of simplicity from a study of Zen Buddhism and constantly strove to reduce the complexity of Apple products. He stripped away 90% of the features on the prototype iTunes music software and eliminated even the on-off switch on the iPod. More of an artist than a technologist, he gave equal importance to form and function and was never satisfied with a new product until its physical elegance was as striking as its technical capabilities.

Returning to Apple in the late 1990s, he introduced a PC with an entirely new look called the iMac, which became the fastest selling model ever launched by Apple. He deferred the launch of the first iPhone because he realized he did not love the product, then altered the design to eliminate all corners so the phone would rest softly in the palm of his hand. Indeed, 'love' was the ultimate goal of every product he designed, knowing full well that where love was born, profits would follow. He combined all these values together in an endless quest for perfection that transcended and sometimes appeared to contradict good business sense. He insisted that even the insides of the computers and the layout of circuit boards which customers never saw should be beautifully designed as a statement of craftsmanship and pride.

3. Evolutionary Theory

Jobs was an evolutionary economist, not a mechanist. He soundly rejected the static conception of business and economy. He understood that society is continuously evolving and that evolution generates an endless fount of new needs and aspirations spurring an endless process of invention and innovation and undergoing a continuous process of development. From the launch of the first Apple computer to the phenomenal success of the iPhone, Jobs demonstrated the ability to intuitively sense successive waves of opportunity before they

became apparent to others and to position his company to ride the rising tide, or to create the new wave of opportunity and then ride it as he did with the Macintosh, iPod and iPad.

At the peak of the company's early success, he realized that Apple could not sustain competitive advantage producing commodity computers, so he shifted all his attention from computing technology to the user experience. Returning to Apple in the late 1990s, he saw that the PC had become a commodity product and even the user friendly interface had become commonplace. So he looked beyond the computer to identify human needs that computers could satisfy. As a lover of music, he realized there was not a single portable music player on the market that delivered the quality of music, storage capacity and ease of use he longed for as a consumer. Soon after the successful launch of the iPod, Apple became the largest online music retailer in the world. Within a few years 45% of Apple's revenues were coming from music sales. In similar fashion, he foresaw that the growth of the smartphone market would eventually undermine sales of the iPod, so he pushed Apple into the cell phone business and within five years, Apple's profits on iPhone sales accounted for nearly three-quarters of the total net earnings by cell phone makers globally. Since its launch in 2007, Apple has sold more than 150 million iPhones.

4. Transition to the Service Economy

The success of the iPod was made possible by a radical shift in the mission of Apple from a computer maker to a service provider. Jobs saw the opportunities generated by the transition that was taking place from the industrial economy of manufactured products to the emergence of the modern service economy. Long overlooked by traditional economists, this transition represented a change in perspective akin to the shift from a geocentric to a heliocentric universe. Apple's entry into the music business marked a more fundamental change in focus. Although it continued to base its operation on the sale of electronic products, the emphasis shifted from selling computers and iPods to providing an integrated delivery system to meet human needs. Apple bridged the gap between products and services. Products became the means to deliver enhanced services. The service economy consists mainly of complex integrated delivery systems such as those providing for education, medical care, communication, transportation, entertainment and financial services. In services the quality, capacity and throughput of the delivery system are more important than the technical specifications and capabilities of the product.

"Apple's success is explained by the fact that unlike its competitors, its strategy reflected a perfect balance between technological sophistication, engineering excellence, ease of use, quality of consumer experience and access to market."

Jobs conceived and developed a seamlessly integrated delivery system for digital music consisting of the iMac computing platform, the iPod portable player and the iTunes online store. In order to make the player as small and simple as possible, he shifted most functions to the computer, which served as the link to the iTunes store. At a time when Apple was an insignificant player in the American computer industry, Jobs succeeded in persuading

major music publishers to allow Apple to sell individual songs for 99 cents each, giving it a virtual monopoly over legal online music sales. Apple literally stole the market from Sony, which had the huge competitive advantage of being both a much larger consumer electronics company and a major music publisher. Bill Gates later expressed his utter astonishment at Jobs' accomplishment, acknowledged Microsoft's error, and was determined to recoup lost ground by launching his own system. Neither Sony nor Microsoft could successfully compete with the simple, elegant Apple interface and finally gave up trying. Their failure appears quite astonishing in view of their much larger technological and financial resources. Apple's success is explained by the fact that unlike its competitors, its strategy reflected a perfect balance between technological sophistication, engineering excellence, ease of use, quality of consumer experience and access to market. In 2012 Apple sold its 25 billionth song.

5. Characteristics of the Entrepreneur

Entrepreneurs are the heroes of contemporary society and as in ages past we tend to deify our heroes, endowing them with rare and superhuman attributes. Apart from his high level of personal motivation and intuitive insight, a careful examination reveals very little that was remarkably rare or unique about the personal capabilities Steve Jobs possessed. There was certainly nothing extraordinary about his birth or early childhood. He was born the illegitimate child of a Lebanese man and an American woman who put their child up for adoption at birth, because their parents would not permit their marriage. Steve grew up in a working class American family. His adopted father was a high school drop-out who developed into a skilled mechanic with a pride in craftsmanship. Steve was denied the benefits of education, money and social connections. Nor was he endowed with any obvious social abilities. The sense of having been rejected by his biological parents may account for Steve's apparent indifference to what others thought of him. He seemed free from the normal social conditioning that inhibits unconventional thought and action. He never hesitated to disagree with his peers, aggressively confront people in positions of authority, or dare to attempt what others thought impossible. As a youth he called up the president of Hewlett Packard to ask for free spare parts for an experimental product. He countermanded the advice of the Apple board and spent his own money funding the original Mac Superbowl ad. He challenged the CEO of Corning Glass to make an unbreakable surface for the first touch screen iPod, after being told that what he asked for was technically impossible, thereby successfully ushering in a whole new generation of touch screen consumer electronic products.

“When individual capacity fails to explain extraordinary accomplishment, we frequently resort to luck, as the only other ‘logical’ explanation.”

Many who conceded Steve's lack of technical expertise regard him instead as a marketing genius. Steve's flair for dramatic product launches and his success in attracting free media coverage are legendary. But he certainly was not known as a marketer in the traditional sense. He placed no faith in market research or consumer feedback. Of far greater significance was

his ability to perceive opportunity where others saw nothing at all. He had the remarkable capacity to sense what would please consumers.

Nor could Steve be described as a born entrepreneur in any real sense of the word. He lacked the native technical inventiveness of an Edison. He had terrible people skills, frequently humiliating, offending and deceiving employees, co-workers and business partners. At least in the early days, he understood very little about business or organization, apart from a shrewd capacity for negotiating, perhaps a genetic capacity inherited from his biological father. He failed dismally as an operations manager, which led to his dismissal by the Apple Board. He learned the importance of organization the hard way. Returning to Apple a decade later, he systematically applied the lessons of supply chain management so successfully employed by Dell.

When individual capacity fails to explain extraordinary accomplishment, we frequently resort to luck as the only other 'logical' explanation. It is true certainly that Steve had the good luck to be born in the right place at the right time. He grew up in the early 1970s in what later became known as Silicon Valley, at exactly the moment when the microprocessor was born. Raised as a mechanic's son, he was exposed to electronics as a child. As earlier generations of American youth repaired cars as a hobby, Steve was among the first generation who made assembling electronic gadgets a hobby. He and Wozniak were both hobbyists who only later realized their hobby had commercial potential. Granted that Steve was lucky to grow up where and when he did, that does not explain why he was able to exploit that opportunity so much more successfully than hundreds of thousands of other American youth raised under similar circumstances.

6. Signs of Genius

Indeed, Steve's lack of specific expertise may have been his greatest endowment. For what he lacked in specialized knowledge and skill, he compensated for marvelously by a wider perspective that saw the big picture, recognized the importance of many different factors, and combined them all into a comprehensive approach.

Though he may have lacked specialized talent, Jobs did possess notable signs of genius. He said he learned the importance of intuition from wandering in India and learned to trust his sensitivities to lead him in the right direction. He had an intuitive capacity to relate to the whole which is more than the sum of its parts. Unlike most entrepreneur business leaders who tended to give inordinate importance to one or two essential components of business – technology, market, capital, people or organization – at the expense of the others, Steve eventually learned to appreciate the essential role played by all of them and to fashion a business with considerable strength and balance in each of them. Thus, by the end of his career, Apple was not only a leader in technology and marketing, but possessed nearly \$100 billion in accumulated cash reserves.

Jobs also possessed the genius' ability to unify disparate and apparently unconnected things. He ushered in the whole new desktop publishing industry by his insistence on scalable fonts and WYSIWYG (what you see is what you get) on the Macintosh. Like many geniuses,

he had the capacity to see profundity in simplicity. He had an insatiable urge to simplify design and function and to focus business strategy on a very small set of priorities. On his return to Apple, he trimmed the company's product line from a dozen product lines to just four. He also had the capacity to perceive deeper levels of causality which others failed to see. Thus, he recognized that branding Apple as the antithesis of Big Brother IBM would win the enduring loyalty of a younger generation.

Geniuses also have the capacity to perceive universal truths of life and human nature. Jobs realized that widespread anxiety regarding domination by the machine – a recurrent theme of Hollywood movies such as 2001, Terminator and Matrix – could be overcome by making machines as simple and friendly as possible, so what once appeared as a threat could become an indispensable companion.

7. Integration

Society is a complex web of interconnections. The increasing linkage and integration of previously isolated or loosely connected people, activities and functions are the very essence of the process of social development. The enormous power of language, roads, cities, markets, money and the Internet resides in their capacity to foster interconnections and integration. Foremost among Jobs' special endowments was his demonstrated capacity as a great integrator. Throughout his career, he intuitively recognized the value of integration. He began by integrating technical components. The original Apple computer was the first to integrate keyboard, monitor and circuit board into a single product. With the Mac he shifted to marrying technology and design and integrating them with customer perceptions and user experience. Apple's success as a music retailer resulted from the masterful integration of computers, music players, and an online music store integrated with the music publishing industry.

The success of the iPhone illustrates importance of viewing integration in an evolutionary perspective in which yesterday's strength becomes tomorrow's weakness, and yesterday's success, tomorrow's failure. From the launch of the first Apple computer up to the launch of the iPhone, Jobs had maintained a near fanatical faith in value of control. While Wozniak wanted to make their first computer open and accessible for expansion by users, Jobs insisted on a closed system in order to maintain perfect control over the user interface and experience. He applied the same logic by refusing to license the Macintosh operating system to other computer makers and resisted for years the opening of the iTunes platform to Windows computers. Then suddenly with the launch of the App Store he dropped the control strategy and adopted the very opposite principle, enabling any developer to create an app to expand the functioning of the iPhone. The introduction of third party Apps and the App Store transformed the smartphone into a customizable multi-purpose personal device capable of performing thousands of different functions. Currently, more than 800,000 apps are available, many of them available to the public free-of-charge, and more than 40 billion apps have been downloaded by users worldwide.

The iPhone perfected the integration of every conceivable function that could be conveniently performed on a small portable device – phone, email, browser, camera, music and

movie player, e-book, game platform, GPS, maps and personal assistant. The iPad conquered the unoccupied territory between the cell phone and the notebook computer, giving new life to the newspaper and magazine publishing industry and spurring development of electronic textbooks and online education. In spite of predictions the product would bomb, in 2010, the first year of its launch, Apple sold 7.5 million iPads. In 2012 it sold 57 million. In this sense, Apple has successfully integrated its products and delivery systems to meet a wider range of personal needs and preferences of more human beings than any other company in history. The products it has pioneered have become iconic symbols of our age.

8. The Enigma of Uncertainty

Uncertainty is the fundamental condition of existence. No matter how much knowledge and experience we acquire, we lack the vision to infallibly see even the very next moment in life's movement. The entire insurance industry has evolved as a commercial sector designed to offset the impact of uncertainty. The aspiration for certainty is an essential component of humanity's quest for security.

Uncertainty haunts our every step. Even Jobs' famed intuition was not infallible – at least not in the way he expected. After leaving Apple, he failed dismally at NeXT computer. Free from interference by a corporate board, he set out to build from scratch the world's best personal computer. He invested \$7 million of his own money to create a world class engineering design and manufacturing facility capable of producing tens of thousands of the world's most advanced personal computers every month, but he never succeeded in selling more than 400 a month. It was not that market or technology conditions changed suddenly. It was simply that for all his insight into their potential, the advanced computer he brought to market proved too expensive to attract significant customers. The company lost millions and its computers never became a commercial success. But there is a flip side to uncertainty, for it is also the source of unexpected opportunities. In 1998 Apple agreed to purchase NeXT for \$400 million in order to acquire rights to the NeXT operating system. Jobs' foray into advanced computing was fully vindicated and through the acquisition, Jobs returned to the Apple board.

Ironically, the greatest opportunities seem to emerge from ventures into domains which we understand the least. Jobs' next endeavor also appeared destined for failure. He invested about \$50 million in Pixar, which he acquired from movie producer George Lucas. By purchasing Pixar, Jobs hoped to shift his emphasis from computers to the application of computer technology for specific purposes. Pixar made specialized computers and software for animated special effects. He soon realized the high price of the system severely limited its market, so he was forced to drastically cut staff and production. In this case, inconceivable opportunity seems to emerge almost literally out of nothing, like the sudden appearance of energy out of the zero-point energy field, which is fundamentally related to Heisenberg's uncertainty principle. It turned out that Pixar included a tiny animation department making short films intended to demonstrate the power of its animation products. The department was not even considered a profit-center. At a time when he was cutting back on expenses everywhere, Jobs invested \$300,000 of his own money to fund development of a short animated

video about talking toys. That video became the first computer generated video to win an Academy Award. As a result Disney contracted with Pixar to produce a full length animated motion picture based on the same theme. Disney was hoping to generate \$50 million in box office revenues. Instead Toy Story brought in \$380 million in box office receipts, the first of 11 straight Hollywood blockbuster films produced by Pixar. Jobs' intuition and willingness to risk converted a failed computer company into the top animation company in the world. Ten years later Disney bought Pixar for \$7.4 billion. Creative uncertainty generated greater commercial opportunity than anything Jobs had known up to that time.

Risk and opportunity are two sides of the same coin known as uncertainty. The greatest business risk Jobs ever took was probably his decision to launch a chain of Apple retail stores in the face of serious opposition from members of the Apple board with extensive experience in retailing who cited the failure of other electronics producers and argued persuasively that the venture was bound to fail. Still, Jobs persisted and worked for months to perfect a new concept in retailing. When the first Apple Store opened in New York in 2001 it attracted record crowds and proved an instant success. As new stores opened, average foot traffic averaged 20 times higher than industry norms. By 2011 Apple operated 326 stores around the world averaging \$34 million in revenues for a total of \$10 billion.

9. Role of the Individual in the Social Sciences

Of all the insights and principles of economic development that can derive from a study of Jobs' accomplishments, a few stand out as of central importance to the future of social science. The quest of social sciences to replicate the formulation of impersonal universal laws and the mathematical precision of the physical sciences have introduced four fundamental distortions that prevent the emergence of a true science of society. First is the implicit assumption that there are universal and immutable laws applicable to the social sciences akin to the laws of natural science. The theoretical conclusions that can be drawn from Steve Jobs' achievements certainly lack the mathematical elegance and statistical precision which macroeconomics strives for in its effort to emulate physical science as well as the simplicity and symmetry of microeconomic formulations based on assumptions rarely, if ever, found in the real world. Instead, they support the view that the laws governing the society are constantly evolving with the evolution of human consciousness.

"A study of Steve Jobs' accomplishments fully justifies a reorientation of social science to take into account the complex uniqueness and the incalculable power of the individual to change the destiny of the collective."

Second is the postulate that social behavior, like physical phenomenon, can be explained by mechanical principles that ignore the central significance of conscious awareness and human choice. Jobs' work provides incontestable evidence of the central role of human aspirations, perceptions, beliefs, values, attitudes and choice in economic development. The future of Pixar could never have been predicted by examining its financial statements or market research reports in 1988. It resided in the imagination of a Pixar employee named

John Lassiter who conceived of a short film called *Tin Toy* and in the faith of the entrepreneur who risked his money on a long shot because he believed in the value in Lassiter's creative inspiration.

Third is the notion that a science of society, like a science of nature, can be impartial and value free and that the role of scientists is merely detached observation of natural phenomena. Although we may consider Nature as motiveless and value free in its actions, the same can never be said of human social behavior. Human conduct is purposeful and value based and that must apply to the study of society as well. Social science must be value based and carried out with the conscious intention of promoting human welfare, not merely understanding the way society presently works.

Fourth is the premise that individual behavior can be aggregated to draw generally valid conclusions – as physicists aggregate data regarding subatomic particles, molecules, and the movement of galaxies – when in fact statistical aggregation merely conceals but does not obliterate the significance of conscious individual variation. A study of Steve Jobs' accomplishments fully justifies a reorientation of social science to take into account the complex uniqueness and the incalculable power of the individual to change the destiny of the collective. Human history is replete with instances in which the actions of outstanding individuals – explorers, inventors, discoverers, pioneers, social reformers, military and political leaders, original thinkers, creative artists, saints – have literally changed the world. The magnitude of Jobs' achievements are remarkable, but in no sense unique. Edison, Ford, Churchill, Gorbachev, Berners-Lee and countless others have demonstrated the same power of formed individuality. There can be no valid science of economy or society that studies only the action of social organizations and social systems, overlooking the unique contributions of the individual.

“Every significant advance in the development of society, civilization and culture begins with the initiative of an individual to set out on a new course of thought or action, often in the face of intense opposition and even persecution for deviant behavior.”

The single member and the collective, human capital and social capital, constitute the infinitesimal microcosm and the infinitely complex macrocosm of society. Neither exists without the other. Neither is adequate in itself to explain the other. The individual is the link and the bridge between the micro and the macro. By the term ‘individual’, I refer to those members of society who do not merely conform to the prevailing beliefs, attitudes and ways of life propagated or imposed by the collective. An individual is one capable of original thinking that transcends and rejects conventional wisdom, one with the courage to reject conformity to prevailing attitudes and values, one with the fortitude to attempt actions which others fear to initiate or believe are impossible. Every significant advance in the development of society, civilization and culture – from the invention of fire to the development of the

World Wide Web – begins with the initiative of an individual to set out on a new course of thought or action, often in the face of intense opposition and even persecution for deviant behavior. As today we remember Socrates, rather than those who compelled him to take hemlock as the penalty for deviant thought, and as we celebrate the memory of Copernicus for rejecting the geocentric doctrine of the Church, so we must recognize and honor the living truths exemplified by Steve Jobs' accomplishment. The bright future of social science lies in the synthesis, integration and harmonious reconciliation of these two spheres of social existence.

10. Conclusions

It is ironic that the principles by which Steve Jobs created so much wealth designing and selling computers should be so resistant to analysis by econometric computer modeling. But this deficiency – if it is a deficiency – is more than compensated by the fact that a study of Jobs' work brings into sharp relief fundamental premises of real world economics that are normally obscured or abolished by abstract theory and mathematical models.

This analysis certainly does not purport to provide a full picture of the science of economy, let alone society, but rather to highlight some of the most blatant deficiencies in current conception. Steve was a pragmatist, not a theorist. His concern was the operation of the private sector economy, not management of the economy as a whole. Study of his actions provides little insight into the catalytic role of money in society, the essential contribution of financial markets to the real economy, the insidious impact of speculation, the necessity of government regulation to maintain open markets, the rightful function of central banks and deficit spending, the responsibility of government for promoting full employment, equitable distribution, the welfare of all citizens and protecting the rights of future generations by a judicious and sustainable use of ecological resources. But it does provide essential insights into the vital core of economic theory.

What then is the essence of Jobs' theory of economy? Economy is a human science concerned with the study of how conscious human beings and social groups apply and direct their energy, knowledge, skills and organizational capabilities to generate wealth, promote human welfare and enhance the well-being of all. In the early days of its development, economics was concerned with the problem of scarcity, earning it the title of the dismal science. Today there is no longer any necessity for scarcity. Society possesses all the necessary knowledge, technology, organizational capabilities and financial resources to eradicate poverty and economic insecurity in a flash. Today there is urgent need for a theoretical formulation that ensures to all economic security, welfare and an equitable share in the earth's and humanity's collective resources. A study of Steve Jobs' contribution to economy confirms our collective capacity to achieve these goals now.

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“In the early days of its development, economics was concerned with the problem of scarcity, earning it the title of the dismal science. Today, there is no longer any necessity for scarcity.”

The Dogma of Democracy Gone Sour

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“The death of democracy is not likely to be an assassination from ambush. It will be a slow extinction from apathy, indifference, and undernourishment.” - Robert Hutchins

Abstract

When it comes to political organisation the western world likes to claim the moral high ground. It touts the benefits of free and fair elections, as if the concept of democracy were a self-evident, eternal truth.

For the US State Department, democracy has taken on near-religious significance. It has become a right, just as much as the right to life, liberty and happiness.

If the US and many other western countries actually practised what they preached, they would at least be giving their sermons from solid turf. But because they continue to undermine the practice of democracy at home, their pulpits are not very high and the ground they stand on is increasingly squishy.

In the nations with the loudest democracy trumpets, big businesses and rich individuals have corrupted the democratic process. They influence elections and laws to their advantage and suppress changes they don't like. At the same time, the poor have become increasingly disenfranchised, either because they are deliberately excluded from the voting process or because they no longer believe it has any value.

This is not just a failure of democracy. It is also a failure of communication. Rather than achieving its goals, and promoting an idea with considerable merit, the West is undermining the cause. Democracy has become little more than an ideological weapon, and it is driving the doubters away.

1. Its Death is not Exaggerated

Democracy is not difficult to understand. It means “rule by the people”. It is difficult to achieve, however. And even when it has been achieved, when there is a fair electoral system and a government that represents the views of the people, it is easy to see the system's flaws. To paraphrase Thomas Jefferson,* democracy can still end up being “mob rule” with 51% of the voters imposing their ideas on everyone else.

When we talk about democracy we usually mean one particular form of representative democracy, called liberal or constitutional democracy. Under this system, most western

* Jefferson actually said: democracy is nothing more than mob rule, where 51 percent of the people may take away the rights of the other 49.

countries hold regular elections to vote for representatives who make decisions on behalf of the electorate. To prevent these representatives from assuming too much power, there is usually a constitution, a legal framework that establishes the principles that the government must follow.

As well as a constitution, a democracy needs an independent judiciary and a fairly elected government. It needs equality of opportunity to stand for election. Anyone should be able to put themselves up as a candidate. Exceptions can exist, for those who might be criminally insane for example, but these should be rare. Being elected should certainly not depend on how rich you are.

A good system also needs universal suffrage. Voting should be open to all adults, without discrimination on the grounds of race, sex, beliefs or social status. This means that even those in prison should have a vote. If not, then those who are wrongful victims of political persecution or of bad laws are denied a voice.

There also needs to be an independent media — a free press — or at least mostly free. Voters should have access to opinions but, more importantly, to facts. It is vital that citizens' views are not influenced by biased reporting, or by media moguls with their own agendas who are able to twist their audience's opinions to suit their own ends.

Democracy also requires freedom of association. Citizens should have the right to form political groups and to have their views heard, even when these views are odious to the majority. Because of the increase in anti-terrorism legislation since 9/11, this requirement has been weakened in many western countries.

Finally, to have a high level of democracy, societies need to have citizens who are educated and informed about their rights and civic responsibilities. There needs to be a working relationship between those in power and those who vote.

It is easy to forget that an electorate has responsibilities too, that the process is two-way. It is not just up to those in power to make sure the system functions, it is also up to every citizen. Citizens, if they care about where their societies are heading, need to take responsibility for being properly informed; they need to speak out when the system does not work; and they need to take part in the political process, even if just through the act of voting.

In many western countries, however, the relationship that exists between the ruled and the rulers has become fraught. Those who have been elected often pursue their own agendas, or look after the interests of lobby groups, before they think of those who elected them into power. Lobbyists, especially those representing big businesses, have become extremely powerful in Europe, including in the UK, Canada, Australia and, especially, in America. They have distorted the political process by influencing elections and laws in ways that the electorate cannot.

At the same time, many western citizens have less direct contact with their political representatives than they once did. Politicians focus instead on a handful of swing voters, meaning that the voice of the majority is frequently ignored. As a consequence, many western citizens

are choosing to vote less than before, and take less interest in politics.

Democracy has always had its problems, of course. Ancient Greece's Aristotle called it one of the three "evil" forms of government. It was not even favoured by America's Founding Fathers who feared democracy as much as they feared monarchy. They worried that a democratically elected government would take away the people's freedom, either by being too weak to protect them from external threats, or by becoming too powerful and taking over every aspect of their lives.

"America's democratic system, the one the world is supposed to look up to as a model, is suffering from exactly the problems the Founding Fathers were trying to avoid."

To try and get around these problems, America chose a constitutional republic as its model of governance where executive, legislative and judicial powers are separated. The constitution and the judiciary are meant to stop any abuses by those in power. The intention was to make "a government of laws, not men".

Despite these efforts, America's democratic system, the one the world is supposed to look up to as a model, is suffering from exactly the problems the Founding Fathers were trying to avoid. Five stand out in particular:

- The constitution is being undermined.
- Millions have become disenfranchised.
- A tiny number of people determine the outcome.
- Big businesses and lobbyists have corrupted the process.
- There is too little choice.

First, the constitution: thanks mainly to a series of badly thought out laws put in place since 9/11, America's constitution is no longer providing the protection for citizens that it should.

Those wanting to oppose the government, members of the Occupy Movement for example, have been denied the right to assemble and speak out, which is a violation of the 1st Amendment. Muslim groups have also been singled out for surveillance¹ while journalists² have been detained to stop them reporting stories the government does not like. These are also violations of the 1st. Just as bad, the PATRIOT Act allows the government to monitor citizens without recourse to law, which violates the 4th. The state can now legally obtain the source and addressee information of all telephone and online communications and gain access to unopened electronic mail. It can also collect DNA samples, even from those not convicted of any crime.

Even 30 years ago such activities would have been unthinkable. It would have been unimaginable that private letters between individuals could be opened and read by the State or that a democratic western government could demand unrestricted access to medical, finan-

cial, business and educational records or authorise secret searches of homes and offices, without extensive legal process. Yet these are all permitted in America today.³

The second problem is with the democratic process itself. In recent years, many more people have been excluded from voting in America. According to a report published in 2012 by the Pew Center,⁴ as many as 24% of those eligible to vote have not registered to do so because the process has been made too complex. That is at least 51 million people.

In many states, people wanting to vote must now have a government-issued photo ID card or passport. Because few Americans travel abroad and many others are wary of authority, this new rule alone has effectively disenfranchised 12% of the population. A disproportionate number of these people are poor and black.

Convicted criminals are also denied the right to vote in many US states, even after they have served their sentence and are free, in gainful employment, and paying their taxes. In those states where they can re-register, the process is often so difficult that few go through with it. Those in prison are also unable to vote, unlike in many other western countries, including neighbouring Canada. As the prison population of the US is so large compared to other developed nations, this adds up to a great many people. In total, more than 2% of the electorate is excluded because they are, or were, felons. Again, a disproportionate number are poor and black.

2. Good for Swingers, but not for Everyone Else

Even for citizens able to vote, there is a third problem. In most American states, the voice of the average voter is practically worthless.

In presidential elections, as well as in many others, the results in 38 of America's 50 states are entirely predictable. That leaves just 12* that matter, that decide the outcome. The population of these states in 2012 was 86 million people, 28% of the US population. This means that the American President, the holder of what is arguably the biggest job in the world, is actually chosen by little more than one-quarter of the US population (half of whom do not bother to vote).

This also means that presidential hopefuls spend huge amounts of time, money and effort on a small number of voters, in some of the smallest states in the country, largely ignoring the wishes and interests of the majority.

The result is national apathy, with average voter turnout in recent federal elections falling below 40%⁵ in many states, reflecting a lack of interest or faith in the process.

3. The Voters' Power Diminished

The fourth major reason why the US and many other western democratic systems are failing has been the rising influence of businesses and lobby groups. Of greatest concern are

* Nevada, Colorado, New Mexico, Iowa, Wisconsin, Michigan, Ohio, Pennsylvania, Virginia, New Hampshire, North Carolina and Florida

so-called super PACS — which are like traditional Political Action Committees (PACs) on steroids.

Super PACS are pressure groups that are largely free of any restrictions on their political activities. They can raise unlimited cash from anonymous donors and spend it praising or disparaging particular candidates without declaring their interests or explaining who is supporting them.

As most big businesses support the right-leaning Republican Party in America, many voters are being deceived; they are unaware that the opinions they see expressed on television are often from biased sources. The rich and anonymous are able to manipulate the electoral process for their own ends, without the electorate understanding that the information presented to them is being funded by someone with a specific, but usually undeclared, agenda.

A further concern is the growing influence of America's richest individuals. Campaign contributions of wealthy people have long been vital to running US elections, especially at the federal level. But for many years they have also been a source of worry. The concern is that these donations allow rich people to buy influence and gain some advantage, often for their businesses or investments, or because they have a private political objective.

A 2012 survey by The Brennan Center⁶ showed that most Americans believed that as well as leading to greater corruption, the current electoral financing system made it less likely that poorer people would vote at all. "One in four respondents — and even larger numbers of low-income people reported that they are less likely to vote because big donors have so much more sway than average Americans", the report said.

Part of the problem, of course, is that America's politicians have been forced to sell their souls, because the cost of running campaigns is so high. Without such huge payments, or a different model, most candidates cannot hope to stand for office. While anyone can theoretically put themselves forward for election, in practice the race is now only open to those who can raise the funds through these corrupting channels, or to the super-rich.

4. Is a Two-party State Twice as Good as a One-party State?

The fifth reason America's political system is so undemocratic (this also applies in the UK, Ireland, Australia and many other countries) is the astonishing lack of choice offered to voters at the polls.

To outsiders, it sometimes appears as if America only has two political parties, the Democrats and the Republicans. In fact, there are at least 40 parties to choose from. Among the next largest are the Constitution Party, The Green Party and the Libertarian Party. But there are many more. Most are small and fragmented, some of them having split from the main parties. A large number have extreme views. But some also reflect the views of millions of people, such as the Green Party.

What most of these parties lack is the funding needed to run an enduring campaign at a national or even at a local level. Although more than ten other parties endorsed candidates for

the 2012 presidential election, few polled even a fraction of 1% of the vote, partly because they found it almost impossible to be heard.

The fact that these parties exist allows politicians from the two dominant parties to claim that their system is democratic, because anyone can stand for office and because the views of all strands of the political spectrum are represented. But the practical barriers that prevent these other parties from holding office make such statements meaningless.

5. The Dogma of Democracy

A wider issue, mostly for those living in less democratic countries, is that the western concept of democracy has become an ideology, a weapon used to bash them. For several decades, the western world has exported an idea, trying to impose it on everyone else. Cosily wrapped in the principles of freedom, equality and justice, “democracy” has become dogma, a doctrine that is proclaimed as true without those who are imposing it needing to provide any proof — because the proof is no longer available. Coupled with the dogma of “the market”, it has encouraged the citizens of other nations to turn their countries into debt-driven consumerist societies, no longer fuelled by a desire for genuine progress but by a heady hunger to go shopping.

As Francis Fukuyama argued in *The End of History and The Last Man*, the great passions that prompted armed struggles and tremendous acts of heroism in the 20th century and before, have been gradually superseded by the call of the market. Material improvement has given way to material gain. The push for democracy and the free market has made nations trade their principles for Pringles.

Western⁷ interference, in the name of democracy, played a large part in the “Arab Spring” of 2011, especially in Egypt, where western NGOs spent millions of dollars trying to direct the revolution and manipulate the political process.⁸ Many of those working for these NGOs were eventually expelled by the Egyptian government. Despite this, western meddling in the country’s political processes remains rife.

The United Arab Emirates has also expelled⁹ “pro-democracy” NGOs from Europe and the US, which the government found to be tinkering with the country’s internal affairs. After the revolution in Libya,¹⁰ the government there attempted to stop US and European groups funding local NGOs as well, fearing that they would manipulate the local democratic processes.

Other countries known to have expelled westerners who were interfering in the democratic process include Russia, Pakistan, North Korea, Syria, Sudan and Bolivia. Many of the same NGOs that were in North Africa in 2011 also played a part in the changes that took place in Myanmar¹¹ in 2012, when the country began to open up to western influence. There are also reports that western-backed groups have intervened in the political freedoms of both Thailand¹² and Malaysia.¹³

Rather than achieving worthy goals, the West’s export of a warped dogma has been undermining its place in the world. Under the name of democracy, the West has tried to

incite resistance to the lawful authority of many governments, to overthrow regimes. It has done this to widen western influence, to gain access to raw materials, and to provide business opportunities for western firms, which then strengthen these objectives by attempting to convert them to the free market.

Democracy has lost touch with its meaning and purpose. It is failing to do what it is meant to, in America, Britain and many other places. It has become a tool for western nations to force their ideas onto others. Tied to the religion of economic growth, carried on the wings of the free market, it is being sold as the answer to everyone's problems, when it is not.

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Malthus

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Abstract

T.R. Malthus' "An Essay on the Principle of Population" (1798) was one of the first systematic studies of the problem of population in relation to resources. It was the first such study to stress the fact that, in general, powerful checks operate at all times to keep human populations from increasing beyond the available food supply. In a later edition, published in 1803, he buttressed this assertion with carefully collected demographic and sociological data from many societies at various periods of their histories. The debate between Malthus and his contemporaries closely parallels current discussions of optimal global population in relation to the carrying capacity of the earth's environment. This essay will discuss not only the historical debate on the ideas of Malthus, but also its relevance to the 21st century. In particular, the essay will discuss the danger that a famine of unprecedented scale may occur during the present century, caused by prohibitively high prices of fossil fuels (on which modern agriculture depends) compounded by the effects of climate change.

1. Introduction

Because of the close parallel between the optimism and disappointments of Malthus' time and those of our own, much light can be thrown on our present situation by rereading the debate between Malthus and his contemporaries. Malthus classified the checks on population growth into two categories: "preventive checks" such as late marriage and contraception, which lower birth rates; and "positive checks", such as famine, disease and war, which raise death rates.

Looking at today's world, we can see that in some regions, the preventive checks, which lower the birth rate, seem to be dominant, while in other regions, the grim Malthusian forces of famine, disease and war hold sway, raising the death rate. The contrast makes the work of Malthus relevant to the 21st century, as we strive to achieve global peace and to eliminate the suffering caused by poverty and preventable disease.

2. A Debate between Father and Son

Thomas Robert Malthus (1766-1834) came from an intellectual family: His father, Daniel Malthus, was a moderately well-to-do English country gentleman, an enthusiastic believer in the optimistic ideas of the Enlightenment, and a friend of the philosophers Henry Rousseau,

David Hume and William Godwin. The famous book on population by the younger Malthus grew out of conversations with his father.

Robert Malthus was at first tutored at home; but in 1782, when he was 16 years old, he was sent to study at the famous Dissenting Academy at Warrington in Lancashire. Joseph Priestley had taught at Warrington, and he had completed his "History of Electricity" there, as well as his "Essay on Government", which contains the phrase "the greatest good for the greatest number".

Robert's tutor at Warrington Academy was Gilbert Wakefield (who was later imprisoned for his radical ideas). When Robert was 18, Wakefield arranged for him to be admitted to Jesus College, Cambridge University, as a student of mathematics. Robert Malthus graduated from Cambridge in 1788 with a first-class degree in mathematics. He was Ninth Wrangler, which meant that he was the ninth-best mathematician in his graduating class. He also won prizes in declamation, both in English and in Latin, which is surprising in view of the speech defect from which he suffered all his life.

In 1793, Robert Malthus was elected a Fellow of Jesus College, and he also took orders in the Anglican Church. He was assigned as Curate to Okewood Chapel in Surrey. This small chapel stood in a woodland region, and Malthus' illiterate parishioners were so poor that the women and children went without shoes. They lived in low thatched huts made of woven branches plastered with mud. The floors of these huts were of dirt, and the only light came from tiny window openings. Malthus' parishioners' diet consisted almost entirely of bread. The children of these cottagers developed late, and were stunted in growth. Nevertheless, in spite of the harsh conditions of his parishioners' lives, Malthus noticed that the number of births which he recorded in the parish register greatly exceeded the number of deaths. It was probably this fact which first turned his attention to the problem of population.

1793, the year when Robert Malthus took up his position at Okewood, was also the year in which Daniel Malthus' friend, William Godwin, published his enormously optimistic book, *Political Justice*. In this book, Godwin predicted a future society where scientific progress would liberate humans from material want. Godwin predicted that in the future, with the institution of war abolished, with a more equal distribution of property, and with the help of scientific improvements in agriculture and industry, much less labour would be needed to support life. Luxuries are at present used to maintain artificial distinctions between the classes of society, Godwin wrote, but in the future values will change; humans will live more simply, and their efforts will be devoted to self-fulfillment and to intellectual and moral improvement, rather than to material possessions. With the help of automated agriculture, the citizens of a future society will need only a few hours a day to earn their bread.

Godwin went on to say, "The spirit of oppression, the spirit of servility and the spirit of fraud: these are the immediate growth of the established administration of property. They are alike hostile to intellectual improvement. The other vices of envy, malice, and revenge are their inseparable companions. In a state of society where men lived in the midst of plenty, and where all shared alike the bounties of nature, these sentiments would inevitably expire. The

narrow principle of selfishness would vanish. No man being obliged to guard his little store, or provide with anxiety and pain for his restless wants, each would lose his own individual existence in the thought of the general good. No man would be the enemy of his neighbor, for they would have nothing to contend; and of consequence philanthropy would resume the empire which reason assigns her. Mind would be delivered from her perpetual anxiety about corporal support, and free to expatiate in the field of thought which is congenial to her. Each man would assist the inquiries of all.”

Godwin insisted that there is an indissoluble link between politics, ethics and knowledge. Political Justice is an enthusiastic vision of what humans could be like at some future period when the trend towards moral and intellectual improvement has lifted men and women above their present state of ignorance and vice. Much of the savage structure of the penal system would then be unnecessary, Godwin believed. (At the time when he was writing, there were more than a hundred capital offenses in England, and this number had soon increased to almost two hundred. The theft of any object of greater value than ten shillings was punishable by hanging.)

In its present state, Godwin wrote, society decrees that the majority of its citizens “should be kept in abject penury, rendered stupid with ignorance and disgusting with vice, perpetuated in nakedness and hunger, goaded to the commission of crimes, and made victims to the merciless laws which the rich have instituted to oppress them”. But human behavior is produced by environment and education, Godwin pointed out. If the conditions of upbringing were improved, behavior would also improve. In fact, Godwin believed that men and women are subject to natural laws no less than the planets of Newton’s solar system. “In the life of every human”, Godwin wrote, “there is a chain of causes, generated in that eternity which preceded his birth, and going on in regular procession through the whole period of his existence, in consequence of which it was impossible for him to act in any instance otherwise than he has acted.”

The chain of causality in human affairs implies that vice and crime should be regarded with the same attitude with which we regard disease. The causes of poverty, ignorance, vice and crime should be removed. Human failings should be cured rather than punished. With this in mind, Godwin wrote, “our disapprobation of vice will be of the same nature as our disapprobation of an infectious distemper.”

In France the Marquis de Condorcet had written an equally optimistic book, *Esquisse d'un Tableau Historique des Progrès de l'Esprit Humain*. Condorcet’s optimism was unaffected even by the fact that at the time when he was writing he was in hiding, under sentence of death by Robespierre’s government. Besides enthusiastically extolling Godwin’s ideas to his son, Daniel Malthus also told him of the views of Condorcet.

Condorcet’s *Esquisse* is an enthusiastic endorsement of the idea of infinite human perfectibility which was current among the philosophers of the 18th century, and in this book, Condorcet anticipated many of the evolutionary ideas of Charles Darwin. He compared humans with animals, and found many common traits. Condorcet believed that animals are able to think, and even to think rationally, although their thoughts are extremely simple

compared with those of humans. He also asserted that humans historically began their existence on the same level as animals and gradually developed to their present state. Since this evolution took place historically, he reasoned, it is probable, or even inevitable, that a similar evolution in the future will bring mankind to a level of physical, mental and moral development which will be as superior to our own present state as we are now superior to animals.

As Daniel Malthus talked warmly about Godwin, Condorcet, and the idea of human progress, the mind of his son, Robert, turned to the imbalance between births and deaths which he had noticed among his parishioners at Okewood Chapel. He pointed out to his father that no matter what benefits science might be able to confer, they would soon be eaten up by population growth. Regardless of technical progress, the condition of the lowest social class would remain exactly the same: The poor would continue to live, as they always had, on the exact borderline between survival and famine, clinging desperately to the lower edge of existence. For them, change for the worse was impossible since it would loosen their precarious hold on life; their children would die and their numbers would diminish until they balanced the supply of food. But any change for the better was equally impossible, because if more nourishment should become available, more of the children of the poor would survive, and the share of food for each of them would again be reduced to the precise minimum required for life.

Observation of his parishioners at Okewood had convinced Robert Malthus that this sombre picture was a realistic description of the condition of the poor in England at the end of the 18th century. Techniques of agriculture and industry were indeed improving rapidly; but among the very poor, population was increasing equally fast, and the misery of society's lowest class remained unaltered.

3. Publication of the First Essay in 1798

Daniel Malthus was so impressed with his son's arguments that he urged him to develop them into a small book. Robert Malthus' first essay on population, written in response to his father's urging, was only 50,000 words in length. It was published anonymously in 1798, and its full title was *An Essay on the Principle of Population, as it Affects the Future Improvement of Society, with Remarks on the Speculations of Mr. Godwin, M. Condorcet, and Other Writers*. Robert Malthus' *Essay* explored the consequences of his basic thesis that "the power of population is indefinitely greater than the power in the earth to produce subsistence for man".

"That population cannot increase without the means of subsistence", Robert Malthus wrote, "is a proposition so evident that it needs no illustration. That population does invariably increase, where there are means of subsistence, the history of every people who have ever existed will abundantly prove. And that the superior power cannot be checked without producing misery and vice, the ample portion of these two bitter ingredients in the cup of human life, and the continuance of the physical causes that seem to have produced them, bear too convincing a testimony."

In order to illustrate the power of human populations to grow quickly to enormous numbers if left completely unchecked, Malthus turned to statistics from the United States, where the population had doubled every 25 years for a century and a half. Malthus called this type of growth “geometrical” (today we would call it “exponential”); and, drawing on his mathematical education, he illustrated it by the progression 1,2,4,8,16,32,64,128,256,...etc. In order to show that, in the long run, no improvement in agriculture could possibly keep pace with unchecked population growth, Malthus allowed that, in England, agricultural output might with great effort be doubled during the next quarter century; but during a subsequent 25-year period it could not again be doubled. The growth of agricultural output could at the very most follow an arithmetic (linear) progression, 1,2,3,4,5,6,...etc.

Because of the overpoweringly greater numbers which can potentially be generated by exponential population growth, as contrasted to the slow linear progression of sustenance, Malthus was convinced that at almost all stages of human history, population has not expanded freely, but has instead pressed painfully against the limits of its food supply. He maintained that human numbers are normally held in check either by “vice or misery”. (Malthus classified both war and birth control as forms of vice.) Occasionally the food supply increases through some improvement in agriculture, or through the opening of new lands; but population then grows very rapidly, and soon a new equilibrium is established, with misery and vice once more holding the population in check.

Like Godwin’s *Political Justice*, Malthus’ *Essay on the Principle of Population* was published at exactly the right moment to capture the prevailing mood of England. In 1793, the mood had been optimistic; but by 1798, hopes for reform had been replaced by reaction and pessimism. Public opinion had been changed by Robespierre’s Reign of Terror and by the threat of a French invasion. Malthus’ clear and powerfully written essay caught the attention of readers not only because it appeared at the right moment, but also because his two contrasting mathematical laws of growth were so striking.

One of Malthus’ readers was William Godwin, who recognized the essay as the strongest challenge to his utopian ideas that had not yet been published. Godwin several times invited Malthus to breakfast at his home to discuss social and economic problems. (After some years, however, the friendship between Godwin and Malthus cooled, the debate between them having become more acrimonious.)

In 1801, Godwin published a reply to his critics, among them his former friends James Mackintosh and Samuel Parr, by whom he recently had been attacked. His ‘Reply to Parr’ also contained a reply to Malthus: Godwin granted that the problem of overpopulation raised by Malthus was an extremely serious one. However, Godwin wrote, all that is needed to solve the problem is a change of the attitudes of society. For example we need to abandon the belief “that it is the first duty of princes to watch for (i.e. encourage) the multiplication of their subjects, and that a man or woman who passes the term of life in a condition of celibacy is to be considered as having failed to discharge the principal obligations owed to the community”.

“On the contrary”, Godwin continued, “it now appears to be rather the man who rears a numerous family that has to some degree transgressed the consideration he owes to the public welfare”. Godwin suggested that each marriage should be allowed only two or three children or whatever number might be needed to balance the current rates of mortality and celibacy. This duty to society, Godwin wrote, would surely not be too great a hardship to be endured, once the reasons for it were thoroughly understood.

4. The Second Essay, Published in 1803

Malthus’ small essay had captured public attention in England, and he was anxious to expand it with empirical data which would show his principle of population to be valid not only in England in his own day, but in all societies and all periods. He therefore traveled widely, collecting data. He also made use of the books of explorers such as Cook and Vancouver.

Malthus’ second edition, more than three times the length of his original essay on population, was ready in 1803. Book I and Book II of the 1803 edition of Malthus’ “Essay” are devoted to a study of the checks to population growth which have operated throughout history in all the countries of the world for which he possessed facts.

In his first chapter, Malthus stressed the potentially enormous power of population growth and contrasted the slow growth of food supply. He concluded that strong checks to the increase of population must almost always be operating to keep human numbers within the bounds of sustenance. He classified the checks as either preventive or positive, the preventive checks being those which reduce fertility, while the positive checks are those which increase mortality. Among the positive checks, Malthus listed “unwholesome occupations, severe labour and exposure to the seasons, extreme poverty, bad nursing of children, great towns, excesses of all kinds, the whole train of common diseases and epidemics, wars, plague, and famine”.

In the following chapters of Book I, Malthus showed in detail the mechanisms by which population is held at the level of sustenance in various cultures. He first discussed primitive hunter-gatherer societies, such as the inhabitants of Tierra del Fuego, Van Diemens Land and New Holland, and those tribes of North American Indians living predominantly by hunting. In hunting societies, he pointed out, the population is inevitably very sparse: “The great extent of territory required for the support of the hunter has been repeatedly stated and acknowledged”, Malthus wrote, “...The tribes of hunters, like beasts of prey, whom they resemble in their mode of subsistence, will consequently be thinly scattered over the surface of the earth. Like beasts of prey, they must either drive away or fly from every rival, and be engaged in perpetual contests with each other...The neighboring nations live in a perpetual state of hostility with each other. The very act of increasing in one tribe must be an act of aggression against its neighbors, as a larger range of territory will be necessary to support its increased numbers. The contest will in this case continue, either till the equilibrium is restored by mutual losses, or till the weaker party is exterminated or driven from its country... Their object in battle is not conquest but destruction. The life of the victor depends on the

death of the enemy". Malthus concluded that among the American Indians of his time, war was the predominant check to population growth, although famine, disease and infanticide each played a part.

In the next chapter, Malthus quoted Captain Cook's description of the natives of the region near Queen Charlotte's Sound in New Zealand, whose way of life involved perpetual war. "If I had followed the advice of all our pretended friends", Cook wrote, "I might have extirpated the whole race; for the people of each hamlet or village, by turns, applied to me to destroy the other". According to Cook, the New Zealanders practiced both ceaseless war and cannibalism; and population pressure provided a motive for both practices.

In later chapters on nomadic societies of the Near East and Asia, war again appears, not only as a consequence of the growth of human numbers, but also as one of the major mechanisms by which these numbers are reduced to the level of their food supply. The studies quoted by Malthus make it seem likely that the nomadic Tartar tribes of central Asia made no use of the preventive checks to population growth. In fact the Tartar tribes may have regarded growth of their own populations as useful in their wars with neighboring tribes.

Malthus also described the Germanic tribes of Northern Europe, whose population growth led them to the attacks which destroyed the Roman Empire. He quoted the following passage from Machiavelli's *History of Florence*: "The people who inhabit the northern parts that lie between the Rhine and the Danube, living in a healthful and prolific climate, often increase to such a degree that vast numbers of them are forced to leave their native country and go in search of new habitations. When any of those provinces begins to grow too populous and wants to disburden itself, the following method is observed. In the first place, it is divided into three parts, in each of which there is an equal portion of the nobility and commonality, the rich and the poor. After this they cast lots; and that division on which the lot falls quits the country and goes to seek its fortune, leaving the other two more room and liberty to enjoy their possessions at home. These emigrations proved the destruction of the Roman Empire". Regarding the Scandinavians in the early middle ages, Malthus wrote: "Mallet relates, what is probably true, that it was their common custom to hold an assembly every spring for the purpose of considering in what quarter they should make war".

In Book II, Malthus turned to the nations of Europe, as they appeared at the end of the 18th century, and here he presents us with a different picture. Although in these societies poverty, unsanitary housing, child labour, malnutrition and disease all took a heavy toll, war produced far less mortality than in hunting and pastoral societies, and the preventive checks, which lower fertility, played a much larger role.

Malthus had visited Scandinavia during the summer of 1799, and he had made particularly detailed notes on Norway. He was thus able to present a description of Norwegian economics and demography based on his own studies. Norway was remarkable for having the lowest reliably-recorded death rate of any nation at that time: Only 1 person in 48 died each year in Norway. (By comparison, 1 person in 20 died each year in London.) The rate of marriage was also remarkably low, with only 1 marriage each year for every 130 inhabitants;

and thus in spite of the low death rate, Norway's population had increased only slightly from the 723,141 inhabitants recorded in 1769.

There were two reasons for late marriage in Norway: Firstly, every man born of a farmer or a labourer was compelled by law to be a soldier in the reserve army for a period of ten years; and during his military service, he could not marry without the permission of both his commanding officer and the parish priest. These permissions were granted only to those who were clearly in an economic position to support a family. Men could be inducted into the army at any age between 20 and 30, and since commanding officers preferred older recruits, Norwegian men were often in their 40s before they were free to marry. At the time when Malthus was writing, these rules had just been made less restrictive; but priests still refused to unite couples whose economic foundations they judged to be insufficient.

The second reason for late marriages was the structure of the farming community. In general, Norwegian farms were large; and the owner's household employed many young unmarried men and women as servants. These young people had no chance to marry unless a smaller house on the property became vacant, with its attached small parcel of land for the use of the "houseman"; but because of the low death rate, such vacancies were infrequent. Thus Norway's remarkably low death rate was balanced by a low birth rate. Other chapters in Book II are devoted to the checks to population growth in Sweden, Russia, Central Europe, Switzerland, France, England, Scotland and Ireland.

Malthus painted a very dark panorama of population pressure and its consequences in human societies throughout the world and throughout history: At the lowest stage of cultural development are the hunter-gatherer societies, where the density of population is extremely low. Nevertheless, the area required to support the hunters is so enormous that even their sparse and thinly scattered numbers press hard against the limits of sustenance. The resulting competition for territory produces merciless intertribal wars. The domestication of animals makes higher population densities possible; and wherever this new mode of food production is adopted, human numbers rapidly increase; but very soon a new equilibrium is established, with the population of pastoral societies once more pressing painfully against the limits of the food supply, growing a little in good years, and being cut back in bad years by famine, disease and war.

"Malthus was conscious that he had drawn an extremely dark picture of the human condition... he was convinced that the dark shades really are there, and that they form an important part of the picture."

Finally, agricultural societies can maintain extremely high densities of population; but the time required to achieve a new equilibrium is very short. After a brief period of unrestricted growth, human numbers are once more crushed against the barrier of limited resources; and if excess lives are produced by overbreeding, they are soon extinguished by deaths among the children of the poor.

Malthus was conscious that he had drawn an extremely dark picture of the human condition. He excused himself by saying that he has not done it gratuitously, but because he was convinced that the dark shades really are there, and that they form an important part of the picture. He did allow one ray of light, however: By 1803, his own studies of Norway, together with personal conversations with Godwin and the arguments in Godwin's "Reply to Parr", had convinced Malthus that "moral restraint" should be included among the possible checks to population growth. Thus he concluded Book II of his 1803 edition by saying that the checks which keep population down to the level of the means of subsistence can all be classified under the headings of "moral restraint, vice and misery". (In his first edition he had maintained that vice and misery are the only possibilities).

5. Avoiding the Terrible Malthusian Forces

Malthus died in Bath in 1834, but debate on his ideas continued to rage, both in his own century and our own. Each year he is refuted, and each year revived. Despite impressive scientific progress since his time, the frightful Malthusian forces – poverty, famine, disease, and war – cast as dark a shadow in our own times as they did in the nineteenth century. Indeed, the enormous power of modern weapons has greatly intensified the dangers posed by war; and the rapid growth of global population has given new dimensions to the problems of poverty and famine.

Looking at the world today, we can see regions where Malthus seems to be a truer prophet than Condorcet and Godwin. In most developing countries, poverty and disease are still major problems. In other parts of the world, the optimistic prophecies of Condorcet and Godwin have been at least partially fulfilled. In the industrialized nations, Godwin's prophecy of automated agriculture has certainly come true. In the nations of the North, only a small percentage of the population is engaged in agriculture, while most of the citizens are free to pursue other goals than food production.

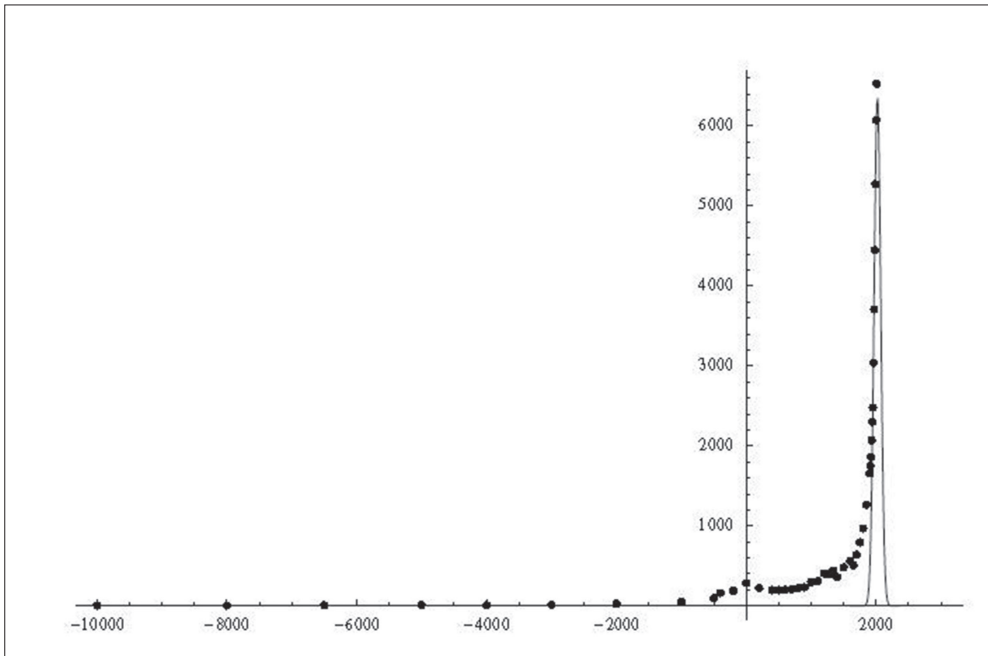
Scandinavia is an example of an area where poverty and war have both been eliminated locally, and where death from infectious disease is a rarity. These achievements would have been impossible without the low birth rates which also characterize the region. In Scandinavia, and in other similar regions, low birth rates and death rates, a stable population, high educational levels, control of infectious disease, equal status for women, democratic governments, and elimination of poverty and war are linked together in a mutually re-enforcing circle of cause and effect.

By contrast, in many large third-world cities, overcrowding, contaminated water, polluted air, dense population without adequate sanitation, low status of women, high birth rates, rapidly increasing population, high unemployment levels, poverty, crime, ethnic conflicts, and resurgence of infectious disease are also linked in a self-perpetuating causal loop, in this case a vicious circle.

6. Population Stabilization and Sustainability

Has the number of humans in the world already exceeded the earth's sustainable limits? Will the global population of humans crash catastrophically after having exceeded the carrying capacity of the environment? There is certainly a danger that this will happen – a danger that the 21st century will bring very large scale famines to vulnerable parts of the world, because modern energy-intensive agriculture will be dealt a severe blow by prohibitively high petroleum prices, and because climate change will reduce the world's agricultural output. When the major glaciers in the Himalayas have melted, they will no longer be able to give India and China summer water supplies; rising oceans will drown much agricultural land; and aridity will reduce the output of many regions that now produce much of the world's grain. Falling water tables in overdrawn aquifers, and loss of topsoil will add to the problem. We should be aware of the threat of a serious global food crisis in the 21st century if we are to have a chance of avoiding it.

Figure 1: Human Population Growth and Fossil Fuel Use*



* This graph shows human population growth and fossil fuel use, seen on a time-scale of several thousand years. The dots are population estimates in millions from the US Census Bureau. Fossil fuel use appears as a spike-like curve, rising from almost nothing to a high value, and then falling again to almost nothing in the space of a few centuries. When the two curves are plotted together, the explosive rise of global population is seen to be simultaneous with, and perhaps partially driven by, the rise of fossil fuel use. This raises the question of whether the world's population is headed for a crash when the fossil fuel era has ended. As an example of the dependence of modern agriculture on fossil fuels, we can consider the US food system, which has been shown by Mario Giampietro and David Pimentel to require more than 10 fossil fuel calories for every food calorie provided. High-yield grain varieties require heavy use of petroleum-derived fertilizers and pesticides. Modern farm machinery is driven by petroleum. If tractors are replaced by draft animals in the future, these animals will require land for pasturage. Furthermore, when synthetic fibers derived from petroleum or coal are no longer available, cropland will have to be diverted from agriculture to growing natural fibers for clothing. Thus there is a danger that the end of the fossil fuel era will lead to widespread famine. Population growth, climate change, and water shortages will add to the severity of this danger.

We can anticipate that as the earth's human population approaches 10 billion, severe famines will occur in many developing countries. The beginnings of this tragedy can already be seen. It is estimated that roughly 40,000 children now die every day from starvation, or from a combination of disease and malnutrition.

Rather than an increase in the global area of cropland, we may encounter a future loss of cropland through soil erosion, salination, desertification, loss of topsoil, depletion of minerals in topsoil, urbanization and failure of water supplies. In China and in the southwestern part of the United States, water tables are falling at an alarming rate. The Ogallala aquifer (which supplies water to many of the plains states in the central and southern parts of the United States) has a yearly overdraft of 160%. Falling water tables form the background for China's stringent population policy.

It may seem surprising that fresh water can be regarded as a non-renewable resource. However, groundwater in deep aquifers is often renewed very slowly. Sometimes, renewal requires several thousand years. When the rate of withdrawal of groundwater exceeds the rate of renewal, the carrying capacity of the resource has been exceeded, and withdrawal of water becomes analogous to mining a mineral. However, it is more serious than ordinary mining because water is such a necessary support for life.

In the 1950s, both the U.S.S.R. and Turkey attempted to convert arid grasslands into wheat farms. In both cases, the attempts were defeated by drought and wind erosion, just as the wheat farms of Oklahoma were overcome by drought and dust in the 1930s.

If irrigation of arid lands is not performed with care, salt may be deposited, so that the land is ruined for agriculture. This type of desertification can be seen, for example, in some parts of Pakistan. Another type of desertification can be seen in the Sahel region of Africa, south of the Sahara. Rapid population growth in the Sahel has led to overgrazing, destruction of trees, and wind erosion, so that the land has become unable to support even its original population.

Especially worrying is a prediction of the International Panel on Climate Change concerning the effect of global warming on the availability of water: According to Model A1 of the IPCC, global warming may, by the 2050s, have reduced by as much as 30% the water available in large areas of the world that now are important producers of grain. These regions include much of the United States, Brazil, the Mediterranean region, Eastern Russia and Belarus, the Middle East, Southern Africa and Australia.

Added to the agricultural and environmental problems, are problems of finance and distribution. Famines can occur even when grain is available somewhere in the world, because those who are threatened with starvation may not be able to pay for the grain, or for its transportation. The economic laws of supply and demand are not able to solve this type of problem. One says that there is no "demand" for food (meaning demand in the economic sense), even though people are in fact starving.

Thus there is a danger that just as global population reaches the unprecedented level of 10 billion or more, the agricultural base for supporting it may suddenly collapse. Ecological

catastrophe, possibly compounded by war and other disorders, could produce famine and death on a scale unprecedented in history, a disaster of unimaginable proportions, involving billions rather than millions of people.

The resources of the earth and the techniques of modern science can support a global population of moderate size in comfort and security; but the optimum size is undoubtedly smaller than the world's present population. Given a sufficiently small global population, renewable sources of energy can be found to replace disappearing fossil fuels. Technology may also be able to find renewable substitutes for many disappearing mineral resources for a global population of a moderate size. What technology cannot do, however, is to give a global population of 10 billion people the standard of living which the industrialized countries enjoy today.

What would Malthus tell us if he were alive today? Certainly he would say that we have reached a period of human history where it is vital to stabilize the world's population if catastrophic environmental degradation and famine are to be avoided. He would applaud efforts to reduce suffering by eliminating poverty, widespread disease, and war; but he would point out that, since it is necessary to stop the rapid increase of human numbers, it follows that whenever the positive checks to population growth are removed, it is absolutely necessary to replace them by preventive checks. Malthus' point of view became more broad in the successive editions of his "Essay"; and if he were alive today, he would probably agree that family planning is the most humane of the preventive checks.

In Malthus' *Essay on the Principle of Population*, population pressure appears as one of the main causes of war; and Malthus also discusses many societies in which war is one of the principal means by which population is reduced to the level of the food supply. Examples of this are Cook's description of constant warfare among the Maori people of New Zealand, and the connection between population growth and war in Machiavelli's description of the Germanic tribes. (In our own time, Michael Klare has documented the close connection between war and the competition for scarce resources.) Thus, the "Essay on Population" contains another important message for our own times: If he were alive today, Malthus would also say that there is a close link between the two most urgent tasks which history has given to the 21st century: stabilization of the global population, and abolition of the institution of war.

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Suggestions for Further Reading

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