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Preface

The purpose of this book is to evaluate the questions: Is civilization developing for the benefit of humankind? What is civilization's future? To answer these questions, we must investigate the role of information and communication (under the form of information-communication technology [ICT]) in civilization's development, because it is information and communication that decide how human organization, knowledge, and wisdom are applied in decisions impacting human survival.

This book is written for a broad audience of academics, students, professionals, and those people who are interested in how information and communication and, later, information-communication technology (ICT) played a role in the development of civilization and what is its current state and future. In the 20th and 21st centuries, the ICT professionals are the main developers of civilization, which has been transforming from developing to developed or even overdeveloped in some regions. Therefore, it is very important, particularly for ICT professionals, to be aware how and why to develop certain ICT systems in order to avoid harm to individuals, society and civilization. Also users, managers/executives and politicians should be aware of the same issues in respect to their environments and in the broader context of civilization.

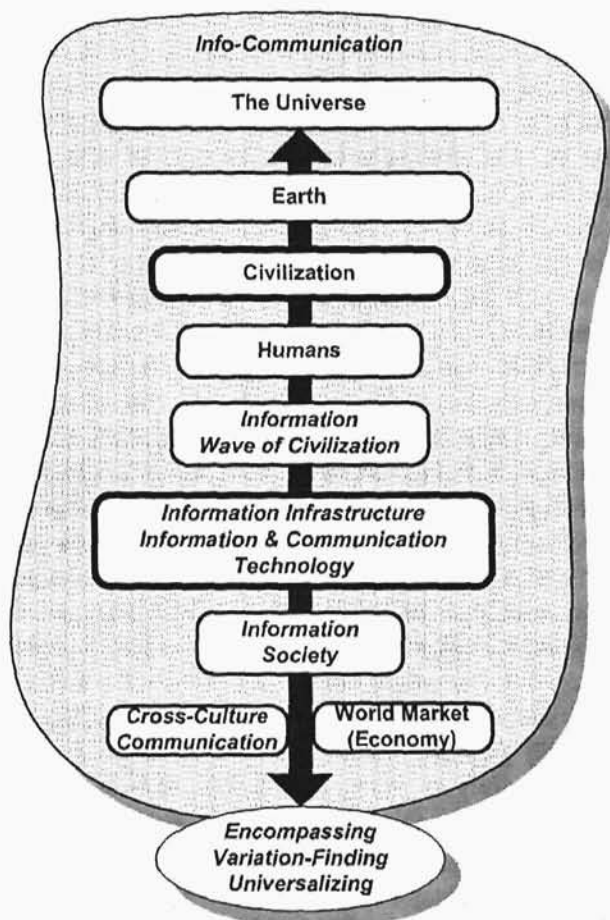
A concept of information has many dimensions, which are addressed in this book; however, one can state that from the users' points of view, they deal with information as the end product. But this end product is shaped by different kinds of information technology, for example, such ones as alphabet, books, newspapers, journals, files, databases, data warehouses and data retrieval and mining, with either by manual effort or recently with the help of computers. The latter is called in the U.S. "information technology" (IT) and in Europe "informatics" (automated information). Furthermore, with the intensive applications of computer networks, the Internet, e-mail and so forth have transformed our humanity to an e-communicating species. Hence the classic IT has been transformed into information-communication technology (ICT). The role of IT and ICT is specifically supporting our civilization in many positive aspects as well as also conquering civilization in many negative ways. This book analyzes these aspects and exposures mostly at the big-picture level, preferring rather synthesis than analysis to better grasp overall concepts, problems and solutions.

An interdisciplinary, holistic method is applied to investigate civilization's complexity with the help of graphic-cybernetic modeling (a tool of ICT). This allows for the inclusion of known macro-structures, large-scale processes, and their relationships to universalize their dynamics.

The reason for this approach is to conduct huge comparisons of big structures and large processes in their totality, leading to variation-finding¹ and universal rules or eventual laws. In such a way, perhaps individual ontology will be more understandable and some answers can be defined for the questions raised above. This book is based on the model of macrostructures and processes leading to their synthesis, which is shown in Figure I.

Civilization is about 6,000 years old, which in comparison to the age of the Earth, 4.5 billion years, is rather a fresh endeavor. Its solutions are very spectacular but may lead to the overpopulation and

Figure 1. The model of marcostructures and info-communication-driven processes leading to their synthesis



depletion of strategic resources. Therefore, we call it Civilization I, since if we do not change our life style, this civilization can fall apart in the third millennium. Perhaps future civilizations (II, III, n) may follow the patterns of the present one.

Robert Denes (former Eaton executive) suggests that my arguments remind him of *Plato's Republic* ruled by wise people, but this republic does not work in practice, since Denes believes in a free spirit in man, who successfully traveled from primitive ancestry to modernity and thinks he/she will continue on for a long time to come. I am not so optimistic and at least offer here a shift from current "*paranoia*" to future "*metanoia*" (defined by Leszek Koakowski²) which emphasizes human wisdom and willingness to change.

This book proposes that in order to ensure the well-being of humankind on Earth, the global civilization should transform into a universal-complementary civilization, based on dialogue, universal values, and self-sustainability, acceptable by all religion-driven (autonomous) civilizations. Otherwise, in the not-too-distant future, humans may be forced to emigrate to other planets, which due to the high cost and practical impossibility of traveling faster than the speed of light, will likely remain in the realm of science fiction. On the other hand, in the very long term, humankind must look beyond even the Solar

System, since the Sun will stop or change the radiating pattern within a few billion years, very probably destroying life on our planet.

Although Civilization I has self-organizing capabilities³, in reality, at the beginning of the 21st century, it enters into a stage of disequilibrium interacting with the Ecosystem. Hence, the future of Civilization I is rather bleak. This book presents *the contingency theory of civilization (as a product of social development) based on the information (including info-communication technology) handling and processing approach*, which may turn our attention and action to how at least to survive on Earth. Information-communication technology (ICT) is strongly presented in this book under a form of graphic modeling, a tool of system analysis and design of complex systems. Without applying this kind of tool, it would be very difficult to identify the complexity of human development.

My involvement in the topic of *Civilization and Information* has roots in my work on the informatization of enterprises (*information architecture*) and states (*Infostrada*⁴) and *local, national and global information infrastructures*. Along with the experience gained in these projects, I noticed that overly aggressive information-communication technology limits the role of humans in civilization. When populations expand and employment does not expand to meet it due to increased productivity, the gap between informed and rich and uninformed and poor does not fade. This type of “wild” greed-driven progress threatens the well-being of humans, and perhaps one day (yet far away) we may call for the “end of progress?” To avoid it we have to elevate our wisdom to such a level as can save the Human Project. So far, the wealthy (money), religions, and politics do not focus on this issue, which is also analyzed in this book. This book aims essentially at the development of knowledge and wisdom about civilization, which eventually can be applied by major leaders of civilization for its benefits.

ORGANIZATION OF THE BOOK

The book is organized in five parts with 18 chapters. Section I defines the basic concepts of civilization, which are applied in further considerations. Section II traces the roots and developmental issues of humans, who are the main creators and users of civilization. Section III investigates the role of information-communication processes and systems functioning in civilization, which are the dominant factors in knowledge and wisdom development and which determine the fate of civilization. Section IV applies some systemic-cybernetic techniques in modeling communication and economic processes, which are basic to civilization. Lastly, Section V investigates the future of civilization on the Earth and beyond, providing a comprehensive architecture of the Universe, which integrates material and information-communication processes.

Chapter I defines the civilization grand model based on a critique of existing approaches and the history of civilization development. This model is presented as a cybernetic model, which is dynamic and system-oriented with three major components: human entities, culture, and infrastructure. This kind of identification of components allows for the comparative investigation of civilizations’ patterns of behavior, leading to the recognition of grand laws of civilization, which govern the world and planet civilizations. These two kinds of civilizations are synthesized at the level of their major components and their relations.

Chapter II investigates why a civilization rises and falls. The majority of the chapter addresses these processes. The answer is provided under a form of the generic civilization life-cycle. As a result of this investigation, a concept of wave-driven civilization life-cycle is provided and its current and future implementations are offered.

Chapter III compares current civilizations’ development level and its consequences for the current state of the world affairs. Some strategies of how to cope with civilization conflicts in the 21st century

are defined. Also, some challenges that humans must cope with in order to make sure civilization functions and develops competently are defined.

Chapter IV investigates the phenomenon of humans on the Earth. What kind of factors determined our evolution from animals into humans? The investigation is limited to the information-communication processes (symbol processing), which triggered the human brain. These processes are recognized as the main ones which led to human beings, the pioneers and developers of civilization.

Chapter V concentrates on wisdom as the highest unit of cognition, which determines the well-being of humans and their civilization. Some suggestions of how to combine philosophical approaches to wisdom are presented in order to be wisely in charge of civilization challenges. Eventually, a model of multi-layered existence in the advanced civilization is defined in order to explain the kind of challenges that lie in front of people for handling life in a world that communicates across cultures.

Chapter VI investigates the issue of whether humans are wise enough to rightly control civilization operations and development. After some comparative analysis of different philosophies' approaches (western and Asian mostly) to wisdom, the answer is that humans are not wise enough to meet the current civilization problems. The difficulty is in our partial approach to the investigation of theoretical knowledge, including philosophy itself. A solution under the form of the Wisdom Diamond is offered and its applications in other sciences are discussed.

Chapter VII investigates the emergence of global civilization in the 21st century and concludes that it is just a solution very convenient for big business, driven by greed. This civilization is not stoppable but should be controlled by the new civilization layer, which should be common and complementary-values-driven. This new solution is called the Universal-Complementary Civilization, which should be a product of agreement of all people who live and share the same planet, which, perhaps, can be called the Rainbow Planet. This new civilization, if developed rightly, should minimize conflicts and wars, since it should build tolerance in all of us from our childhood.

Chapter VIII develops the theory of critical total history of civilization. In order to wisely control civilization, its developers and users must understand the history of civilization. So far, it is mostly based on lengthy narratives and lost in many less important details. This theory emphasizes the critical issues of the civilization's total history and differentiates them from peripheral issues secondary for the well-being of civilization. Eventually, grand laws of western civilization are defined to provide examples of how to investigate other civilizations.

Chapter IX investigates civilization in terms of the current information wave. First, the role of information in civilization history is analyzed. The invention and application of printing (15th century) had a very strong impact on the development of intellectual, political and commercial revolutions, which led to the rise of the information wave, exemplified by the application of millions of computers and their networks embracing the globe in the 21st century. This wave is characterized in its mission, goals, and strategy as well as in ideology, which should be taken into consideration when information systems and services are designed and operated.

Chapter X defines what is information in terms of quantitative, qualitative, cognitive, computer, decision-making, and managerial perspectives. Furthermore, information images are analyzed as resource, system, mind, communication, synchronism, superhighway, power, and art. This kind of approach is important for correct design and operation of information systems, services, and infrastructure. Therefore, a case of enterprise information infrastructure is analyzed and its generic model is presented. As a result of these considerations, the informed architecture of management and a concept of how to informate the industrial enterprise are provided. The latter is important for the practice of transforming old industrial endeavors into new informed enterprises.

Chapter XI defines generic service processes and their systems within six kinds. Four criteria, which impact e-service systems' architecture, have been defined as: service business model, customer contact

and level of involvement (service user interface), service provider's enterprise complexity (enterprise systems and networks), and scope of goods involved in service. Based on the nature of presented service systems, a scope of service science has been defined. Also, its developmental and innovation strategy has been defined based upon six stages of service systems developments and the three laws of service systems. In conclusion, seven recommendations are offered for the further development of service science.

Chapter XII defines the information laws, which govern our cognitive development and based on it, our functioning in civilization. Four such laws are defined. These laws should be applied in all our information-driven undertakings.

Chapter XIII investigates the birth of the electronic global village and its composition under a form of a generic architecture. Based on this approach, the architectures of several kinds of informed organizations are defined. Also, major components of contemporary civilization such as global economy, global culture, electronic culture, and eventually electronic global citizenship are also defined.

Chapter XIV traces the evolution of an information society, which has several distinctive implementations, affected by the availability of information-communication tools. Some paradigms and key indicators are defined in order to better measure the impact of such societies on civilization.

Chapter XV models a process of asymmetric communications between different civilizations. A case of interaction of American and Egyptian culture is taken to show how cross-culture communication can be analyzed in terms of quantitative indicators. As a result of this case, five rules of this kind of communication are defined.

Chapter XVI models the markets from the civilization point of view. This approach perceives the economic integration of some areas of the world along the civilization lines. The question of whether China will dominate the world market is analyzed and the answer is that the western civilization will respond with its own integration under a form of transatlantic free trade zone. This trade zone will be formed by the U.S. and the E.U. and should dominate world trade. The future of capitalism is also addressed. What kind of capitalism or other economic system must be applied in order to keep the world population within the threshold of the Ecosystem is analyzed. The answer to this question will determine the future of civilization.

Chapter XVII synthesizes the issues impacting the future of civilization. Three bombs, population (P), ecological (E) and depletion of strategic resources (R), will lead in the near future (about the year 2050) to the death triangle of Civilization I and perhaps to the next generation of civilization. Different factors and strategies are offered in order to slow down or eventually prevent the decline of Civilization I.

Chapter XVIII defines the informed architecture of the Universe. So far, the physicists investigate the Universe with their classic matter-oriented techniques, which were available in the 20th century. However, the information wave of the 21st century brings in the importance of information-communication processes which "activate" matter and its relations with the environment. This approach is offered in this chapter; however, the complexity of a new model of the Universe is still too big for our tools to solve its puzzle.

ENDNOTES

- ¹ Tilly, Charles. (1984) inspired me by providing the insight to these kinds of issues in his book *Big structures, large processes, huge comparisons*. New York, NY: Russell Sage Foundation.
- ² Editorial. (2004). The award of the first John w. Kluge Prize for lifetime achievement in the human sciences to Leszek Kolakowski. *Dialogue and Universalism, XIV*, 3-6.
- ³ The biologists call these autopoietic systems.
- ⁴ Targowski, A. (2007). The genesis, political, and economic sides of the Internet. In: L. Tomei (Ed.), *Integrating information & communications technologies into the classroom*, (pp.62-82). Hershey, PA: Information Science Publishing.

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Andrew Targowski
Kalamazoo, Michigan, USA, 2008