



The Integrated Scale of the Evolution of Civilizations

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*For my mind-of-man
Now seeks the nature of the vast Beyond
There on the other side, that boundless sum
Which lies without the ramparts of the world,
Toward which the spirit longs to peer afar,
Toward which indeed the swift élan of thought
Flies unencumbered forth.*

De Rerum Natura, Book II - verses 1034-1037 by Lucretius, 1 sec. B.C.



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1. Definitions

➤ Civilization

An organized community which is presumed to be:

- *composed of biological beings sharing the same general constitution and capable of*
 - *self-consciousness,*
 - *thinking,*
 - *freewill,*
 - *curiosity,*
 - *associationism.*
- *originating from any planet, and dwelling in any location of the universe.*
- *changing with time.*
- *expanding, that is widening its range of influence with time.*

➤ Development

See page 6.

➤ Moral laws¹

Those moral laws deriving from the knowledge of a limited part of the universe (e.g., those laws that stem from, and that apply to, a civilization whose knowledge and influence remains limited to the scale of its own planet).

➤ Universal moral laws¹

Those moral laws deriving from the knowledge of a wide portion of the universe (e.g., those laws that stem from, and apply to, a civilization whose knowledge and influence extends to the planetary system or galactic scale).

¹ In this context, moral laws are considered *relative*. As it happens with scientific development, civilization are supposed to be able to increase and refine their knowledge of moral laws as their general development state advances.

2. Preamble

To date, several scales have been developed to classify civilizations and measure their evolution. The common characteristic of these scales is to consider only one of the possible aspects of civilizations' evolution, in most cases the scientific-technological one. The authors believe that such an approach does not allow to properly characterize such complex entities as civilizations, and that a more faceted approach is required.

The present work therefore intends to define an integrated method, which from now on will be referred to as the "GP Scale", to classify and qualitatively characterize the overall level of evolution of civilizations as well as their progression in development. This method is based on the three factors that the authors consider as fundamental in the development of any civilization:

- the technical-scientific knowledge*
- the ethical and moral sense*
- the political dimension*

thus emphasizing in an implied but desired way the importance of an harmonious development of these factors.

3. The definition of the term "development"

In this work it is assumed that civilizations, being composed by living entities, do indeed change with time. Changes are not considered here as inherently good or bad; for the purposes of this work they are just changes. The term Development has therefore a neutral meaning in this work.

For sure there are “virtuous paths” that can lead civilizations to flourish, to last and maximize their negentropic effect, while at the same time exist “unvirtuous paths” that can bring civilizations to exert entropic effects and even to their destruction.

The authors believe that to properly analyze and understand the development of civilizations it is necessary to examine the three major macrocomponents in which the dynamics of civilizations’ growth can be analytically decomposed: the scientific-technological development, the development of the ethical-moral sense, and the development of the “political” dimension, that is the level of social aggregation.

It is therefore possible, among other things, to define the concepts of "harmonic development" and “harmonic asset” of civilizations on the basis of the degree of harmony between the three mentioned macrocomponents.

A developmental dynamics where the three macrocomponents develop according to a suitable progression is considered to be the optimal case.

Such suitability can be defined as the civilizations’ capacity to counter entropy.

4. Valence

In the full awareness of the inevitable anthropocentric connotation underlying this exercise, and of the fact that it might prove to be inadequate in practice, that is when being actually faced with real exocivilizations, the authors wish to attribute to this work a value that extends to two different domains.

The first domain concerns the open and official contact with extraterrestrial civilizations. The authors are confident that this scale can serve as a useful tool to for the understanding of the "different", helping the terrestrial humanity to face such an epochal event in a not totally unprepared way.

The second concerns the present situation of the terrestrial humanity, where a considerable scientific and technological development is already present in a numerically reduced but important portion of it. A development that is unbalanced, though, not being accompanied by the proper level of a suitable moral-ethical sentiment.

5. The Integrated Scale of the Evolution of Civilizations

a. The structure of the scale

The scale is structured as a five rows by three columns matrix. The five rows are the general levels of evolution, or Levels, where each Level represents a major step in the development of civilizations.

These major steps can be broadly defined on the base of the extension of the civilizations' influence range:

Level 1 - Tribal: civilizations whose influence range remains limited to the planet of origin, composed by many scattered micro-social aggregation nuclei (tribes).

Level 2 - National: civilizations whose influence range remains limited to the planet of origin, composed by a more reduced number of aggregation nuclei (states/nations).

Level 3 - Planetary: civilizations whose influence range remains limited to the planet of origin, composed by a single pole of social aggregation.

Level 4 - Solar System/Sub-galactic: civilizations whose influence as well as social aggregation extends to the entire solar system of origin or to a sub-galactic scale.

Level 5 - Galactic: civilizations whose influence as well as social aggregation extends to a galactic scale.

The three columns are the fundamental factors of civilizations' development as described below:

SCI: The expression of the overall amount and quality of scientific, technical and technologic knowledge possessed by a civilization.

MOR: The expression of the level of ethical-moral development of a civilization.

SOC: The expression of the degree of political maturity possessed by a civilization, manifested in practice by the quality of its social aggregation.

The order in which the fundamental factors of development are presented here has been chosen for the sake of the easy memorization of their acronyms, that is:

SCI - MOR - SOC

This order is important, as it defines the assembly criterion of the Asset parameter, as we will see in the following pages.

b. The scale

The GP scale is illustrated below in its matrix form.

GL: General Level	SCI: Scientific-Technic Development	MOR: Moral-Ethical Development	SOC: Level of social aggregation
1 <i>Tribal</i>	Use of rudimentary tools. Fire as the only source of energy. Overall energy management capacity about 10^5 Watt / year.	<i>Embryonic ability to distinguish between good and bad. Behavior and conscience of the individual, essentially driven by animal instincts and limited to their own tribe.</i>	Simple social aggregation with microfragmentation at a sub-planetary level.
2 <i>National</i>	Extensive use of tools and machines. Automatic calculation. Telecommunications. Nuclear energy. Rudimentary space travel capabilities. Overall energy management capacity approx. 10^{13} Watts / Year.	<i>Potential ability to learn and apply universal moral laws. Awareness of the effects of individual actions limited to their own national / social group.</i>	Social aggregation with sub-planetary fragmentation.
3 <i>Planetary</i>	Virtual Tools and Machines. Capillary informatics. Matter-antimatter reaction. Inter-stellar-interplanetary travel capability. Overall energy management capacity approx. 10^{26} Watt / year.	<i>Practical ability to learn and apply universal and potential moral laws to extend the awareness of the effects of individual actions on the whole society.</i>	Social aggregation across the entire planet of origin.
4 <i>Sub-Galactic</i>	Conscious tools and machines. "Zero point" energy. Matter-antimatter reaction. Wide capability of sub galactic travel. Overall energy management capacity approx. 10^{37} Watt / Year.	<i>Potential capacity to recognize universal moral laws and to conform to them. Concrete ability to extend the awareness of the results of individual actions to the entire society.</i>	Social aggregation at the level of the entire solar system of origin or anyway in a sub galactic environment.
5 <i>Galactic</i>	Conscious tools and machines. Exploitation of energy sources at the galactic level. Intra and extra-galactic travel abilities. Overall energy management capacity approx. 10^{50} Watt / Year.	<i>Inner knowledge of universal moral laws and their unconditional obedience. Fusion of individual awareness into a single super-social group awareness.</i>	Social aggregation across the entire galaxy of origin.

Table 1 - The GP scale in its matrix form. Note that Level 2, the one presently attained by the Homo Sapiens Sapiens civilization of Planet Earth, is highlighted.

c. The ideal pattern of development

Table 1 in the precedent page illustrates the general structure of the GP scale and, at the same time, what the authors esteem to be the ideal progression of civilizations' advancement from Level 1 to 5.

In this ideal progression, each of the three fundamental factors bears the same number as the corresponding general Level.

Considering the overall process of civilizations' development, that is proceeding vertically along Table 1 in a downward direction, the pattern of evolution as illustrated in the Table is defined harmonic development.

Civilizations developing along these lines, that is, moving from 1-1-1 to 2-2-2 to 3-3-3 to 4-4-4 and finally to 5-5-5, are said to follow a harmonic development pattern.

Civilizations not following this pattern, like for instance passing from 1-1-1 to 2-2-1 and then to 3-2-3, are said to proceed along the lines of an unbalanced development pattern.

Considering any single Level, that is moving horizontally across any one of the five rows, civilizations manifesting the asset of the three fundamental parameters as shown in Table 1 are said to enjoy a harmonic asset, that is 1-1-1 or 2-2-2 and so on up to 5-5-5.

Civilizations where this kind of asset is not verified are said to manifest an unbalanced asset, such as, 1-2-2, 3-2-2, 5-5-4 and so on,

d. The fundamental factors of development

Here is the description of the various levels for each one of the three fundamental factors in civilizations' development.

- **SCI**

The SCI factor expresses the amount of scientific, technical and technological knowledge that a civilization possesses.

1: Fire and animal power as the only sources of energy. Use of rudimentary tools. Overall energy management capacity about 10^5 Watt / year.

2: Non-renewable and nuclear energy. Extensive use of mechanical machines. Automatic calculation. Radio-based telecommunications. Rudimentary space travel capabilities.

Overall energy management capacity approx. 10^{13} Watts / Year.

[This is the present level of the terrestrial civilization]

3: Matter-antimatter reaction as main source of energy. Virtual machines. Capillary informatics. Instantaneous telecommunications capacity. Interplanetary to interstellar travel capability.

Overall energy management capacity approx. 10^{26} Watt / year.

4: Non-Local energy as main source of energy. Conscious machines. Sub galactic travel capability.

Overall energy management capacity approx. 10^{37} Watt / Year.

5: Exploitation of energy sources at the galactic level. Intra and extra-galactic travel capability.

Overall energy management capacity approx. 10^{50} Watt / Year.

- **MOR**

The MOR factor expresses the level and quality of the ethical-moral sense of a civilization.

1: Ability to distinguish between an embryonic notion of good and bad. Individuals' behavior essentially driven by animal instincts and awareness of the effects of the individuals' actions limited to their own group (tribe).

*2: Ability to learn to know and apply moral laws. Awareness of the effects of the individuals' actions limited to their own national group.
[This is the present level of the terrestrial civilization]*

3: Capacity to spontaneously recognize and apply moral laws. Potential ability to learn and apply universal moral laws; potential ability to extend the awareness of the effects of the individuals' actions onto the whole society.

4: Capacity to spontaneously recognize and apply the universal moral laws and to conform to them. Awareness of the results of the individuals' actions extended to the whole society.

5: Inner and innate knowledge of the moral laws of the universe; unsolicited and unconditional obedience to them. Fusion of individuals' awarenesses into a single super-social group awareness.

- **SOC**

The SOC factor expresses the "political" maturity of a civilization, manifested in practice by its level of social aggregation.

1: Simple social aggregation with micro fragmentation on a sub-planetary level.

The civilization is composed by a large number of simple social agglomerations of the tribal kind.

2: Social aggregation with sub-planetary fragmentation.

The civilization is composed by a limited number of social agglomerations, typically on a national basis.

[This is the present level of the terrestrial civilization]

3: Social aggregation at the planetary level.

The civilization is composed by a single social agglomeration which jurisdiction extends over the entire planet of origin.

4: Social aggregation at the sub galactic scale.

The civilization is composed by a single social agglomeration which jurisdiction extends over a sub-galactic area.

5: Social aggregation across the entire galaxy of origin.

The civilization consists of a single social agglomeration which jurisdiction extends over a galactic area.

e. How to use the GP scale to characterize civilizations

The GP scale allows to characterize the level of civilizations' development through two related parameters: the Asset and the Level.

Let us now see with the help of a practical example how to use the GP scale to classify civilizations.

1) Attribution of the values to the three fundamental factors

The first step consists in examining the civilization under analysis and attributing to each of the three fundamental factors of development their respective value, using the definitions in point d above as a guide.

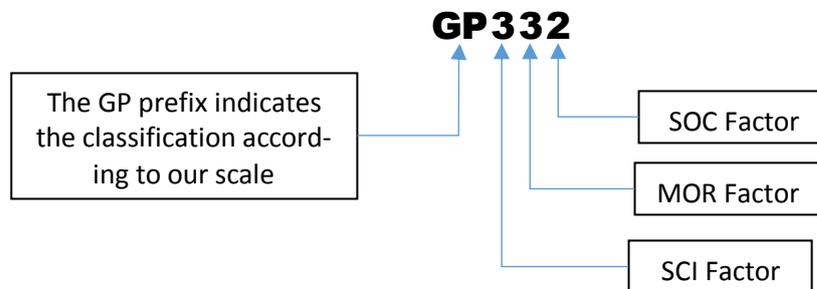
As an example, let us see the case of a civilization whose fundamentals of evolution are measured as follows:

SCI=3, MOR=3 and SOC=2

2) Definition of the Asset on the GP scale

The second step consists in defining the Asset on the GP scale.

Continuing in the example, and remembering the SCI-MOR-SOC order of succession, the Asset of the Civilization under analysis will be defined by assembling the values of the three respective fundamental factors as follows:



3) Definition of the Level on the GP scale

The third stage consists in defining the Level of a civilization on the GP scale. This is obtained through a simple calculation, the arithmetic mean of the three fundamental factors' values:

$$(3 + 3 + 2) / 3 = 2.6$$

4) Classification on the GP scale

We can then finalize the classification of the civilization under exam as characterized on our scale by Asset GP332 and Level GP2.6 or, more concisely

GP332 / 2.6

f. Observations on the practical use of the scale

Using Asset and Level

From the practical use of our scale, it can be seen that of the two parameters on the GP scale the most informational is the Asset, as it expresses in a concise but sufficiently illustrative fashion the main characteristics of a given civilization.

The Level, on the other hand, provides an even more concise information about the overall level of development attained by a civilization, a concise information necessarily obtained at the expenses of the informative content.

The choice about which one of the two parameters to use is left to the user on the base of the specific content.

The only general rule that can be formulated is that, given the extremely concise informational nature of the Level parameter, its use should preferably be restricted to the cases of harmonic asset.

That is, in case of a civilization possessing all the three fundamental values at 4, it should preferably be referred to as a “GP4 civilization” instead of GP444/4 or GP444.

Further on we will see some practical examples of how to use the GP scale to characterize some exocivilizations taken from the science fiction literature and the UFO culture.

g. The unbalanced progression and its effects

In cases of non-harmonic Asset, that is an unbalanced combination of the three fundamental parameters, civilizations can manifest different characteristics on the base of the relative asset of the three fundamental parameters and of the Level at which this unbalance happens.

Of the many possible combinations, we will discuss here only about the MOR and SCI factors, as their relative asset plays a very important role in this context.

1) *Predominance of the ethical-moral development MOR*

When, at any Level in the development of a civilization, the $MOR > SCI$ relation is satisfied, the moral-ethical factor prevails over the scientific-technical factor.

This means that such civilizations manifest a great development as well as a fine knowledge of the spiritual and philosophical dimensions of existence without possessing a comparable level of technical-scientific development.

Such an arrangement, albeit unbalanced, does not preclude the development of long-lasting civilizations, characterized by a good level of negative entropy.

2) *Predominance of the technical-scientific development SCI*

When, at any of the Levels in the development process of a civilization, the $SCI > MOR$ relation is satisfied, the scientific and technical development prevail on the development of the moral-ethical sense.

In addition to a high probability of exerting an entropic effect, such an arrangement puts the duration of the whole civilization at risk, particularly in the critical passage from Level 2 to 3, where the so-called "technological adolescence" is manifested. The acquisition of high scientific knowledge, and in particular the large quantities of energy that this process inevitably makes available, may in fact lead on the path of (self) destruction a civilization that has not reached a suitable ethical maturity, be that by annihilation through mass destruction weapons or by extinction caused by the irreparable alteration of the environment.

If, at the same time, this arrangement is characterized also by the satisfaction of the $SCI > SOC$ relation, it means that the level of political maturity does not "keep up" with the other two factors. In this case, the risk of a premature (and violent) death of the civilization is even higher, as the divisions between the various nations / factions in which it continues to be divided can easily lead to conflicts that would be fought with weapons of mass destruction of such a power to cause the annihilation of the whole civilization.

3) *The situation of earthly humanity today*

It is the intention of the authors to point out that the human civilization of planet Earth presently manifests an imbalance in an important, though numerically reduced, portion of it.

Such imbalance sees the SCI factor sharply prevailing over the other two.

In the light of the considerations expressed in the preceding paragraph, the authors consider this situation to be very worrying, as the lack of moral control over the scientific and technological development does indeed represent a concrete danger for the long-term duration of the Homo Sapiens Sapiens species civilization on Planet Earth.

Furthermore, the lack of political unity in this civilization can (and indeed does) lead to contrasts, the more dangerous as ever more powerful destruction tools are made available to political and military leaders.

6. Some practical cases of classification of exocivilization

Since no exocivilizations are known to date, we will now see some examples of how our scale can be applied to some hypothetical exocivilizations taken from the ufologic culture and science fiction literature (more information in the references):

a) *The Na'vi civilization (from the "Avatar" movie)*

The tribal civilization of the Na'vis manifests an unbalanced set of the fundamental factors where the MOR component sharply predominates over the other two: 1 - 2 - 1, which on our scale translates into Asset GP121 and Level GP1.3 .

Note: It is interesting that the terrestrial civilization as described in J. Cameron's film could be characterized by Asset 422 and Level 2.6 on the GP scale (a highly unbalanced civilization where the SCIENTIFIC factor heavily prevails against the factors of MORal and SOCial development).

b) *The Ummo planet civilization*

The civilization from the planet Ummo manifests a harmonious set of the three fundamental factors: 3 - 3 - 3, that is, a GP333 Asset and a GP3 Level.

Given the harmony of the fundamental factors' values, it can simply be referred to as a "GP3 Level civilization".

c) *The "Janos people" civilization*

Like the Ummo planet's civilization, this another GP3 Level civilization.

d) *The Serpo planet civilization*

Like that of the Janos, this civilization also is a GP3 Level civilization.

e) *The W56 civilization (from the saga of "Amicizia")*

The civilization of the W56s manifests an harmonious set of the three fundamental factors: 4 - 4 - 4, that is, Asset GP444 and level GP4 or, to put it more simply, is a "GP4 Level civilization".

f) *The CTR civilization (from the saga of "Amicizia")*

This civilization, similar to that of the W56s, but characterized by a strong deficiency in the MORal-ethical component, manifests a set of fundamental factors 4 - 2 - 4, which on our scale translates into Asset GP424 and Level GP3.3.

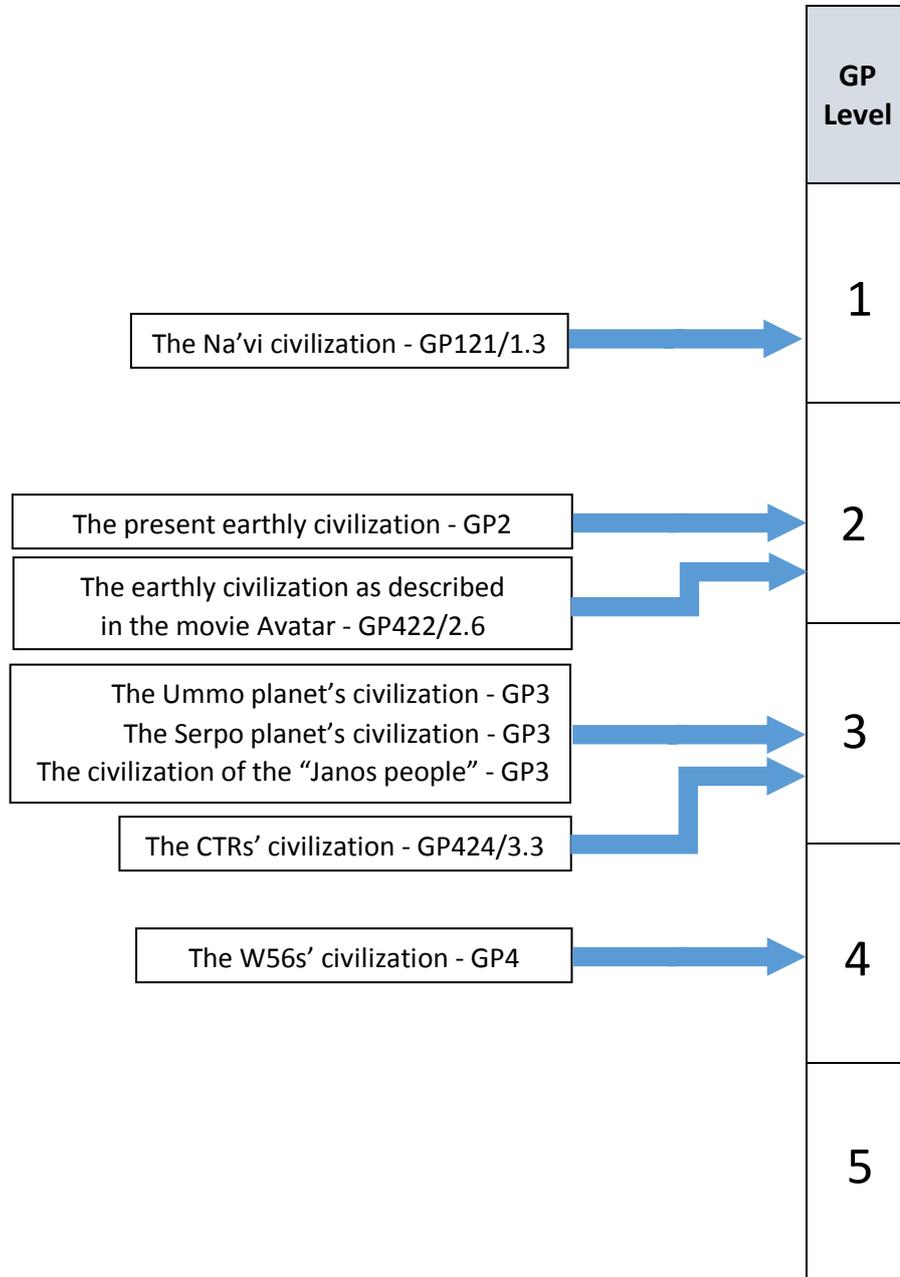
g) *The civilization of Ra*

Lastly, the particular case of Ra, a civilization that would have accomplished the whole cycle described in our scale and then "ascended an octave", undergoing a process that could be described as a new experience of the living being on a different and higher plan of existence.

As such, this civilization cannot be classified using the GP scale, finding itself by any practical definition, "off-scale".

7. A graphical example

Let's now look at the same examples of the previous point, but expressed in a graphical way:



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