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Holistic management of critically ill economies and other human systems

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RÉSUMÉ

Les questions économiques, médicales, sociales et autres doivent être traitées de manière globale et dans une perspective de système. Des approches fragmentaires et des interventions "standard" ad hoc fonctionnent rarement, parce qu'elles ne tiennent pas compte des principes fondamentaux tels que: l'interdépendance (entre les parties), les structures (pour renforcer la cohésion des parties), les synergies (à multiplier la valeur de chaque partie), l'homéostasie dynamique (nécessité pour le changement tout en maintenant l'équilibre), l'entropie (la maladie de systèmes fermés), la consideration des différences individuelles (pas de «one size fits all" solutions), la disproportion (la même action sous deux réglages différents ne donnera pas le même résultat), le besoin de coordination des parties afin de rendre le système efficace et la futilité de cibler l'optimalité, étant donné que ce concept ne figure pas dans les systèmes sociaux, principalement en raison des limitations sur la capacité des gens à diagnostiquer et prévoir correctement (par exemple, le problème économique de Chypre est-il financier ou problème de perte de confiance?). Les approches holistiques considèrent l'image plus large; englober le tangible et l'intangible, l'économique et le social, l'aspect financier ainsi que les fondamentaux spirituels. Regarder une question de façon isolée, c'est à peine la bonne façon de s'y prendre pour résoudre un problème.

ABSTRACT

Economic, medical, social and other issues need to be dealt with holistically and from a system perspective. Piecemeal approaches and ad hoc "standard" interventions seldom work because these ignore fundamental principles such as: interdependence (between parts), structures (to enhance the cohesion of parts), synergies (to multiply the value of each part), dynamic homeostasis (need for change whilst maintaining balance,) entropy (the ailment of

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closed systems), individual differences (no to "one size fits all" solutions), disproportionality (the same action under two different settings will not yield the same result), need for coordination of parts to make the system efficient and the futility of targeting optimality considering that this concept does not exist in social systems mostly because of human limitations on the ability of people to diagnose and forecast correctly (e.g. is the Cyprus economic problem financial or one of lost trust?) Holistic approaches consider the wider picture; encompass the tangible and the intangible, the economic and the social, financial as well as spiritual fundamentals. Looking at one issue in isolation is hardly the correct way to go about solving a problem.

We refer to system as, *"An organized, purposeful structure that consists of interrelated and interdependent elements (components, entities,factors, members, parts etc.). These elements continually influence one another (directly or indirectly) to maintain their activity and the existence of the system, in order to achieve the goal of the system"*[1]. In our case, the goal is perceived as maintaining sustainably the welfare of the citizen and person; the system being a civilized society. This paper attempts to explain the importance of holistic management to critical issues and problems using the following ten headings:

1. Lessons from the Health sciences

2. Lessons from History

3. Open vs closed and simple vs complex systems

4. Systems' entropy and dynamic homeostasis

5. People and systems

6. Holistic view of the economy as a complex system

7. Pathophysiology of a critically ill economy as malfunctioning system

8. The pitfalls of the current management of economic dysfunction

9. Systems' management evolution: Time for a new "therapeutic" paradigm for critically ill economies?

10. Concluding remarks

1. Lessons from the Health Sciences

Hippocrates was amongst the first to recognize the complexity of the human body and to stress the inter-connectivity between each and every part (organ / body system, "the 4 humours" in his theory[2]) of this complex super-system. Much water has flowed under the bridge since Hippocrates' time and an immense amount of work was generated on the subject. The impact of failure of one or more parts of the body (from cellular to organ level) on health and the overall functioning of a person, as well as the impact of a dysfunctional person on the community's health and wellbeing has been studied and documented in-depth in Medicine and Sociology respectively. A great deal of effort was put in examining the interrelationship between physical, emotional and the psychic /spiritual health of humans through studies in Psychology (experimental Psychology in particular) and Religion.

Factors in the environment, amongst others the social and financial standing of the individual, have also been identified as impacting on human health even though these factors were underestimated or neglected for a large part of the history of Science; these factors were seen then as unconnected to medicine. Conventional wisdom now supports that we cannot understand health simply by looking at blood markers and images of the body, but rather by bench-marking human behavior and perceived satisfaction in life. Reversely, human behavior and more particularly the behaviour that is the outcome of the "evil twins" of *greed* and *fear* influence human micro- and macro- environments which in turn impact on human health.

Critical illness is perceived as a health status where one (or more) organic system(s) / organ(s) / physiological mechanism(s) are so disordered that seize to perform adequately to maintain vital body functions (consciousness, airway patency, breathing and circulation), to the extent of imminent death. We shall see in a while the ultimate of disorganization in systems theory and the uncontrollable increase in entropy in thermodynamics.

Critical illness can result from either external insult(s) or internal pathological process(es) with or without an underlying chronic illness (acute or chronic illness exacerbation). External insults can be classified broadly from a pathophysiological point of view as: a) acutely or chronically acting poisons and traumas, b) infections (endemic or transferred through the process of globalization; more or less contagious), c) acute or chronic unsustainable

deviations from "normality" in one or more environmental system(s) (i.e. serious temperature disregulation), d) lack of essential food and water supplies (hunger and thirst). Similarly, internal chronic diseases can be classified as: a) immune and cancer (parts of the system attack and tend to destroy the system itself), b) degeneration and senescence (prevalence of entropy forces). To cause maximum damage such insult(s) / process(es) need to be powerful enough to overcome the existing "defense" mechanisms (usually multifaceted and multilevel) and/or saturate the existing balancing (bio-feedback) / buffer systems (usually overlapping and cross-reacting).

We examine critical illness in this essay, as a model of system disorganization that has remarkable similarities with failing economies and may dictate important lessons in the management of such adverse situations that endanger lives and human / personal / societal welfare! Evidence based[3] abstract description of the aforesaid (concepts / dictums / axioms of critical illness pathophysiology) are given where necessary in the paragraphs that follow so as to illustrate these similarities.

The gist of the matter is that the medical and scientific community now realise that unless the (critically) ill patient (human being) is viewed as a whole (considering the interrelationships between body organs / systems) thus going beyond blood and tissues indices, the patient cannot be adequately studied, protected and restored to health. This approach applies practically to all dysfunctions that afflict human organisations (social, economic, etc.). Scientific, historical and factual evidence will be presented below in support of the above.

2. Lessons from History

Alexander the Great was one of the first to recognize the complexity of the military and political systems. He was quick to identify the interrelationship between internal and external forces that threatened to disturb the balance and vitality of his kingdom. Though he himself did not build the core/basic military and political system of the Greeks, it was Alexander that fashioned masterfully what he found from his father Philip and the great military strategist Parmenion into a formidable structure that would outlive him for centuries and which would leave a legacy to this day. Alexander and his companions were all educated by the great Greek philosopher from Stagira, Aristotle in the great

school at Mieza (near the modern Greek city of Naousa). There they learned all about interrelationships and interdependence from the great master Aristotle. By understanding the broader properties of the system he inherited, Alexander managed to build the world's most integrated and formidable force of his time. This organization was destined to liberate from tyranny fellow Greeks in the East and finally pass on Hellenistic thought to countless countries stretching as far as Bactria (in modern Punjab, India). The Greco-Bactrian Empire (set up mostly by Athenians) lasted for over 200 years after his death.

Alexander's understanding of systems, organizational working patterns and interrelate parts went beyond common comprehension. The fact that he recruited Callisthenes (Aristotle's nephew) to record history and to study and categorize the flora of the nations that were to fall under the Greeks speaks volumes about Alexander's understanding of what is now known as "holistic" approach to his task. The great King of Macedon understood full well the human side of the military. He thus built a political machine to help bond everyone together through camaraderie in the armed forces that was central to his approach. He extended the hand of friendship to the peoples that came under his empire and refused to view the vanquished as conquered people; rather, he saw them as new co-patriots. Because of his masterful management of the Hellenistic organization, Alexander managed to rule without a single revolution in the areas under Greek command. He understood clearly and at an early stage the enormous importance of a unifying language and thus quickly introduced the koine (Hellenistic) Greek for easier understanding and communication through the Greek language; seeing that many found the rigor of ancient Greek too much to handle. Little did Alexander know at the time that the New Testament (the book with the highest circulation in world history) would be written in Greek and that the great books of Orthodoxy and the Eastern Roman empire would be written in the language he helped fashion.

Alexander's concern went beyond the army, the cavalry, the archers and the navy because he wished to set up a system that would go beyond the military side of his task and that would be impregnable in the long-run because it would blend together successfully a multitude of properties and functions: the armed forces, psychology, religion, spirituality, the sciences, culture, language and so on. He understood well things that were beyond the conventional wisdom of his time and had a good grasp of the intricacies entailed by complex systems.

Alexander was genius par excellence. This explains why he went beyond the need to set up just a military machine. His gifted personality, courage and brain enabled him to build a system that was to last for 300 years after his death and, most importantly, that would act as model to this day for business, politics, linguistics, strategy and leadership[4].

Partha Bose characterizes Alexander as, *"Arguably the greatest military strategist, tactician, and ruler in history, Alexander's achievements have influenced many military, political and business leaders."*[5] Bose goes on to say that Alexander's system of governance influenced Roman leaders and emperors (Pompey, Julius Caesar), Carthaginians, Indians, the Medici of Italy, the Habsburgs of Austria and a pleiad of leaders spanning history. Alexander had a mission to build a truly magnificent system that would help him achieve his dream of Hellenisation; passing on to others the Greek culture, ideas and traditions. With sense of history he carried with him a copy of Homer's Iliad to guide him in this dream. Alexander claimed the hero of the Iliad, Achilles, as his direct ancestor.

Alexander took a holistic approach to his task and this helped him set the foundations of the system that would influence the world for 2,500 years and certainly for thousands of years to come. Just like his father Alexander's vista transcended Macedonia, Thrace, Epirus (his mother's birth-place) and the rest of the lands of the Greeks. He had a truly global understanding when most people of his generation took a parochial approach. He could see the then known world as a unified whole and himself and the Greeks as the champions of unity for nations that were to come under his influence. He had the capacity to harness the strengths of diversified peoples for broader good. He saw countries and people as parts of a wide system and an advanced world order that he envisioned. He saw the resources of countries under his influence as tangibles in his system and the varying religions, customs, beliefs, philosophies as soft intangibles. He managed all these resources masterfully. In pursuit of his objective he did not shy away from foreigners or people that were alien to the Greek culture. As such he encouraged his officers to intermarry and in fact promoted non-Greeks to officer rank (much to the consternation of some of the Greek officers)! He himself was married to a non-Greek (Tajik /Uzbek) that gave birth to their son Alexander.

3. Open vs Closed and Simple vs Complex Systems

Open VS Closed Systems:

In thermodynamics, isolated systems cannot exchange energy or matter with their environment. Closed systems are able to exchange with their environment energy (heat and work) but not matter. An open system allows transfer of energy as well as matter between it and its surroundings[6]. Analogous systems' approach considers the human being (or an organization / a society), as a set of functions which receive input within the internal and from the external environment, process this and then produce an output (i.e. action / status change) that can conversely influence the internal / external environment[7]. The closed-system model tends to focus on internal events when explaining system's actions and behavior, while open-system models focus on events occurring externally (and internally as well) that influence changes within the system. In fact, the human body and psyche is by definition an open system exchanging energy and matter with the environment. Students are dismayed when they first hear that we humans are in fact completely "recycled" in every aspect of our being!

In the course of a critical illness, an organism / organization fails to respond adequately to an unusually abrupt change in the settings of the internal and / or the external environment; its buffering systems become overwhelmed by the force and magnitude of the change, frequently undermined by pre-existing, internal (usually) chronic dysfunctions. Typically, restoring the internal equilibrium of an ill system to a different but viable and stable state (but not necessarily back to "normal") is of paramount importance if the system is to be enabled to ultimately interact successfully and beneficially with the external environment.

Modern-world economic systems that are no more "isolated" or "closed" than the example from medicine above could benefit from medical theory and practice in better understanding the system dynamics of a "critically ill" economic system (or other societal structure for that matter). In this way society's efforts to restore the system to health would be better placed to design and apply effective remedies and develop monitoring systems and markers of progress.

Defining the Boundaries of an Open Economic System

Open economic systems communicate with the outside world and as such their boundaries are difficult to define. Open economic systems communicate with practically the whole world, compete in the open market, share innovative ideas with anyone and are willing to share with others ideas and plans. Technology has no boundaries just as innovation does not. In fact it is impossible to define the boundaries of open systems. As such, economies can benefit from the boundless relationships and exchanges they can have but could also be destroyed by the relentless competition coming from a boundless environment. Systems need to be well tuned, with as few as possible hindrances to productivity and effectiveness so as to allow such systems to compete. No one could have imagined 20 years back that imported fruit and vegetables from countries with a few weeks of sunshine a year would be inundating a traditionally agricultural country such as Cyprus which enjoys almost year-long sunshine. Globalization brings both opportunities and threats to countries.

Simple VS Complex Systems

Not all systems carry the same complexity. And, systems with a large number of component parts are not necessarily complex. Most complex systems have the capacity to adapt, learn and rejuvenate. Adaptive systems are capable of: a) receiving feedback b) evaluation and c) acting on information to help the system adapt and survive. Organizations are typically adaptive in nature though not all manage to adapt correctly or timely; this explains why the average life of a business organization is short (e.g. 30 years).

Thus, on the one end of the spectrum we see very complex, adaptive and intricate systems and on the other simple and uncomplicated systems which have the capacity to adapt. The human body is naturally an open, very complex and adaptive system as mentioned earlier, but can this be said of an economy or a business enterprise? Some economies like those of the USA, China and Germany are large beyond imagination and those of small and tiny countries and islands are puny and inconsequential. It's one thing dealing with an economy that encompasses military industrial complexes, services, technology, health industries and practically every other industry imaginable and dealing with an economy that basically relies on tourism and a set of other simple services without an industrial base to talk of and without a complex

international transport system. To provide an example: The United States is a complex $15 trillion economy and Cyprus is a meager 15.5 billion economy (one is thousand times smaller than the other).

One would surmise that smaller and less complex economies are by their very nature easier to manage than complex ones. Yet, we see today that there are no quick fixes even for small economies in trouble such as those of Greece and Cyprus. In the current economic crisis we also see large countries, such as Italy, being afflicted with similar ailments such as those of small countries. We see colossal economies such that of Japan languishing in recession for the past 15 - 20 years but we also see smaller economies such as that of Greece also languishing in a much worse recession which has taken a heavy toll on people in the last 7 years and with no end in sight. The same holds at the level of the business enterprise where we see gigantic corporations like Apple (and Google and Exxon and so on) with capitalization approaching $100bil ($77bil on last search) or 7 times the GDP of Cyprus. We see large businesses, e.g., General Motors suffering repeated malaise just as we see small shops in Cyprus shutting down on account of the recession.

System failure can hit small and large, complex and simple structures, old and young enterprises. Behind most of these failures lies bad management (usually accompanied by *greed* and its companion, *fear*!). Real estate bubbles, stock exchange bubbles and financial institution failures usually precede the arrival of hard-hitting recessions. The collapse of Lehmann Brothers in 2008 lit the fuse of the global financial crisis that followed and the loss of people's confidence and trust in financial institutions. This started a chain reaction on housing loans (confirming Marx's dictum that housing and land is likely to bring the capitalist system down!), non-performing loans and so on. Behind each of the above failures lies bad management and speculation. Behind bad management usually lie incompetence, greed, individualism and human frailty that culminate in fear of what the future will bring.

Some system parts are large and complicated to the point of forming large sub-systems in their own right. As the number of sub-systems increases our difficulty in understanding the overall system also increases. In order to mitigate system complexity, managers often break the entity into smaller sub-systems and even into sub-sub-systems. This helps somehow reduce complexity that is often associated with large size (Exxon vs a local shoe factory in Lebanon). Segregated

systems, however, need much coordination so that these can work in unison for the common goal of the overall enterprise and the economy.

The demands of sub-systems usually differ and may even be contradictory. For example, in recessions the Ministry of Finance typically responds by putting the brakes on expenditure. Though this is meant to help at the end it worsens the situation as business activity begins to drop. On the other side of the spectrum, the Ministry of Works keeps asking for money, with a view to rejuvenating the economy, but which the Ministry of Finance refuses to give. This phenomenon of bifurcation of interests causes problems and frictions that need to be managed. The way this problem (spending or not spending) is dealt with, could make the difference between early or late exit from a recession and how fast a critically ill economy is restored to health.

4. Systems' Entropy and Dynamic Homeostasis

As seen earlier through examples from history, economics and physiology, human beings and human systems tend to die as internal equilibrium tends to imbalances and eventually to non-reversible deviations from normality! In the case of human body, death constitutes an inevitable, yet hardly acceptable, reality in the modern society despite the great achievements of medicine. In the case of an economic system however, "death" does not come easily if the system can manage to reinvent itself and be rejuvenated by adapting to the challenges of the society it serves; thus, adaptability to new external conditions and societal needs is central to survival. But, this requires wise and visionary leadership that has the ability to take into account the overall good rather than its own narrow selfish interests.

Entropy. The evolution and transformation of economic systems will be discussed at the end of this essay. Here we shall discuss how human nature itself and micro / macro environmental changes can create the circumstances under which a critical illness of a system may occur. Equally, we will discuss how dynamic homeostasis mechanisms could be reinforced in order to alleviate "poisonous" effects and unnecessary human suffering. Entropy brings disorder and randomness (typical characteristic of closed systems; even if open systems run a similar danger). Entropy renders the system inefficient and continued entropy incapacitates or even kills the system.

Systems employ *feedback* as a control and improvement mechanism. Feedback improves the stability of the system and creates the platform for self-improvement. Feedback mechanisms exercise influence on the system and protect it from failure and disaster. Feedback mechanisms help to sustain equilibrium through self-regulation. *Homeostatic* mechanisms recognize the value of the self-regulation process and employ this to good effect. Homeostatic control mechanisms typically provide negative feedback to help bring the system back to its preferred state by controlling those variables that go out of line. The thermostat for instance, tells the air conditioning unit that the required/ideal temperature has been exceeded and asks it to tone down. Thus, in this case the output (temperature) of a sensor affects the regulatory center (air conditioning unit) and instructs it to reduce activity so as to bring back the equilibrium. Positive feedback mechanisms work in reverse to negative systems. In the former, systems output enhances the activity of the stimulus rather than toning it down, e.g., increased sweating triggers off the body's cooling mechanisms to provide equilibrium.

Dynamic homeostasis: In the view of the authors, dynamic homeostasis is perhaps the most potent characteristic of effective systems as it allows needed changes to happen whilst the system maintains relative stability. Dynamic homeostasis is analogous to an airplane moving at great speeds without the passengers noticing the continuous shift of position the airplane goes through. In fact, passengers get the feel that the airplane in flight is in a static position. Keeping a system in equilibrium whilst changes (and rejuvenation) go on is not an easy task particularly as regards complex systems. Change usually entails some turbulence. A good example of how equilibrium was lost in the mist of change is Russia just after perestroika that brought in tumultuous changes to a system that was relatively stable for about 70 years. With the break-up of the Soviet Union the Russian economy went into a spin and chaos followed accompanied by all the horrors of recession on the suffering Russian people. It took decades before the Russian economy could reach a state of equilibrium. This has not happened in the case of China as economic change is coming gradually and in a controlled manner.

5. People and Systems

People are an integral part of economic and business systems. Get the people side wrong and you end up with a malfunctioning system. Here again the way the people factor operates varies from country to country, company to company and from culture to culture, rendering solutions and "treatments", highly individualized. In 1981 Ouchi[8] put forward the idea that the secret to Japanese success (Japan was a success story at the time) lies in the way the people factor is handled. Japan, he proposed, owes its success to its people management rather than to technology. He wrote, *"This is a managing style that focuses on a strong company philosophy, a distinct corporate culture, long-range staff development, and consensus decision-making."* He stressed that commitment to the human factor ultimately leads to increased job commitment, lower turnover and, most importantly, higher productivity. Participation in most stages of decision-making is central to the Japanese system. Thus, communication and exchange of information at a level probably unknown to many companies outside Japan is absolutely central to the management function. The Japanese system assumes that as people are integral to organization they have to be respected and their contribution acknowledged. Ideas should not be sourced from management alone; the system needs to encourage wider employee involvement and contribution.

The Japanese system requires employees to be well-trained so as to enhance their level of competence which in turn allows them to participate meaningfully in the management of company affairs. Ouchi coined the term *"Theory Z"* to express the system under which the Japanese work and in which people play a central role and where emphasis is placed on knowledge, training and organizational practices that render the employee valuable to many (as opposed to one or few) departments and many functions in the organization. Job stability and tenure are also central to this approach. Organizations are expected to provide employees with job security and in turn employees are expected to give their loyalty and commitment to the company. It is assumed that stability of tenure, experience of the full range of business activities and knowledge of the organization prepares employees well for higher managerial roles. The Japanese system contrasts in many ways that of western countries where emphasize on specialization takes precedence to more general skills and where a reasonable percentage of labor turnover is desired to allow staff renewal (e.g.

2-3% labour turnover). The Japanese experience demonstrates that though each part in the system adds its own intrinsic value it is imperative for management to isolate that part or parts that would require special attention considering their overwhelming value to the system.

Just as in human pathophysiology any unnecessary wastage of physiological reserves can be detrimental, in an economy wastage of human talent can be damaging to sustainability and economic growth. Cyprus offers a good example of wasted talent. The Island prides itself for having one of the highest densities of university graduates in the world (some with education from highly respected institutions). Yet Cyprus failed pitifully to exploit the potential of this talent. The culture of the place has been a very negative influence on people that are motivated to work and are achievement oriented. The dream of many parents over the last 40 years has been to see their children enter the civil service bureaucracy where reward for superior performance has never been the hallmark of the service. There is ample evidence of gifted people wilting away in an overstaffed and overpaid civil service or its near-equivalent the now discredited and failed banking sector of Cyprus. When talent of immense potential is directed to the civil service private enterprise is starved of this talent. Consequently then the skills balance changes against industry and commerce. Now add to the above equation high salaries to the public sector (result of strong unions) and low productivity and you get the perfect recipe for economic catastrophe and societal decay. Now add low value for money services and poor customer care from the public sector and you create an economic time-bomb. As human activity is interconnected what happens in the public sector is automatically reflected in the private sector that is forced to bear the cost of maintaining an oversized and inefficient operation. These costs inevitably raise the price of goods and services that Cyprus produces making exports uncompetitive. This partly explains why at the start of the current recession the value of Cyprus' exports fell short of the value of imports (funded by extended loans and high salaries) to the tune of 8% of GDP!

6. Holistic View of the Economy as a Complex System

The economy as an integrated system / whole attracted the attention of thinkers from antiquity though the systematic and "scientific" study of the economy as a unified whole is thought to have started some 500 years back. As

a subject of study holism (from the Greek words *"holos /όλος"*), or the idea that the whole is made up of component parts that need to work in unison if they are to be efficient and to avoid ruin gained prominence relatively recently (even though holism was well known in ancient times). The Oxford dictionary defines holism as, *"The theory that parts of a whole are in intimate interconnection, such that they cannot exist independently of the whole, or cannot be understood without reference to the whole, which is thus regarded as greater than the sum of its parts … the opposite of atomism"*. Within a medical context the Oxford dictionary defines holism as, *"The treating of the whole person, taking into account mental and social factors, rather than just the symptoms of a disease"*. Parts influence each other within the context of an integrated whole. As such, the value of each component part when working inside the system is much greater than the cumulative value of each part when outside the system. In fact, specialised /dedicated parts have little or no value outside the system.

The Cartesian way of understanding systems has been to break the whole into its component parts and to study each part rationally and independently. This meant that the system/whole needed to be studied through its individual component parts and not through its unified properties. Though this approach might work well in some cases (in the sciences probably) this logic has little or no meaning within the social sciences. Simply, by: a) decomposing the system into parts, then b) gaining an understanding of the properties of each part and then c) putting these parts back into a whole does not guarantee a total understanding of the system and its workings. We need to examine the system and its workings as a unified whole. It is interesting to note that, the involvement of humans in the workings of systems also carries with it the risk of causing the system to generate unwanted consequences considering that human behaviour is not always rational.

For better results, the whole needs to be viewed as the master that unifies rationally and efficiently its component parts. Clearly, the whole cannot be understood adequately in terms of the properties of each component part. The function of the heart, as part of the human body, cannot be understood if the heart is merely viewed as a muscle/"machine" with defined properties and defined functions. The heart's function gains meaning when seen as a working part of the human body and as a contributor to the workings of the other parts of the body which in the end keep the body functioning and healthy.

Reductionism, or the processes of decomposition of the whole into parts, cannot explain the whole because the whole tends to become more complex than the totality of the complexities of each part working within the system.

By accepting that prices rise as demand increases whilst supply remains constant, we cannot fully understand how the economic system functions. Supply and demand do not operate in a vacuum and outside the broader economic framework. To understand the economy we need to go beyond supply and demand. We need to understand concepts such as: inflation, fiscal and monetary policies, price elasticity, factors of production, government policies, consumer behaviour, unemployment (and why sometimes we need to take measures to alleviate the suffering of the unemployed); economic growth, social welfare, savings and host of other issues. Thus, we need to understand both the parts as well as the unified whole of the economy. Touch one part of the economic system and you trigger a whole process, sometimes with unwanted consequences.

Similarly we cannot understand how a business enterprise works by simply understanding independently how marketing and pricing work. To understand the business organisation we need to understand, amongst others, how the following work within the context of the organisation: employees, finance and accounting systems, storing and purchasing, logistics, raw materials, human behaviour, consumer habits, marketing and sales, management systems, technology, equipment and productivity which together with a host of other parts make the corporate system work healthily and productively. One has also to understand how corporate and economic systems are created in the first place and how reversible and irreversible disease sets in; and, how ailing systems can be restored to sustainable health following a thoughtful, evidence-based and individualized (personalized) treatment plan instead of a one-size-fits-all procrustean approach which can leave behind only societal handicaps and human despair.

The Economy as a System

The ancient Greek philosopher, historian and military strategist, Xenophon is credited with making the first attempt at helping us understand how the economy works as a system by concentrating on the workings of home economics in his seminal work, "The Oeconomicus" which was probably written

in the early 360s BC[9]. The Latin "oeconomia" comes from the Greek word "οικονομία" (οίκος = house / dwelling + νόμος / management) (see Online etymology dictionary). Much later others attempted to explain more systematically and scientifically how the economic system works. Amongst the first to write about "scientific economy", was the French politician and Minister of Finance Jean-Baptiste Colbert (1619-1683), who attempted to introduce order in the workings of the economy and government. He approached his subject through systematic study and analysis of the complexities of the economic system and how the bureaucracy and economy function. Probably one of the most universally acknowledged economist and philosopher that tried to explain the workings of the economy and the interrelationships that lie behind the working of the true economy was Adam Smith[10]. Smith wrote on nearly all issues surrounding the economic system including but not limited to: division of labour, wages and labour, pricing and commodities, interest rates and stock prices (including stock of money), accumulation of capital, political economy and so on.

Political Economy as a System

Of the classical economists, and one who was influenced by Adam Smith, the British David Ricardo (1772-1823)[11] proved to be one of the most influential in explaining in the early 19th century the "*science*" of economics and how complex functions come to form a viable economic system. Ricardo's contemporary, Jean-Baptiste Say's (1767-1832) published in 1803 his famous treatise on political economy. This was later published as "A Treatise on Political Economy" [12]. Alexander Hamilton, the first secretary of the economy of the USA also attempted to explain the workings of the economic system and in so doing he relied on the work of many of his predecessors[13]. A little later Max Weber (1826-1920) addressed the workings of bureaucratic systems[14]. Max Weber, along with Karl Marks and Emil Durkheim are considered to be probably the architects of modern social science (they helped sociology take its rightful place by helping us understand the economy as a function of the overall social system).

Corporate Management System

In the area of corporate management Frederick Taylor (1855-1915) led the development of "scientific management." In his seminal work, "Scientific

Management",[15] he attempted to use measurement and observation (both scientific processes) to define the best way of doing things so that the overall system can work efficiently and beneficially. Taylor saw clearly the interrelationship between events and functions. His near-contemporary engineer Henri Fayol (1841-1925) was one of the first to put forward fundamental principles of the art of managing the corporate system[16]. He expanded on how best to organize a business entity if utilization of its resources is to be maximized[17]. Fayol concentrated mostly on the Administrative (management) side of running an organisation whilst Taylor expounded on what came to be known as the science of management. Both attempts were focused on running efficiently the business enterprise system. Fayol gave us his 14 functions of management that went a long way in helping us understand better the workings and functions of the corporate body: a) division of labour, b) authority, c) discipline, d) unity of command, e) unity of direction, f) subordination of individual interests to the general interest, g) remuneration, h) centralization, i) scalar chain of command, j) order, k) equity, l) stability of tenure (of personnel), m) initiative and n) esprit de corps.

Mary Parket Follet (1868-1933) [18] and Lillian Gilbreth[19] are considered amongst the first to have contributed immensely to the study of management and particularly the social systems of organizations. Both stand alongside Taylor and Fayol as great contributors to our understanding of the corporate body. Peter F. Drucker[20] the "social ecologist" left a lasting legacy on management and is probably the most quoted management guru in the history of management. He helped us understand the complex workings of the organization and the ramifications of good management on the corporate body and society. He is rightly hailed by many as the architect of modern management. Whilst Taylor and Fayol helped enhance our understanding of organisational systems Drucker (through his 39 books, countless articles and lectures) helped push our comprehension of business systems to levels not seen or experienced before. Drucker had a formidable ability to predict developments long before they materialise. One could go as far as to say that he was the Aristotle of management thinkers. He is the man that saw vividly major developments of his era, the 20th century, coming. Bywords such as information society, decentralization, privatization, the knowledge economy, innovation and a host of other concepts are credited to Drucker. As a thinker

he explained masterfully the real world of management and gave substance to words and ideas. As such he became the envy of many an academic that berated him (much to the chagrin of people in the real world of business) as not adding enough academic rigor to his work. Drucker understood business theory and practice probably better than anyone else that wrote on business. Drucker predicted the coming of the services explosion and the need to train people in knowledge and skills that can be meaningfully applied[21]. His critics went as far as to label him a communist (whatever that meant at the time!) because of his thoughtful position that: a) management ought to take account of the people factor in the decision-making process and b) organisations must balance profit with good citizenship if they are to have a bright future. Balance and equity was the mainstay of Drucker's work: balance between short- and long-term needs, balance between profit and social responsibility, balance between business needs and people expectations, balance between the individual and the group and balance between freedom and responsibility.

All of the above pioneers viewed the world of business and economics as a system in need of good management that can evaluate properly today's decisions against future outcomes. They believed that practically every action we take, no matter how isolated and how confined to one's area or function that might be, influences the system in its totality. All of the above were among the first to realise and document their belief in the complexity and interrelatedness of economic, business and social systems and to make recommendations on how best to deal with and manage these systems to optimal(!) effect. They all, of course, suffered the fate most pioneers suffer; being attacked by others for their "outlandish" views. For example, Adam Smith's work was attacked by none other than Ricardo. At the end the work of these people left an indelible mark on the management of the economy and enterprises and helped later generations understand how economic and corporate systems work. Each gave us an indispensable frame within which to view the workings of the economy. This frame comes under the heading of "system."

Economic and business systems cannot operate without organisation and cannot continue to function effectively without organisational renewal. Organisation develops structures, functions, reporting relationships, communication patterns, roles, authorities, and procedures, tasks to be

performed and accountabilities. The likelihood of anomie and anarchy is almost inevitable without organisation; largely because the decision-making process takes random forms. Organization presupposes a pyramid of powers spanning the whole organisation with those at the apex of the system having more legitimate authority than those at the lower end. Decisions on economic activities need to be taken by those authorised to take decisions; thus, the decision-making structure delineates decision-making boundaries.

Following the pattern of biological systems, economic systems also need methods of control (hence sensors and overlapping afferent / efferent mechanisms and pathways); otherwise activities go unchecked and the system ultimately fails. In business management terms systems require audits, appraisals, feedback reports and other mechanisms that can catch errors and misbehaviours in good time to allow the timely taking of remedial action. These system mechanisms are inherent in the economies of most countries. The issue here, however, is not whether there are control systems in place but how well these function and how independent of political interference and intrigue (and noise contamination) these are. Though centralized economic systems and command economies have more controls in place, these very often fail to be applied efficiently and independently and often lack transparency; these failures inevitably generate system anomalies.

7. Pathophysiology of a Critically ill Economy as Malfunctioning System

Coordination and discordance: Brain coordinates organ systems through an extremely complex matrix of sensors and afferent / efferent mechanisms which guarantee effective coordination and thus maintenance of physiological functions. Likewise, coordination mechanisms are a central feature of economic systems' viability considering the vast array of functions and sub-functions that are required to work in unison. Differing ministries, often with competing objectives, need to be coordinated so that these can function in a unified manner serving the overall objective. Regrettably, coordination fails sometimes because of internal conflicts that are often endemic in government bureaucracies and also because of the pull and push towards and away from centralization. Thus, we often see a pull towards more power at the top by people that wish to centralize power in their own hands and on the other end

there is push towards more autonomy further down the scalar chain of command so that decision-making can decentralize. Thus, the need for coordination at many levels is ever-present to ensure that the system functions effectively and adapts to the environment in good time.

The Legal Structure and its Common Ailments

One of the most essential prerequisites to a well-functioning economy or business entity is the existence of a highly effective and widely respected legal system. Failed economies often work within failed legal systems as well. A well-functioning legal system guarantees property rights, secures patents and copy rights and handles litigation speedily and justly. Investors shun countries with failed or malfunctioning legal systems preferring to work in countries that do not experience such problems. Further to the need for a strong legal system the country needs to have in place an efficient and just taxation system that can act as incentive for people and organizations. Economic activity needs incentives and encouragement through well-thought out programs and schemes that have the protection of a well-functioning legal system and a stable taxation regime. Amongst others investors wish to see stability and fairness in the legal and tax regimes before deciding to invest.

Depending on the prevailing beliefs and philosophies of a country its legal system can be business-friendly or, in the extreme, anti-business. Regrettably, in some cases widespread anti-business sentiment forces parliaments to enact laws that constrain business activity in a way that ultimately harms the very people and politicians that promote such disincentives. The opposite is also true when one sees greedy businessmen and other vested interests lobbying for laws that favour business and their profits but harm the general good; consumers, taxpayers and so on.

Effective public policy is essential to the rewards and punishments system of incentives and disincentives that governments put in place depending on what they wish to promote or discourage. Values and attitudes play a significant role in this regard, considering that politicians are often driven by their own political beliefs and social orientations in addition to the need to gain the favour of voters.

Synergy. Synergy is a central property of every effective physiological and economic complex system. The term *synergy* comes from the Greek "συνεργία"

which derives from the word *"συνεργός"*, i.e. working together. With synergy 1+1 exceeds 2; Working together helps the system outperform its part. The term synergy is often put forward in support of mergers between companies. Through synergies companies hope to enhance their combined value (higher profit and better financial performance). The creation of the European Union was made possible on the premise of synergies for member countries (unified market, no internal import taxes, free movement of capital, goods and people, etc.). Synergies are ubiquitous features of well-functioning systems.

Synergy has the ability to create new properties and value structures provided the network properties are managed efficiently and in a unifying manner. People in the corporate world know full well that it is neigh impossible to create economic surplus independently and in isolation and without cohesion between the functions of production, finance and marketing and so on. Products don't sell on their own no matter how good these are. So, customer needs must be taken into account, the cost of goods to be sold needs to be competitive, production, marketing and selling capabilities need to be in place; most importantly all parameters need to work in unison if economic surplus is to be created. The wellness of an economy cannot be predicted by just looking at each economic function independently and without regard to the whole. Synergy needs to be actively promoted, rewarded and protected. Synergy is dependent on a healthy relationship between the elements of the system.

Optimality and sub-optimality

Despite the beauty and complicated perfection of the human body physiology, optimal physiologic functioning is generally unattainable in real life because the "system" is designed to sustain several concurrent deviations from normality as well as the sub-optimal performance of one or more sub-systems; it does this by recruiting its physiological reserves and (as mentioned earlier) by deploying buffer and compensatory systems. Likewise, economic and business systems (and most other complex systems for that matter), hardly ever work optimally (at 100% performance or at 100% of potential) because of the weaknesses that are inherent in systems; mostly because of unhelpful human behavior or inherent cognitive limitations. The difficulty of getting all elements and properties to work together and in harmony is an accepted fact. Perhaps the biggest threat to the optimality of economic systems comes from

the limitations of human thought and emotion. Perhaps more so in situations that require decisions from elected representatives (e.g. corporate boards or public offices) that in some instances have weak backgrounds, may be victims of warped ambitions and dodgy moral values; but who have the cunning ability to win votes that put them in positions to take decisions for others.

The limitations of the human brain and of human behavior cause systems to fail repeatedly and almost predictably and as external and internal threats, limitations, imbalances and sub-optimal performances cross the limits of viability. When one part of the community lives at the expense of another the economic system inescapably will fail under the weight of injustice. For, example, when governments tax excessively and illogically in order to maintain the high-life styles of those in the ruling class and the bureaucrats that serve them, the real economy will ultimately be starved of liquidity and consumption and investment will stagnate. Greed, and the wish of one side to exploit the other, renders optimality a phantom and meaningless concept. Once the system fails all sides in the equation lose; both exploiters and the exploited suffer considering the interrelatedness of system properties. The reverse is also true when those that are supposed to pay their taxes fail to do so and ultimately lead the system to weaken and in the process causing great hardship to both sides of the equation.

In 1956 Herbert Simon put forward the concept of satisficing[22]; a concept that is close to sub-optimality. Economic and business systems generate acceptable, but not optimal outputs. Simply, when the human brain evaluates alternative options it ends up choosing that option that meets acceptable requirements to the brain rather than optimal requirements. The preferred option cannot be optimal because of the limitations of the human brain which makes this impossible. Human thought processes are bounded /limited and cannot meet full potential. Human beings operate and decide within the confines of "bounded rationality" (to use Simon's terminology) which make optimal decisions impossible. The limitations of human thought are not just biological or cognitive in nature. Limitations could arise out of the emotional and spiritual dimension which renders an optimal decision impossible. Human beings are emotional and often-times are guided by self-interest, self-aggrandizement and limited spirituality all of which prevent a decision from being optimal. Dishonesty inside the workings of governments and

bureaucracies of countries such as Greece, Cyprus, Italy but also of many other countries makes sound (let alone optimal) decision-making difficult; if not impossible. Cyprus, ranks 31st on the transparency index (Transparency International[23]), having slipped from 29th position in the 2011 index. Transparency International sites corrupt practices between political parties and businesses in Cyprus. It also mentions lack of regulations that aim to prevent corruption from happening and weak: a) follow-up, b) tracking and c) penalization of corruption. Amongst the European Union countries that took part in the survey, Cyprus ranked 16th, so there are plenty of worse countries on the corruption index in the EU. Corruption interferes in the decision-making process as individual interests interfere with the decision-making process making optimality an unreachable goal.

Forecasting and looking into the future presents perhaps the biggest challenge /limitation to optimal decision-making. Human beings simply do not have the capacity to see the future clearly and in all its dimensions; perfect forecasting of multiple factors and imponderables is humanely impossible. Decisions that are taken now are meant to work in the future and to yield results on the basis of what actually happens in the future. But, the business and political environments change fast and in certain sectors, such as technology, changes are on-going. What held yesterday does not necessarily hold today and probably not tomorrow. Extrapolating from past data is no longer helpful in some industries because the future is unlikely to look the same as the past. Whilst Wall Street forecasted shrinkage of 0.5% for the US economy for the first three months of 2014 the final shrinkage of the economy was double that forecasted (annual rate of 1%). Strikingly, the projections were made only a few months before the actual figures were released. Needless to say those businesses that relied on such wrong forecasts suffered at the end.

Sometimes decisions fail because of human inability to differentiate small from big, important from unimportant and good from bad. Governments and businesses often take decisions that in the fullness of time prove to be totally hopeless and irrational. Take the decision of Cyprus to continue financing the government-owned Cyprus Airways (national airline) in the full knowledge that the company was a white elephant and in need of continuous subsidization (often outside EU rules!) The need to close the company down was obvious even to the uninitiated. Everyone involved in the Cyprus Airways saga new that shut-

down was the best option as subsidization was never ending. What transpired is perfect proof of decision-making that was guided by vested interests and interferences in the proper and rational evaluation of options. With party interests in mind one of the actors in the saga took the position that the company should not be sold because, "it would end up in the hands of capitalists" (*sic*). With falling union dues in mind another player put this position in camera, "if the company is sold to private interests redundancies would follow, union membership would reduce and union dues will suffer." That was the main reason behind the union's opposition to the sale of a failing airline that needed continuous propping up by the taxpayer. With their comfort zone in mind some pilots opposed the sale with vehemence. They were worried that they would have to look for work abroad just as many other of their colleagues did when the company began to falter. Those pilots that were party to the Cyprus Airways saga argued that, "the government is trying to barter away state property for the benefit of private interests and party hacks!" *(sic.)* Most political parties in this chronicle were prevaricating and hoping that someone else would take the right decision and the political cost of shutting down or selling an all-but bankrupt company. As the saga unfolded the tax-payer fell victim to propaganda and kept pouring money down a dark hole in the vain hope that the dead horse would be brought to life!

The limitations of human memory and most critically the difficulties in human conceptualization make optimality impossible to achieve. Proof of this are some of the most horrendous decisions that were taken, ostensibly by people with high intelligence quotient that supposedly acted rationally. In his memoires and on the chapter covering the Vietnam War former cerebral defense secretary of the United States of America Robert McNamara[24] noted, "….we were wrong, terribly wrong. We owe it to future generations to explain why." MacNamara goes on to lament the fact that in the decision-making process some of the best brains of America failed to understand what ought to have been done and plunged the country into a terrible, humiliating and debilitating war that cost hundreds of thousands of lives on both sides.

Herbert Simon's "*bounded rationality*" and acceptable-goal attainment are proven almost daily by decisions on the economy and business and particularly by decisions on public policy. Political correctness, the need for reelection and political gain forces politicians to take decisions that often pile devastating

consequences on people. Economic decisions are more often than not contaminated by electoral politics, the need for political gain and the need to balance the varied competing requirements (often greed-oriented) of the manifold publics that politicians serve. In 1963 Cyert and March[25] talked about *aspiration levels* in the decision-making process. They basically say that governments, institutions and people have differing aspiration levels that basically determine the level of what they require to be achieved. High aspirations call for more and low aspirations call for less. The system is then programmed to stop once the aspired achievement levels are met. Thus, once aspirations are met the need to go higher (or to optimize) ceases to exist. So, the decision-makers psychology, needs and makeup are critical in this regard.

Interaction

Interaction between parts is another critical aspect of a well-functioning system and closely relates (in fact it is a prerequisite) to coordination and synergy. Systems need to interact internally and with the outside environment if they are to remain healthy. Closed systems limit interactions internally and as such ultimately suffer from ever increased *entropy forces* considering that their inability to communicate limits their ability of change when this becomes necessary. Systems need to receive feedback to enable them take action in the right direction and at the opportune time. Starve the organization from information and you kill its power to change and adapt. Economies and businesses need innovation to survive. Innovation, however, needs information and ideation which presuppose interaction with the environment. Closed economic systems, that often strive to protect vested interests, realise sooner or later that remaining closed leads to the system's ultimate death. Exchange of information and adaptation need to be ongoing and unrelenting if the system is to survive.

Stilted, inflexible and bureaucratic systems are programmed to die. Interactions affect and are affected by the system and its component parts. For many years before accession to the EU sections of the Cyprus economy were closed to outside competition through protective tariffs and dues. This was done in the mistaken belief that tariffs would protect Cypriot industry. This let to the withering away of the industrial base of Cyprus and ultimate death. With the opening up of the markets after Cyprus' accession to the EU many of these

protected organizations literally melted away as they were unable to compete. To (supposedly!) protect the locally-produced aluminium products the government of the day slapped on imported aluminium products a crippling import duty. One had to pay twice the price of Italian-made aluminium products for a much inferior local one. As expected, once import duties were abolished, the industry found itself in great trouble.

The same happened to, amongst others, the garment and shoe industries where customers were forced to buy expensive and often shoddy products to "protect" local industry. A characteristic example of the practices of those times is this: with union support a handful of hotel musicians managed to close the trade allowing the employment of local musicians only. This forced hotels to hire Cypriot musicians only from a very limited pool of oftentimes doubtful talent. The reader can imagine what happened as the many hotels in country vied for the services of a handful of local musicians; some with dubious musical backgrounds! With demand for musicians high the market saw an influx of unqualified and amateur "musicians" offering their cacophonic services to the hotel industry. As the hotels began to experience client complaints the practice was abandoned; but not before causing much damage to the hotel industry.

Disproportionality

Disproportionality (expression of non-linear properties) is another characteristic of complex systems. Change a part and you influence the system in a given way. Then change another part and you get a different influence on the system. Repeat the two above changes a year later and you end up with still different results to the ones you got a year back. From the human pathophysiology point of view, this phenomenon is of paramount importance, as any therapeutic intervention or bundle of interventions possesses a magnitude of effects (quantitatively and qualitatively) which may shift in time, rendering the intervention more or less effective or even detrimental to the patient depending on the circumstances and the time-frame of its deployment.[26]

An upgrade of 1% on the totality of factors in the system does not necessarily yield a 1% change in output. Upgrade the marketing budget by 1% and you conceivably increase sales by 4%. Repeat the exercise and you get some other result. Make the same change to the sales incentive budget and you get

something else. Make a marginal change in job content (to make the job more interesting and emotionally rewarding for the employee) and you get a significant improvement in morale, productivity and profitability of the firm. Repeat the change a year later and you get something else.

Repeated attempts were made to introduce improved performance management systems in the Cyprus civil service. All attempts failed because: a) political patronage protected employees from the consequences of poor performance, b) line managers failed to truly engage themselves in an exercise which they considered dangerously near the boundaries of their comfort zone, c) high unionization provided ample protection to low-performing staff and discouraged just treatment of high-performers who were brow-bitten by the union not to "rock the board." Similar changes in the performance management scheme were made in a Cypriot-owned private enterprise operating abroad with phenomenal results in terms of employee enhanced performance and company profitability. Organizational culture seemed to have made the difference between the two above cases. In the first of the two cases above the culture was (and still is) one of bureaucracy and indifference whereas in the other case the culture was one of vibrancy, creativity and healthy competition; most importantly reward was on merit.

Changes in one or more parts of the system could conceivably lead to unintended consequences with real outcome differing to the expected. The Hawthorn experiments[27] are a good proof of unintended consequences. Work performance improved as a result of a changed environment. In these experiments the fact that attention was paid to staff, in the process of carrying out observations for purposes of research, yielded higher employee interest in their job and employee short-term performance improved even if this outcome was not intended.

Deming[28] saw training and innovation as necessary tools for meeting the ever-changing environment in which economies and businesses find themselves all the time. *"Long-term commitment to new learning and new philosophy is required of any management that seeks transformation. The timid and the fainthearted, and the people that expect quick results, are doomed to disappointment."* Deming gave the business and economic literature some good and traditional guidelines on instituting management transformation. These guidelines include: consistent improvement of product and service quality, emphasis on good leadership that

can deal with change, emphasis on cost minimization, building long-term relationships with suppliers, improving quality and productivity, emphasis on on-the-job training, education and self-improvement, stability and prospects for staff, reduced inter-departmental barriers, removal of barriers that take away from the workmanship and pride of employees in their work, emphasis on quality rather than only output numbers and engaging everyone in the transformation process.

In the world of economy and business, equilibrium is represented by what we commonly call bench-marks or economic indicators. The markers of a stable economic system are many and varied. It is generally accepted that unless these markers stay within prescribed range the system is bound to become unstable. By analogy with physiology, economic homeostasis refers to the mechanisms that allow critical economic indicators to remain within specified ranges and bench-marks. There are no universally accepted markers of "economic health", but from experience we know more or less that an economy is considered healthy if it registers, for example, growth rates of above 4%, keeps unemployment in the region of 3%, inflation in the region of 1-3%, a positive or near-positive balance of trade, national debt of, say, 75% or lower, budget surplus or budget deficit of less than 1% of GDP, if it attracts serious investments, if can speed up renewal and innovation, if it has good educational and health systems, enough research and development, an annual productivity of, say, 4+%, a balanced tax system and so on. The above list is not exhaustive as many other factors such as military expenditure, income per person, quality of living and life expectancy have to be taken into account.

8. The Pitfalls of the Current Management of Economic Dysfunctions

System Break-down

System break-downs are not easy to reverse particularly if the affected system is complex in nature. Indicatively, the Japanese economy has been in recession for the past 15 years and all sophisticated attempts to revive the economy failed. The country's debt to GDP ratio now stands at roughly 200%. When the Japanese consumption tax increased slightly the country's growth rate immediately receded. The American economy went into recession in 2008 and

six years later is still fighting to regain lost ground. Five or more years into the "economic recovery process" and many of the countries of southern Europe continue to reel under the pressure of high unemployment, cash shortages, crippling private and corporate debt, inadequate investments and low business / bank system confidence.

Growth rates in the EU are now below 1% and countries such as Italy, Greece and France are stagnating and seem to be in quack mire with new investments nowhere to be seen[29]. *Culture* is often at the centre of economic and business systems and their workings. Countries that put much emphasis on social cohesion and social support (socialist governments!) operate in a culture that differs from that of countries with a strong private enterprise / capitalist / laissez faire sentiment (conservative governments!). Recession and the accompanying human suffering brought back the ever-present debate over the role of government and interventionist policies. The western world has to a large extent adopted the capitalist system and as such unwittingly introduced business cycles, recessions, unemployment and system failures that are typical of capitalism. On the positive side, these economies benefited from capitalism and managed to keep improving their per capital income for decades.

Attitudes, mind sets, political orientations and ethics play a vastly important role in the functioning, survival and efficiency of economic systems. The German sociologist and economist Max Weber approached this problem with great enthusiasm in his seminal work on sociology and economics under the title, *Die protestantische Ethik und der Geist des Kapitalismus*[30]. Weber put forward the view that the capitalistic system and its breakdowns started as Protestants, and more particularly Calvinists, succeeded in penetrating the minds of sufficient numbers of people influencing them to take on secular work, entrepreneurship, commerce and trade and more specifically to adopt the business of accumulating wealth and investment of surpluses, as part of their divine worldly "call" and a proof of commitment to His will. As the protestant ethic began to translate into action, capitalism began to grow bringing along wealth creation, recessions and unemployment.

There are philosophical arguments that support that economic failures are rooted in the failure of leaders (in politics, government, business, education, etc.) to behave in a just and equitable manner and according to the spirit God. The *Judeo-Christian ethic* is characteristic of the above thinking. The rules of

decent behavior lay the foundations that can create the preconditions for a healthy economic and business system. The adoption of this kind of mindset and behavior can act as barrier to system failure, recessions and unemployment. Speaking about America, James P. Eckman[31] summarized well what happens when an economic system departs from basic ethical principles.

He said,

> *Some business leaders have been motivated by greed and selfishness ... The ethical foundation of American culture that prevents business leaders from engaging in unethical activity is gone. I would strongly argue that as the ethical foundation of the American financial system has crumbled, the state has stepped in and rewritten the rules for financial and business dealings. The result is an economic and financial system overseen by impersonal bureaucrats, who first write and then seek to enforce literally volumes of rules and regulations. Those rules and regulations replace the simplicity of God's moral law ... The more we depart from God's moral law, the historic foundation of our civilization, the more onerous and complicated government regulation will become. The more this occurs, the more the American economy will no longer be able to compete, and its capacity to generate innovation and wealth will be gone.*

The above passage reminds one of Cyprus, Greece, Italy, Spain, etc. James Eckman is talking about ethical behaviour, and lack thereof, which to a large extend explains many of the ills of our economic system. Chicanery, deviousness, love for money, greed for material things and lack of scruples have catapulted economic failure to new heights and have laid the foundations for a repeat even if the recession is reversed for now. Disrespect towards ethical standards has been a major cause for the economic desolation we are now experiencing in southern Europe and elsewhere. Christian ethics have been to a large extent absent from the lives of many that hold positions of leadership in politics, business, education, entertainment and in almost all fields of endeavour. The concept of self-imposed boundaries on recalcitrant behaviour is all but missing in many areas of business. Deviant and unethical behaviour is sometimes rewarded with bonuses for short-term fictitious business gains (see the banking sector!). Instant gratification through borrowing and rising debt has been the hallmark of much of our behaviour. Meanwhile the state is in the

business of collecting taxes without much accountability as to their proper use. The concept of value for money (taxes collected vs benefits offered to the taxpayer) for many governments in southern Europe is all but unknown.

The Pitfalls of Management from the Pathophysiology point of View

One size fits all appears to be the current default "treatment" recommended by the Troika for its patients (failing economies): Aliquots of cash in the form of loans, crippling austerity measures in the form of higher taxes and lower social benefits. In the case of Cyprus, the weaker of the troubled economies, the Troika also forced on the banks depositors a deep hair-cut to help with their capitalization which to this day is dangerously inadequate despite repeated injection of new capital. Thus the Troika dispenses its "traditional" bitter elixir (its "panacea" medical potion) for all ailments and without regard to the economic patient's make-up: geographic and population size, culture, religious orientation, history, societal circumstances etc. Notwithstanding how primal and insensitive the approach looks, this has started to dominate increasingly the lives of those living in South Europe. No care is paid in re-enforcing "buffer systems" which would maintain critical social parameters within acceptable (viable) limits. Interventions are frequently not timed properly or targeted enough, and patient complications are not monitored in a safe and meaningful way; to mention just few of the counter-physiological outcomes of treating human economic suffering. Worryingly the team of medical practitioners can cut off the potion (loan tranche) if they judge that the patient is not towing the line. The Troika sometimes (not often) behaves like the proverbial medical practitioner that threatens the patient with abandonment the moment the patient has no recourse to other medical assistance. Or, like the proverbial medical practitioner that abandons the patient in the middle of the treatment because of worries that the patient may be unable to pay the mounting bills. Troika wields a lot of power and just as a powerful medical insurance provider can cut off all access to hospitals, medical treatment and the like to patients in economic trouble the Troika can cut off a country from international financing. The Troika asks for its money to be paid back as agreed with little regard to the societal needs of the debtor country. It has the power to cut off a wayward debtor from the money markets and to even bankrupt the country literally overnight. If the Troika experiment works (because Cyprus is a guinea pig in an experiment with depositor hair-cuts in conjunction with austerity measures) then all will be well.

Otherwise, the suffering of people will be prolonged; those that created the problems in the first place and those that dispensed wrong treatment will have a lot to answer for as regards widespread unemployment, break-down of societal structures, political crises, etc.

9. Systems Management Evolution: Time for a New "Therapeutic" Paradigm for Critically ill Economies?

Economic systems evolve all the time but also use precedent to provide predictability. As economies expand and as the imponderables of competition come into play the system itself ought to evolve to accommodate the many changes that face it. Perhaps the biggest evolution in the Cyprus economic system has been that of moving away from an agrarian economy (first stage) that was in place for thousands of years to a quasi-sophisticated one (second stage) over a short period of 40-50 years. This evolution was soon followed by economic collapse as the system could not cope with the required sophistication that the second stage of development called for. The agrarian Cyprus economy was turned into a service economy at dizzying pace (mainly tourist, shipping and financial services including all the financial peripherals). The evolution of the banking industry was swift, haphazard and consequently risky.

Cyprus was living under the illusion that it was operating a sophisticated center of financial services the moment this was not recognized as such by the major financial players of the world: London, Frankfurt, and Zurich. The banking system depended heavily on high-interest-paying deposits that primarily came from three sources: local depositors, businessmen from the former USSR and to a lesser extend third world depositors. Cyprus failed to understand that sophisticated banking systems draw deposits and investments from a wide spectrum of countries that recognize the financial institutions of the country as developed, sophisticated and (most importantly) serious. To the trained eye the collapse of the Cyprus financial industry was a matter of time considering that the system was working without a strong rudder. For example, whilst other countries in the EU offered depositors interest rates of say 1.5 - 2.5% Cyprus paid double this rate making the country an attractive proposition for short-term investors and speculators that flooded the island with money. These deposits, however, had to be loaned out to bring revenue to the banks. This in

turn let to the accumulation of risky loans to unworthy borrowers. This, coupled with corruption from varied sectors created the situation that Cyprus now finds itself in. Cyprus' financial system was in many ways working by its own rules and outside what is known as the conventional system. One word can best characterize the financial industry of Cyprus: *excess*: a) the industry was obese and probably suffering from diabetes that raised dangerously the risk of leg amputation (financial sector balance sheet of 7-8 times GDP that finally ended up in amputated deposits,) b) over-sized deposits that clogged the banking sector's arteries and forced it to take measures, which only a witchdoctor would have recommended, to unclog the organism, c) over-sized and dangerously-risky loans that created the toxic non performing loans (NPLs) that crippled the sector just as high blood pressure does to a patient.

It is time for profound changes in Cyprus' economy; but most importantly, in Cyprus' society and political system. Is the society itself ready for the unavoidable "painful" surgical operation that supposedly will revive the patient and restore him to health? Are there mature methodologies to be used to reconstruct reality and monitor its change and the side effects? Depriving a society from luxury is manageable. Stripping a nation from its self-respect, the children from descent education, the youth from hope and prospect, the elderly from meaningful support and the poor from medical care does not auger well for the future. Is the Memorandum with the Troika moving Cyprus in the right direction? Time will tell; even though for the moment the health of the economy and its prospects for recovery do not look at all well.

10. Concluding Remarks

Multiple lessons from pathophysiology and history teach us that, dysfunctional human systems in general and failing economies in particular, should be considered and dealt with in respect to their complexity, their uniqueness and most importantly failure should be treated holistically. Entropic forces (which tend to disrupt and cause chaos) and buffers - dynamic homeostasis mechanisms (which maintain balance) should be identified and their particular characteristics analyzed. Interventions should be planned accordingly with a view to annihilating the former and reinforcing the latter. Each sick person is sick in his own way just as each failing economy is failing in its own particular way. Thus, treatment would need to vary accordingly.

Human nature (and its great malfeasance: greed and fear), the strengths that are inherent in a country's human resources and the quality of management that is available are cardinal factors for the prevention and treatment of a diseased economy that needs to be restored to health. Leading by example and re-discovering lost ethical standards and values are of paramount importance to the healing process of society's economic and other ailments. Like biological systems, failed economic systems need methods of control (hence sensors and overlapping afferent / efferent mechanisms and pathways) otherwise activities and treatment effects / side-effects go unchecked and the system ultimately buckles under pressure. Coordination, the legal structure, synergy, optimality (satisfisation!), forecasting capabilities, recognition of disproportionality and proper interaction are crucial parts of this monitoring and change mechanisms; these are the "sensors" that control and protect corporate governance from slipping back into suspect practices.

It is astounding that the mainstay of current "treatment" of failing economies appears to be aliquots of cash (loans) and crippling austerity measures (supposedly to re-start the economy but in essence driving it to the ground). Worst still these are presented as panacea for all ailments for all societies irrespective of size, culture, religious background, history, societal circumstances etc.

Economic systems evolve all the time (just as the Western world's Calvinistic capitalism is evolving too). Thus, therapeutic strategies and interventions for failing economies should also evolve adapting accordingly but always remaining helpful rather than harmful ("Ὠφελεῖν ἢ μὴ βλάπτειν").[32] In this respect, the interests of the lenders should harmonise with those of the borrowers always guided by the moral criterion of philanthropy and the need to help. Humanitarianism and public-spiritedness (all ancient Greek traits) should not be lost in our drive to "save" the economy. Financial tools are essential for economic recovery; But no economy can be sustained in the long-run without strong ethical standards that should be built into the economic system to help bring morality to decision-making. With the help of the twin tools of financial rule and ethical behaviour society can overcome its economic failures whilst restoring the individuality and self-respect of the citizens and maintaining a country's cultural identity. We urgently need a holistic approach that will encompass the tangible and the intangible, the economic and the social, the financial as well as the spiritual fundamentals.

(Note: "he" = "she" in this paper).

NOTES

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