

Chapter II

Civilization Life Cycle: Introduction

INTRODUCTION

The purpose of this study is to define the role of civilization's critical powers in the civilization life cycle. The role of information-communication processes is particularly crucial in this quest. The terms "rise" and "fall" of civilization reflect this chronic issue in comparative civilization studies.

Spengler, in his book *The Decline of the West* (1918), argued that all cultures are subject to the same cycle of growth and decay in accordance with predetermined "historical destiny."

Toynbee in his *Study of History* (1934), compared civilizations to organisms and perceived their existence in a life cycle of four stages: genesis, growth, breakdown, and disintegration. A mechanism of "challenge-response" facing civilizations influences their abilities at self-determination and self-direction. However, according to him, all civilizations that grow eventually reach a peak, from which they begin to decline. It seems that Toynbee's civilization life cycle is too short, since his "breakdown of growth" phase is in fact a point in time and the "disintegration" phase is too pessimistic in its title, only perceiving the "universal state," often under a form of "empire," as an *ancient regime* which only wants to maintain the status quo and is doomed to fail.

But history shows that some civilizations may last a long time in relatively good shape without being in imminent danger of disintegration.

Sorokin argued in *Social and Cultural Dynamics* (1937) that three cultural mentalities, ideational (spiritual needs and goals), sensate ("wine, women, and song"), and idealistic (a balance of needs and ends) are the central organizing principles of a civilization's life cycle, and that they succeed each other always in the same order according to super-rhythms of history. According to Sorokin, Western civilization has for the last 500 years been in the sensate stage, reaching now its limit, and will soon pass to the next idealistic stage (which, according to this author, could be the universal civilization).

A discussion about a civilization's life cycle among contemporary researchers is still very interesting. Quigley (1961), in *The Evolution of Civilizations*, offered seven stages of a civilization's change: mixture, gestation, expansion, age of conflict, universal empire, decay, and invasion. Each stage is divided by Quigley into further sub-stages and characterization is provided for the levels of intellectual life, religious outlook, social grouping, economic control, economic organization, political, and military. Quigley perceived his famous book as a study not of history but of the analytical tools assisting the understanding

of history. He argued that many historic books have been written about the same subject over and over without touching main issues, because the right historic tools were not applied.

Melko, in his book *The Nature of Civilizations* (1969), provides a model of a civilization life cycle's stages including crystallization (C), transition (T), complete disintegration (D), and ossification (freezing at a crystallized stage) (O). He also introduced a concept of civilization phases, including primitive (P), feudal (F), state (S), and imperial (I) culture. Based on these categorizations, Melko develops different "trees" of a civilization's paths, similar to formulas applied in organic chemistry. He emphasizes the strong role of a transition stage, which can lead to different stages, not necessarily always to the same one.

Sanderson (1995) writes that "civilizations, like symphonies, retain characteristic patterns notwithstanding fluxes of formation, disintegration, and reconstitution." This statement is approved by a discussion of 56 researchers, recorded in the book *The Boundaries of Civilizations in Space and Time* (Melko & Scott, 1987). Their main discussion was organized around the origins and terminations of civilization in 32 short papers. The discussants agreed that civilizations rise and fall but they were lost in defining generic stages and main factors causing these stages.

Snyder (1999) proposes the most striking solution how to categorize the historic cycle of culture-systems (civilizations). He distinguishes three eras: First era (3,000 B.C.-1,600 B.C.), Transition, Second era (1,200 B.C.-200 A.D.), and Transition and Third era (600 A.D.-2000 A.D.). As a parallel time division, he recognizes seven historic cycles: Proto-Formative cycle, Formative cycle, Classical cycle, Renewal cycle, Secularization cycle, Frontier cycle and Transitional cycle, each lasting 300-400 years. He divided each cycle into four distinct stages of 75 to 100 years in length: reform stage, post-revolutionary stage, consolidation stage, and disintegration stage. This correlates with the traditional Chinese theory of

the dynastic cycle, or the rise and fall of dynasties. This framework, according to Snyder, is based on his empirical study of Western European and old world culture-systems. He perceives the disintegration stage as not a negative change but one necessary for the next formative stage. He defines a culture-system or a civilization as existing if it has at least three core cycles: Classical, Renewal, and Secularization. He analyzes the culture short cycle (300-400 years) within the world long cycles, such as the Classical cycle, Renewal cycle, Secularization cycle, and the Next cycle. This is a very important association, but is limited by the author to the political sub-system (dimension) only.

Blaha (2002) quantifies Toynbee's cycle (growth, breakdown, disintegration, and social challenge) in an elegant mathematical model¹ with three main variables: the societal level (S), the rate of change (C), the acceleration of the civilization (its growth rate socially) (A), force (F), the "mass" of the civilization (m), and time (T). However, there is no way to measure these variables excepting (T). The force is measured "using simple everyday thinking" (Blaha, 2002, p. 47). The social level in his model reflects the overall feelings of the civilization's inhabitants, not necessarily their population size, energy use, material resources, production of goods, technological advancement, and so forth. Stephen Blaha, as a noted contributor to the elementary particle theory of physics, perceives history as a continuum composed of wave oscillations with their peaks and valleys. It is interesting to note that he found that the interval of time between the breakdown of a civilization (the point at which growth stops) and the beginning of the universal state (at the end of the time of troubles) is approximately $T=400$ years. A similar interval time has been found by Snyder (1999) and this author, who calls it a cycle of human curiosity (Chapter VIII). The model assumes that the interval time between a civilization's consecutive waves' peaks is approximately $T=267$ years and Blaha calls this a general

feature of civilizations. He assumes that it takes four generations to go from the top to the bottom of a cycle (a rout) and another four generations to reach the top again (a rally). If one generation is 33.375 years, then the eight generations could total to 267 years. Another interesting feature of the model is the assumption of the start-up phase of civilization, which takes 133.3 years before the breakdown of the civilization. He compares his theory with various civilizations' main events and in many cases he is right but in others he is wrong, according to Mark Hall (2003).

Every model in science simplifies reality, and particularly such a complex reality as the history of civilizations. Even if his model does not identify the reality in 1:1 isomorphic relationship, the model introduces us to a new way of analyzing and synthesizing civilization. The Blaha model is designed for long-lasting examples, which is the case of the majority of old civilizations. His model is also an excellent example of application of quantitative method to social science, which leads to better understanding of reality.

What about short-lived civilizations such as the Soviet civilization and Nazi civilization, which lasted less than a century? This problem can be solved by defining what constitutes a civilization. If it is an entity guided by a special values set, then those mentioned units are civilizations in the empire phase of Toynbee's disintegration phase.

So, the quest for the answers why civilizations rise and fall, and in what more general if not generic phases and stages they do it, is still valid.

CIVILIZATION CONTINUITY AND MEMORY

The developmental process of civilizations is based on the evolution of one civilization into another (Figure 2-1). For example, Western civilization has its eventual (though not immediate) roots in the Mesopotamian civilization beginning

4,000 B.C. Since then, the latter has transformed into six civilizations and has now reached its 7th level of development. In this sense, one can state that Western civilization is the 7th generation of the Mesopotamian civilization. This empirical evolutionary process of autonomous civilizations is shown in Figure 2-1.

This process indicates that civilizations never die, because many (but not necessarily all) of their contributions are passed on to succeeding civilizations. For example, the Classical civilization is alive in spirit and in worldview today.

There are five exceptions to this rule. We call these "arrested civilizations," but they have transformed themselves into another mutation or generation. Every civilization has its own memory and roots that can be considered as its "DNA." For example the Western civilization's "DNA" recorded the experience of its previous six civilizations.

This means that the civilization process has additive character: solutions of previous civilizations, particularly in the area of infrastructures, are cultivated by the next succeeding civilization. Of course, many old solutions may be rejected through the process of progress.

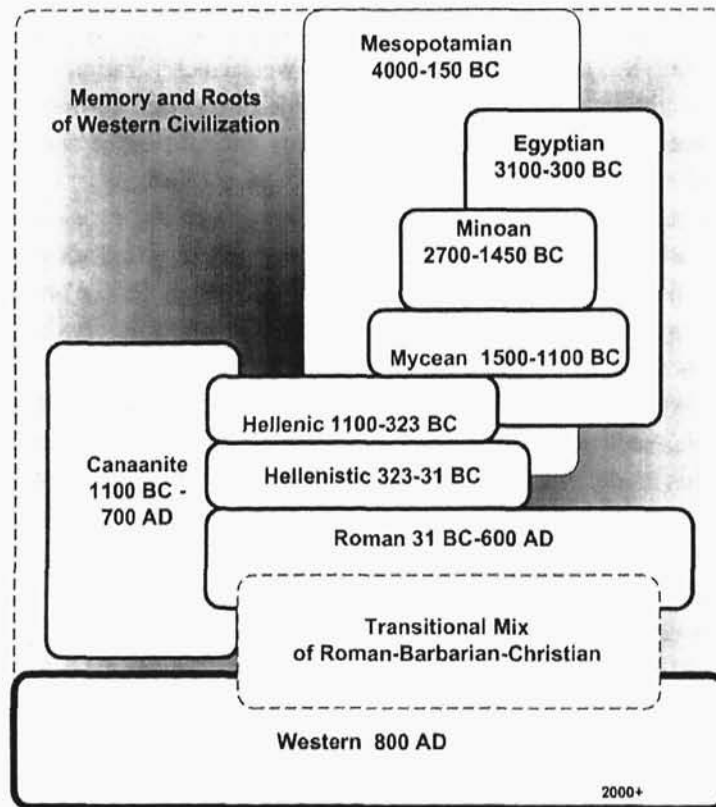
UNIVERSAL LAWS OF A CIVILIZATION

Based on a model of empirical development of civilization (Figure 1-2) and discussions on this subject, one can define the following universal laws of a civilization².

The Civilization Challenge-Response Law
(The Toynbee Law defined):

The Life Cycle of Civilizations is steered by the challenge-response capability of the human entity.

Figure 2-1. Memory and empiric process of the Western civilization development



Discussion: A survey of the great myths in which the wisdom of mankind is enshrined suggests the possibility that man achieves civilization, not as a result of superior biological endowment or geographical environment, but as a response to a challenge in a situation of special difficulty which rouses him to make unprecedented efforts. The Egyptian, Chinese, Mayan, Minoan, and Indic civilizations originated from the challenge of barbaric countries. The challenges of blows indicate in the examples of the Hellenic and Western civilizations that a sudden crushing defeat motivates defeated parties to respond by setting their house in order and preparing to make a victorious response. Certain classes and races have suffered for centuries from various forms of oppression imposed upon them by other classes or races

that had mastery over them. The hordes of slaves imported to Italy from the Eastern Mediterranean during the last centuries B.C. were a "freedmen" class which proved alarmingly powerful. From this slave world came Christianity.

This law reflects natural biological evolution and the human ability to survive and develop.

The Civilization Transformation Law (The Koneczny-Targowski Law):

Transformation of a civilization takes place when the civilization in decline cannot respond to challenges and an old World Values View set is transforming into another set. This transformation is stimulated either by force of a conqueror

or by the dissidents of the old guiding system in a situation when almost 100% of the silent majority is passive and the old guiding system has lost coordination power.

Discussion: The Hellenistic civilization replaced the Hellenic civilization (which rose in 750 B.C.) after the death of Alexander the Great in 323 B.C. A new WVVS (World View Values Set, discussed in respect to Figure 1-10, where the word “set” is not to be understood mathematically) was emerging from the teachings of Aristotle (384-322 B.C.), Epicurus of Samos (342-270 B.C.), and Zeno of Citium (335-263 B.C.). “Epicureanism” promoted ways of maximizing pleasure by acting in moderation, while Zeno’s “stoicism” condemned emotion and called for a stern life of devotion to virtue and duty. Hipparchus (190-120 B.C.) introduced the scientific approach to astronomy. The Roman Empire rounded out its classical borders in 31-27 B.C. by conquering the last bastion of Alexander the Great’s Empire, Egypt, annexing the Hellenistic civilization into the Roman civilization with a new WVVS. At its beginning the WVVS was based on the *Pax Romana*, law, civil service (perceived as the legacy of the whole period of Roman Empire), and the rise of Latin literature. The Hellenic-Hellenistic values of truth, goodness, and beauty had been modified by the Roman values of rightness, courage, strength, comfort, pleasure, and entertainment. Socrates’ (470-399 B.C.) quest for the truth had been replaced by mystic philosophies (“irrational” only in our times. In the terms of those times, they were considered highly rational, even such irrationalities as astrology and emperor-worship played the great role in then). After 313, the Roman civilization began to accept Christianity; after Constantine’s conversion to Christianity (337 B.C.), a new WVVS emerged. Such values as faith, hope, and love were promoted and became a new WVVS of the new Western civilization, established (about 800 B.C.) by the powerful Charlemagne, head of the Frankish Empire. Since then, a new WVVS has

been formulated, adding such values as wealth, justice, happiness, tolerance, democracy, civil rights, and health. Western civilization has been challenged in the 20th century by the Soviet and Nazi civilizations that promoted different WVVS, based among other values respectively upon collectivism and classless society or on racism. These civilizations have been eliminated by the Western civilization military and moral fight for the victory of Western WVVS.

This law reflects the power of information-communication processes, which define and communicate the world values view set.

The Civilization Knowledge Law (The Targowski Law).

A new World Values View Set emerges as a consequence of developed and acquired knowledge based on the experience of challenge-response practice. The richer the record of unpredictable challenges and successful responses, the greater the awareness generated and the higher the probability of civilization development.

Discussion: Western civilization developed strong empirical sciences enlightening their human entities in the second part of the 2nd millennium. The superior Western knowledge of technology and management helped the West to defeat the Nazi and Soviet civilizations and flourish in the second part of the 20th century. Due to its strong knowledge system, Western civilization achieved an effective awareness that helps in self-repairing its own condition.

This law reflects the power of information-communication processes, which define and communicate knowledge.

The Civilization World-System Law (The Eckhard Law).

Civilizations, empires, and wars interact in such a manner as promotes one another’s growth

up to a point where surplus wealth is diminished and they cannot any longer be afforded. Their loss is another civilization's and empire's gain. An empire plays the role of a world-system, which through wars expands its territory and civilization.

Discussion: This law reflects Alexander's conquest of the Persian Empire. The first 2,500 years of civilization showed no dramatic increases in population or territory, or in such signs of civilization as statesmanship, philosophy, religion, literature, fine arts, scholarship, science, music, business, and so forth. The great leap forward in all these areas occurred about 600 B.C., when the Medes and the Persians developed civilization, empire, and war into arts based on hierarchical delegation of power such as the world had not known before. The next great leap came with the Muslims in the 7th century A.D., another with the Mongols in the 13th century, and finally with the Europeans in the 16th century. In the 20th century, 95% of the earth's surface belonged to

empires³, which were spreading their civilizations (Eckhard, 1995).

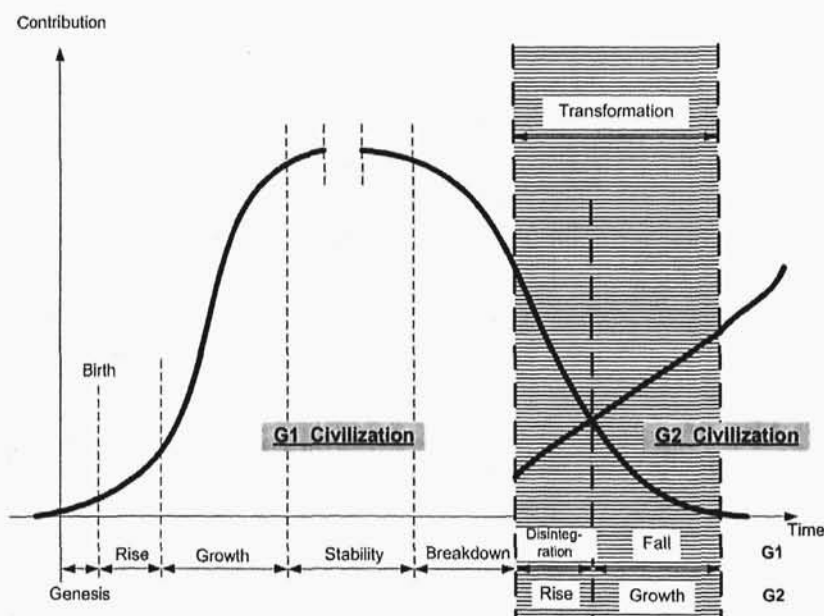
The question is posed: can we have civilization without empires and wars, which develop civilization? Can the Internet be treated as an electronic empire, which promotes civilization?

GENERAL MODEL OF THE CIVILIZATION LIFE CYCLE

The transformational process of civilizations is continuous from the point of view of the world civilization. However, from the individual civilization's point of view, there is a question of what causes a civilization to grow, mature, decline, and transform into the next mutation or to disappear. The answer to this question lies in the general model of civilization life cycle, shown in Figure 2-2.

Although a civilization is not an organism, which once born must die, it rises, stabilizes, and

Figure 2-2. The general model of an autonomous civilization life-cycle



eventually dies too. Civilization is an entity and as well as a process that we observe empirically throughout history. This processes the civilization life cycle, which may take centuries or millennia to complete, or may never be concluded. The Hindu and Chinese civilizations have lasted 2,600 to 3,500 years, respectively and may function another three to five millennia or forever.

The civilization life cycle general model in Figure 2-2 indicates that a civilization may develop through the following phases:

Phase 0: The Birth of a Civilization is triggered by a creative individual, such as Caesar, Jesus Christ, the Buddha, Muhammad, Henry VIII of England, Lenin or Hitler, who have been elevated to a leadership position either by their inner mission or by external circumstances in response to such ongoing kinds of challenges as physical (from nature), social (cultural, political, economic), religious, technological, and so forth. Such a creative leader provides a consistent world view values set (WVVS) and motivates his followers to apply it. In this phase, civilization coordination power (P_k) rises and is concentrated in the hands of a few new leaders who are integrated, committed, and capable of promoting a new WVVS. In order to do so they must be knowledgeable and have idle power (P_{id}) providing free time for learning. This phase is driven mostly by information-communication processes and the Civilization Knowledge Law, the First World Civilization Grand Law—the right of man to freedom and reason—and the Third World Civilization Grand Law—the law of conscious historical evolution.

Phase 1: The Rise of a Civilization is promoted by a group of pioneers, followers of the creative leaders. For example, among these is the apostle Paul, who won converts to the new religion of Christianity, or Stalin, who played the same role in the proliferation of communism. At this phase, a civilization's coordination power (P_k) triggers the rise of the civilization's working power (P_w).

As far as Western civilization is concerned, its working power at this phase (around A.D. 800) can be measured by the number of traders and transportation workers employed (including the commercial fleet, e.g., The Netherlands and Venice's activities in the second Millennium). This phase is driven by information-communication processes, the Civilization Knowledge Law (P_{id}) in respect to WVVS dissemination, and The Challenge-Response Law in respect to the generation of working power and the Third World Civilization Grand Law—the law of conscious historical evolution (P_{id}).

Phase 2: The Growth of a Civilization is supported by a committed group of members of the new guiding system who generate coordination power and secured civilization power within the boundaries of a given environment. They expand their own microcosms of WVVS into a macrocosm of human entities, creating a nation. This occurred from the 15th to the 20th centuries for Western civilization (the English Revolution 1642-1649, the French Revolution 1773-1789 and the American Revolution 1776-1787). It also happened during the years 1922-1956 for the Soviet civilization and between 1934 and 1942 for the Nazi civilization. At this phase, the critical powers are coordination power (P_k), measured by the number of clerks employed in the state apparatus, and working power (P_w) measured by economic measurements.

This phase is driven by information-communication processes exemplified by the Ability of Man to Develop Law, the right of man to freedom and reason, and the Civilization Knowledge Law in respect to developing human opportunities, which implies free time for learning (P_{id}).

Phase 3: The Stability of a Civilization is experienced by the majority of the human entity. It may have its ups and downs, but on average steadiness characterizes this period. This is a time of *Pax Romana* from 31 B.C. to A.D. 235

in the Roman civilization or the years 1956-1976 of the Soviet civilization. During this phase, the critical factor is a co-efficient of power supply (r), which identifies the relation of working power (P_w) to secure power ($P_s = P_w + P_{id}$), $r = P_w/P_s$. If $r = 0$, taking in resources from the environment does not require any work (a case of Islamic civilization and slave-driven Western civilization, where work existed but was facilitated by slaves, contemporary "robots"). On the other hand, if r approximates 1, this means that the taking of energy by a civilization requires vast work and secure power approximates to infinity. This means that a civilization does not have idle power (P_{id}), regardless of how much secure power (P_s) it is taking from the environment. This is the case in African civilization and perhaps in Hindu civilization at the beginning of the 21st century. To calculate r , one must measure secure power (P_s) by calculating a sum of idle power (P_{id}) and working power (P_w), where the former can be measured by the number of workers per capita employed in the entertainment industry and working power can be measured by the number of employed per capita in the civilization's economy. The working power can be measured as well as by GNP or GDP per capita and idle power can be measured in monetary productivity of workers employed in the entertainment industry.

This phase is driven by information-communication processes, the ability of man to development (P_{id}), the civilization knowledge law in respect to developing secure power via new tools and media (P_s), (P_{id}), and the world-system law in respect to the generation of idle power for the elites, who can better disseminate civilization into new territories and the generation of higher productivity of working power (P_w). The stability of civilization is driven by the historical right of a country's success grand law which speaks about the harmony of a country's all major areas of existence, which requires a good coordination power (P_k). Of course, the civilization's stability is achieved if the right of man to freedom and

reason is applied (P_w) and working power is good and productive. To keep a civilization at this phase long, the Conscious Historical Evolution Grand Law must be intact (P_{id}). This case reminds the Cold War, when the both sides were developing strong awareness about their causes.

Another measuring option can be based on a civilization's index (Chapter III), which if between 0.5 and 0.75, means that a given civilization is able to produce a surplus of wealth, supporting its smooth existence.

Phase 4: The Breakdown of a Civilization begins when the leaders are losing self-determination and the majority of the population is isolated from the destructive, corrupted guiding system and drilled into passivity. These are the years 235-284 for the Roman Empire or the years 1968-1976 for the Soviet civilization, particularly in its satellites Czechoslovakia (*Prague Spring*, 1968) and Poland (KOR, 1976, see below). To survive, a civilization must produce total power ($P_t = P_s + P_k$) no lower than secure power ($P_t \geq P_s$). However, a civilization may apply its coordination power (P_k) to move to a new territory ("globalism," "europeism") through so-called "clashes of civilization." In reality, some kinds of civilizations, mostly based on dictatorships, may fail to spot their opportunities or be unsuccessful in implementing them. This happened to the Brezhnev Doctrine, when the USSR tried to defend its empire in the 1960s and 1970s and eventually failed in 1991 (triggered by the rise of the Polish Solidarity movement and the fall of communistic regime in Poland in 1989). In summary, at this phase, a civilization's total power is lower than secure power. The calculation is based on measurements of all mentioned powers (already defined in possible measurement terms) at this time. In fact, all civilization laws are applied at this phase. For example, the ability of man to development (P_{id}) implies that citizens would like to get out from under the old regime and be able to develop new opportunities (a cause

of the Soviet Empire's fall). The right of man to freedom and reason supports this case, as well as remaining laws, which influence performance of total power, secure power, coordination power, and so forth (Table 2-1).

Another measuring option can be based on a civilization's index (Chapter III), which if close to 1, means that a given civilization is saturated and either will expand externally or will decline, since it is not able to produce a surplus of wealth supporting its smooth existence. At this phase, the, in Toynbee's term, "internal proletariat," shows discontent and puts a civilization in the "time of troubles."

Phase 5: The Disintegration of a Civilization takes place when masses become estranged from their leaders, who then try to cling to their position by using force as a substitute for their loss of an effective guiding system. The human entity disintegrates into five segments: a dominant minority, silent majority, outspoken dissidents, external supporters, and disconnected souls. In the Soviet civilization's Poland, this process began in 1976 when outspoken dissidents organized the official Committee for Workers' Defense (KOR—*Komitet Obrony Robotnikow*) against the dominant minority—the Communist Party apparatus. Later, in 1980, KOR facilitated the birth of Solidarity (an independent labor union), which gained supporters among the Polish emigrant community and several foreign labor unions. The rulers' response to these challenges was the introduction of the Martial State in 1981. The fifth segment was the underground literature, theater, and press that initiated an intellectual current toward a new WVVS.

To measure performance of a civilization at this phase, one must take into account coordination power (P_k), which is not able by itself to rule a civilization. In the Soviet civilization, it happened when in Poland the readership of the underground political press exceeded the readership of the official press.

This phase is driven by information-communication processes, the Civilization Transformation Law, the Civilization Knowledge Law with respect to a definition and dissemination of a new WVVS, and the World-System Law with respect to the shift of paradigm (e.g., from "communism" to "capitalism"). In fact all civilization laws are applied, causing negative performance of all types of civilization powers. At this phase, in terms of Toynbee's terminology the "external proletariat" either shows support for the "internal proletariat" or takes action (either military or ideological) against a given civilization in the time of troubles. For example, this is the case of the American (Western civilization) military intervention in Afghanistan and Iraq.

Phase 6: The Fall of a Civilization takes place when a new WVVS officially replaces the old one and a new guiding system is put in to place. The old regime fights for its survival, sometimes even gains some recognition (winning parliamentary victories between 1993 and 1995 in the post-communist countries), but its plight is widely recognized. This phase took place in Poland in 1989 when the conference at the round table between the communistic rulers and the opposition transferred the power systems into the hands of Solidarity representatives. The fall of the entire Soviet civilization took place in 1991 when Boris Yeltsin replaced Mikhail Gorbachev and the universal state of the USSR fell apart⁴. The old WVVS has been and is still replaced by a new WVVS.

It is difficult to measure a civilization's performance at this phase. One must instead to evaluate the shift of civilization paradigm in the scope of WVVS.

This phase is driven mostly by information-communication processes, the Civilization Transformation Law, the Civilization Knowledge Law with respect to WVVS dissemination, and the World-System Law with respect to the shift

of paradigm (e.g., from “communism” to “capitalism”).

The most dramatic and interesting part of the civilization life cycle is *the Super Phase of Transformation* from an old to a new generation of a civilization. This phase is dark-shadowed in Figure 2-2 and indicates the co-existence of four sub-phases: G1 (disintegration) versus G2 (rise) and G1 (fall) versus G2 (growth). In Western civilization this phase took place between the 5th and 15th centuries, when the Roman civilization was disintegrating and the Western civilization was emerging⁵. In the Soviet civilization, the transitional phase, beginning in the 1980s, is still taking place.

This phase is driven mostly by information-communication processes, the Civilization Transformation Law, the Civilization Knowledge Law with respect to WVVS replacement, and the World-System Law with respect to the shift of

paradigm (e.g., from “communism” to “capitalism”).

To measure a civilization’s performance in all its life cycle’s phases can be difficult due to a lack of appropriate data. Therefore, some substitutions of ideal data can be accepted if they are reasonable. This approach is offered in Chapter III, when the civilization index is computed.

The quantification of comparisons among different civilizations can be difficult, because each kind of civilization has a different internal logic of functioning. For example, in civilizations based on authoritarian/dictatorial/totalitarian rule, coordination power consumes much more of the available resources than in civilizations based on democracy. Hence, different levels of coordination power may trigger different consequences in each civilization. For example, when working power (P_w) in communistic Poland between 1980 and 1989 was at the level of \$5,000 per capita (in *ppp-purchasing power parity*) providing a quite good

Table 2-1. The application of civilization laws and critical powers in the life cycle

Grand Civilization Laws	Birth	Rise	Growth	Stability	Breakdown	Transition Disintegration	Fall
Ability of Man to Development	P_{id}	P_{id}	P_{id}	P_{id}	P_{id}	P_{id}	P_{id}
Right of Man to Freedom and Reason	P_k P_{id}		P_w P_{id}	P_w P_{id}	P_w P_{id}	P_w P_{id}	
Conscious Historical Evolution	P_{id}	P_{id}	P_{id}	P_{id}	P_{id}	P_{id}	P_{id}
Historical Right of a Country’s Success	P_{id}	P_{id}	P_k	P_k P_s R	P_k P_s r P_t	P_k P_s r	P_k P_s P_t
Universal Laws of a Civilization							
Challenge-Response Law		P_w P_k	P_w		P_w P_k	P_w P_k	P_w P_k
Knowledge Law	P_k P_{id}	P_w P_k P_{id}	P_{id} P_w P_k	P_{id}	P_{id}	P_{id}	P_{id}
World-System Law				R	R	r	r

level of living, it triggered social dissatisfaction because expectations rose. Eventually, this led to the civilization transformation in 1989. In Western civilization's states such as the U.S., such a level of working power put this country in the Great Depression, more than 60 years ago (Maddison, 2001). However, the internal analysis of power dynamics in each civilization may explain its behavior and politics.

Table 2-1 illustrates the application of Grand Laws of the World Civilization (Chapter I) and Universal Laws of a Civilization and critical civilization powers in the civilization life cycle.

The process of civilization development through time becomes independent from the birth and rise phases. For example, in the Soviet civilization a later period of "Stalinism" was quite different (independent) from a beginning period, associated with "Leninism." A *longue duree* of civilizations means that they are stable and when affected by disturbances, they easily return to equilibrium. A civilization is guided by the adaptive World View Values Set, which can be called the general process of a civilization's development. A civilization is stable if it has feedback from the world civilization and can minimize or eliminate disturbances. However, if external disturbances are becoming more frequent and lasting, a civilization can be either aging or still immature. A young civilization is resistant to small disturbances; an old civilization is resistant to bigger disturbances (e.g., the Western civilization's experience with terrorism). On the other hand, an aging civilization loses resistance to bigger disturbances. The last case can be illustrated by the state of the Islamic civilization in the 21st century, which is very "energetic" but with a message which is not acceptable to all its faithful. On the other hand, these hostile activities did not terminate the Islamic civilization. Even the destruction by the Mongols of the Abbasid caliphate (Baghdad) in the 13th century or the decay of the Ottoman Empire in the 19th and 20th centuries did not terminate the Islamic civilization.

If civilizations act in the environment of the highly influential world civilization (e.g., the global civilization in the 21st century), a young civilization may not have enough time to become mature, which is the case of the African civilization. Such a civilization has problems in returning to the equilibrium and its WVVS is no longer guiding the developmental process. Those civilizations which can easily return to the equilibrium remain intact, because they have the ability of self-steering. Certainly such civilizations include the Western and Japanese civilizations.

A civilization has the ability to develop if it has differentiated components which produce inputs and outputs to other components not in full agreement to each other. Rather they are in contradiction, which pushes a civilization into motion and forward, as takes place in democracy.

In general, one can state that those civilizations last, which do not have contradictions between their beginning and later phases. In other words, it happens when those civilizations cultivate their WVVS. For example, both Soviet and Nazi civilizations experienced that type of contradiction. On the other hand, the Western civilization is still strong since it likes to look to its own roots of ideas (the birth phase; the English, American and French Revolutions and constitutional systems).

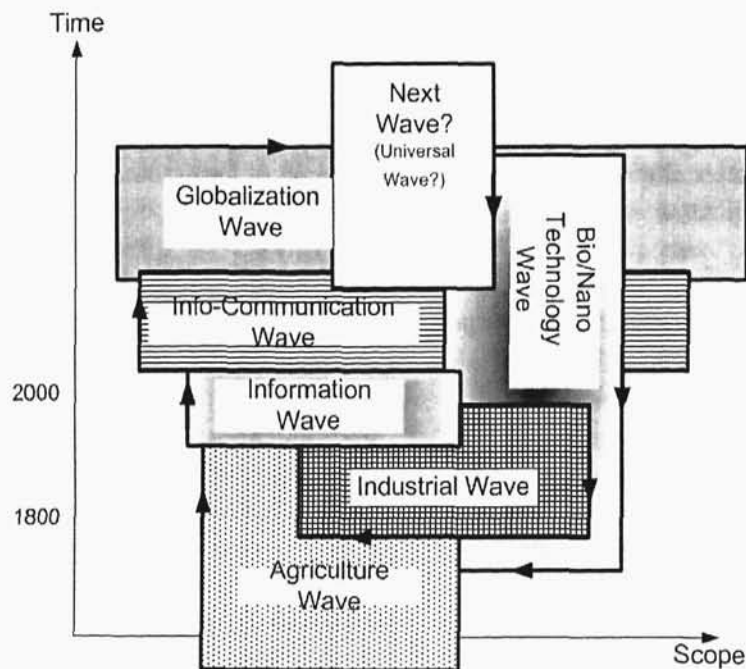
One can mention that the quantification of a state's power is a popular quest and is applied in international political studies (Taylor & Judice, 1983; Cline, 1994; Moczulski, 2000).

The quantification of the civilization life cycle cannot properly be a unique approach. It should rather be a supplement to the qualitative analysis and synthesis of civilization change and continuity.

THE WAVE MODEL OF THE WORLD CIVILIZATION LIFE CYCLE

The three wave-like models of world civilization were offered by Toffler (1980) and can be treated as world-systems, as follows:

Figure 2-3. The relationship among civilization waves (The Targowski-Zacher Model)



First Wave - Agriculture (4000 B.C.-2000+): We are in disagreement and we must gather in order to survive.

Second Wave - Industrialization (1780 - 2000+): We are divided and must compete in order to rise to affluence.

Third Wave - Information (1980-2000+): We are in touch and we must cooperate in order to match global competition.

Civilization development at the beginning of the 21st century emphasizes the emergence of the next waves, defined by Targowski and Zacher⁶, such as:

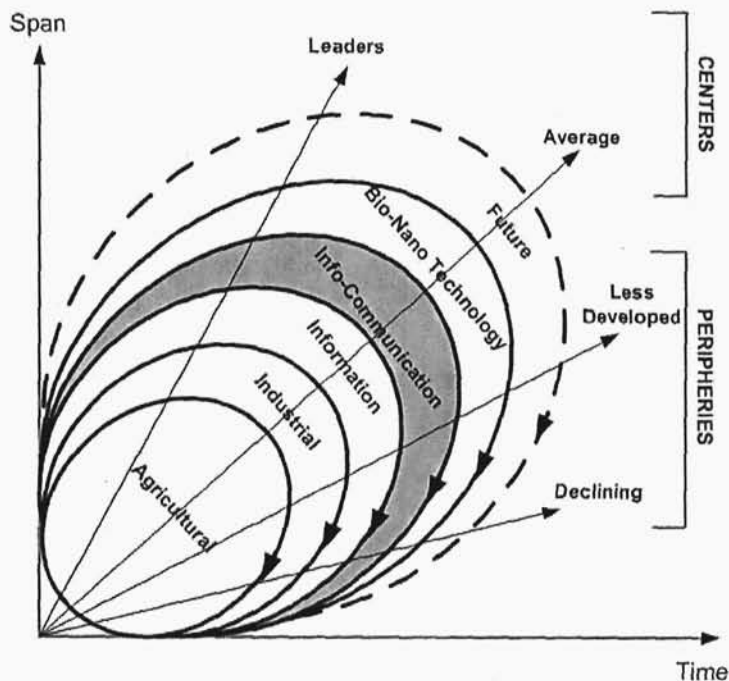
Fourth Wave – Info-Communication Wave (2000+): We are aware that instant communication optimizes our well-being.

Fifth Wave – Bio/Nano-Technology Wave (2000+): We want to improve our health and quality of life through the better understanding of nature's frontiers. Examples of such solutions are life-cloning or smart drugs (bio-robots) at the molecular level.

It is important to notice that succeeding civilization waves do not replace previous waves but optimize their development and operation. For example, the Industrial Wave did not replace the Agricultural Wave; it improved agriculture's productivity and profitability. The relationships among civilization waves are shown in Figure 2-3.

The wave approach towards world civilization development must take into account the different levels of countries' development. The leaders of this type of development (driven by waves of technological impact) come mostly from the Western civilization and Japanese civilization; however. The leaders and average users of the civilization

Figure 2-4. Countries in civilization transformations (The Targowski-Zacher Model)



waves create civilization centers that cooperate through fast diffusion of solutions. The remaining countries form the civilization's peripheries, which either adapt the centers' solutions slowly or even reject them on grounds of inadequate address of those countries' systems of values. The former is the case of the policy "to modernize but not Americanize" a country. Malaysia and Iran are good examples of this policy. A case of the rejection of the center was the policy of the Taliban government of Afghanistan.

Of course, the Wave Model is a rather limited paradigm which mostly emphasizes one civilization component—the infrastructure. On the other hand, this model provides a very good intuitive understanding of human development during the civilization centuries (Figure 2-4).

CONCLUSION

The modeling of civilization development and modeling of history in general are intrinsically based on "models," which must simplify the reality. This is their weakness. On the other hand, this approach is widely applied in many sciences, particularly in physics, chemistry, biology, medicine, and computing. These disciplines are invasive of individual humans, and errors in modeling their processes and systems may have strong repercussions in real life. But without "modeling," these disciplines could have only slow progress. For example, the Solar model of an atom developed by Niels Bohr in 1913 had a strong impact upon later discoveries in physics. Today, the Charge-cloud model of atoms is quite different from the original model, due to progress made in physics.