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Letters to the Editor

Veni, Vidi, Vici?

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I read with some surprise a paper on “Civilization Defined” written by Dr. Abbey Perumpanani in the *Comparative Civilizations Review* issue of Spring 2013, No. 68. The author claims that he was told by members of the International Society for the Comparative Study of Civilizations that they have made numerous previous attempts at their annual meetings to generate a consensus definition of civilization—without success.

I would like to remind all those members and the author as well as the editors that a paper reviewing about 25 definitions (provided by early civilizationists and our members) has been published. My article “Towards a Composite Definition and Classification of Civilization” was also in the *Comparative Civilizations Review* of Spring 2009, No. 60.

Based on all those contributions, the composite definition of civilization is as follows:

Civilization is a large society living in an autonomous, fuzzy reification (invisible-visible) that is not a part of larger one and exists over an extended period of time. It specializes in labor and differentiates from other civilizations by developing its own advanced cultural system driven by communication, religion, wealth, power, and sharing the same knowledge/wisdom system within complex urban, agricultural infrastructures, and others such as industrial, information ones. It also progresses in a cycle or cycles of rising, growing, declining and falling.

A graphic model of civilization is illustrated in Figure 1.

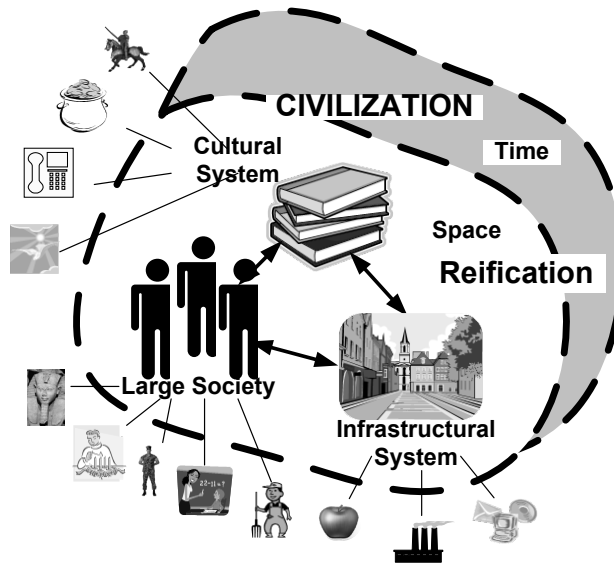


Figure 1 A Model of Civilization

As we see this definition is very comprehensive and thoughtful, much more isomorphic than one provided by Dr. Perumpanani, who states that “A civilization is a dynamical system that supports endogenous cultural development through economic activity aggregated across elements of its data.”

Also, the mentioned author argues for a mathematical definition of civilization. He provided two formulae for computing the rates of economic and cultural changes. It is necessary to point out that our member Stephen Blaha has published several books on the mathematical modeling of civilizations.

These works include, among others:

- *The Life Cycle of Civilizations* (2002)
- *SuperCivilizations: Civilizations as Superorganisms* (2010).

Also, I have published some chapters on mathematical modeling of civilization dynamics (tested upon current civilizational data) in my book entitled *Information Technology and Societal Development* (2009).

Just one of the examples of the kind of modeling used in the latter book is exemplified on the following page:

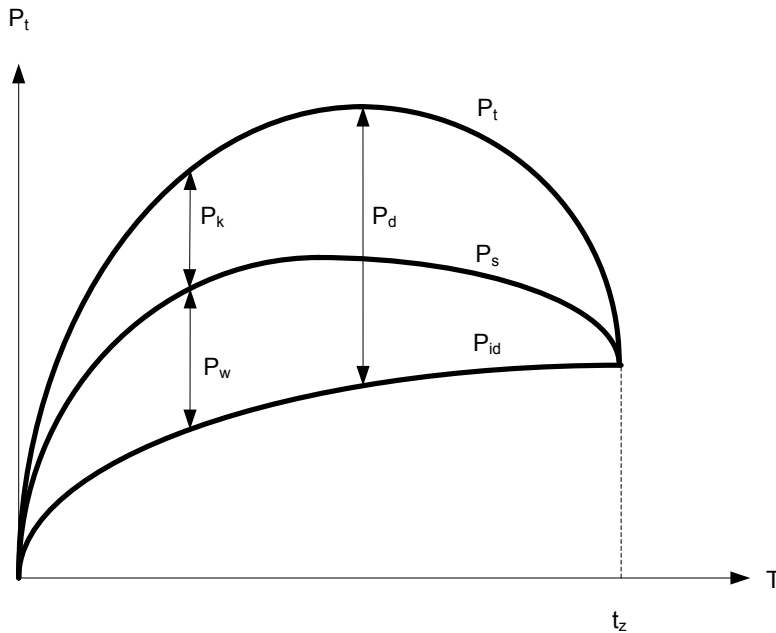


Figure 1-12 The Distribution of the Total Power of a Civilization, where:

P_t - total power, P_{id} - idle power, P_w - working power,
 P_d - disposal power, P_k - coordination power, P_s - secured power

A civilization that cannot maintain its necessary level of secured resources will decline into lower stages of existence, but this decline can be arrested. A civilization can also lose its strength and pass into transition or arrest if its idle power (P_i) exceeds its working power (P_w). This is the case for the Roman (31 BC - 476 AD) and Soviet (1917-1991) civilizations. These considerations allow a definition of civilization secured power P_s :

$$P_s = P_w + P_{id} \quad [1]$$

A relation of the working power to secured power we will call a coefficient of power supply:

$$r = P_w / P_s \quad [2]$$

Hence, the working power P_w is defined as follows:

$$P_w = r P_s \quad [3]$$

Inserting the expression [3] into the formula [1] we obtain a formula for secured power:

$$P_s = P_{id} / (1 - r) \quad [4]$$

If $r = 0$, the taking in of resources from the environment does not require any work. This means that the existence of a civilization depends upon the size of its secured power which only needs to cover idle power $P_s = P_{id}$. This is the case for the Islamic Civilization and its abundant oil resources at the beginning of the 21st century.

The bigger r is, the more work is needed to take in energy from the environment. This means that a civilization must take in more energy and its secured power (P_s) must be bigger.

If r approximates to 1, in other words, when the taking in of energy by a civilization requires vast work, then secured power approximates to infinity. This means that a civilization does not have idle power (P_{id}) regardless of how much secured power it is taking in from the environment. This is the case in arrested civilizations, such as the Mayan, Andean, Yucatec-Mexican, Eskimo, Indian, and Polynesian specimens. To a certain degree it also represents some parts of the present African civilization.

There is some surplus of power, which remains after total power covers secured power. The remaining power we will call coordination power P_k :

$$P_k = P_t - P_s \quad [5]$$

Then, the total power P_t of a civilization can be expressed as follows:

$$P_t = P_s + P_k \quad [6]$$

If we substitute the expression [1] for P_s then:

$$P_t = P_{id} + P_w + P_k \quad [7]$$

The disposable power P_d of a civilization is defined as follows:

$$P_d = P_w + P_k \quad [8]$$

All components of the total power are shown on Figure 1 - 12.

To survive, a civilization must produce total power no lower than its secured power (P_t P_s), which depends upon existing civilization power (P_c). However, a civilization can reduce its secured power (P_s) by triggering changes in the environment that cause civilization power to increase. This means that a civilization may move into a territory with better resources or it may invade another civilization with such resources. This strategy explains clashes among civilizations. To engage in a clash, a civilization must spend some power, which we called coordination power (P_k).

The more coordination power that is at the disposal of a civilization, the more changes it can invoke in the environment. Mastery of information distribution and utilization are at the heart of coordination power, and it produces a positive feedback cycle: more coordination power produces more civilization power; this in turn requires less working power and less secured power. As a result, coordination power becomes bigger. This effect means that a civilization reaches its maximal coordination power and civilization power at the same time it has its minimal secured power.

This is a highly desirable situation where a civilization uses its coordination power to secure the best environmental conditions and increases its own existence timeline. In the long run, mastery of information increases awareness and knowledge, which results in wiser decision-making about all civilization system components. Most civilizations

last for many years, enduring decisions of varying quality, but information coordination provides capacities to eventually turn data into wisdom for the benefit of a given civilization.

As one of the results of mathematical modeling, the Civilization Index has been developed and depicted in the following table, which has a very practical application.

Table 3-9 The Civilization Index CI

Civilization	Existence System	Communication System	Knowledge System	Guiding System	Power System	Logistic System	Infrastructure	Total	CI as % of Potential (max 77)	Ranking
Western-West	29	7	7	7	7	6	7	70	0.91	1
Western-Jewish	27	7	7	7	6	6	7	67	0.87	2
Japanese	21	6	6	7	5	6	7	58	0.75	3
Western-Central	20	5	4	6	5	3	4	47	0.61	4
Eastern	23	5	5	1	7	3	3	47	0.61	5
Western-Latin	15	4	4	6	3	2	4	40	0.52	6
Chinese	17	4	2	2	6	1	3	35	0.45	7
Islamic	13	3	2	4	4	3	4	33	0.43	8
Hindu	13	2	3	7	3	1	3	32	0.41	9
Buddhist	9	3	3	5	2	1	2	25	.32	10
African	8	1	1	1	1	1	1	14	0.18	11

A comparison of civilizations at the end of the 20th century permits us to draw the following conclusions:

1. The Western-West civilization is at the stage of "saturation," indicating that it is either ready to expand into other civilizations or to enter into social unrest. This civilization has an almost perfect Index: CI = 91%.
2. The Western-Jewish (CI = 87%) and Japanese civilizations (CI = 75%) are very well developed and will approach the "saturation" point in the near future.

3. The African civilization is either at the beginning of the developmental process or at the stage of disastrous development. Taking into account its very short and tumultuous history, both statements may be correct (CI = 18%).
4. The remaining civilizations have a good prospect for further development or redevelopment. This is presently taking place in the case of the Western-Central civilization after the collapse of the Soviet civilization. Civilization Indexes of these civilizations vary from CI = 32% to 61%.

All these mentioned books take into account many more systemic components in characterizing a civilization than the two ones offered by Abbey Perumpanani. Will Dr. Perumpanani continue his quest for a better definition of civilization using mathematical modeling? Modern science develops by the additive accumulation of contributions.

Andrew Targowski