

Avances SISTÉMICOS

Número 10

Enero 2021

THE ROLE OF THE EXPRESSION

$$\mathbf{T=Y/X}$$

IN SCIENCE

With an introduction to the economic subsystem



Año 4 - Número 10 - Enero 2021

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ISSN 2659-6520

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EDITORIAL

Old is the contrast between Parmenides (nothing changes, everything remains) and Heraclitus (everything changes; everything is a flow), happening that both sages were right. Because what does not change is the transformation process itself (as an operating method) of everything that exists, whether it is perceptible or not, because many times it is an internal "process" of which we know very little (black box). Nevertheless what definitely does change is the state and the functions that things fulfill at the end of each process, by the way in continuous succession, even if it is due to the mere passage of time. For instance, biologically, living beings change with time and the circumstances that surround them; in the physical field matter and energy exchange their initial states many times; and even in the psychological and spiritual field minds evolve through education and experiences.

But the interesting thing is to know the internal process of change (the transformation operation) that takes place, and this is when the concepts of "initial state", "inputs", "transformation" and "output" (or "new state") would come into play. And this means that the transformation operation "T" can be formalized through the relationship between the "outputs (Y) and the" inputs "(X) in the form $T = Y / X$, a relationship that, if standardized or normalized units in a common dimension (eg, 0-100) in both "inputs" and "outputs" are used, then it presents the critical advantage of knowing if that quotient is equal to, greater or less than the "unity", that is, if the transforming relationship is positive (creative) or negative (destructive), speaking for the moment in exclusively quantitative terms.

And even more interesting is the universalization of this formula ($T=Y/X$) in social systems since it can be applied to an infinite number of cases and circumstances, serving also to give a transcendent meaning to the transformation depending on whether it implies "progress" for humanity or, otherwise, a "regression".

It also may be linked to a new concept that it is highly significant in the cultural (spiritual) dimension as it happens when we deep in the field of the "ethics of transformation", when we try to know if the transformation process (T) it is "good" or "bad" and "for whom".

All of which leads to the concept of transformation represented by $T = Y / X$ and its internal process $X \rightarrow T \rightarrow Y$, possibly becoming the great universal paradigm of life and what will force to every conscious human being to watch how to obtain the greater or better "Y" possible, and how to use the minimum amount of "X" so that each transformation operation, of the many that may occur each day, improves the life of a human being who must be aware of what it is being played: its happiness. And this is so because, as it will be seen, the components of "Y" in social systems are always a "system of values" composed by the following nine quantitative empirical indicators coming from a REFERENTIAL PATTERN OF UNIVERSAL VALUES (RPUV) (1): *Health, Wealth, Security, Freedom, Distributive Justice, Conservation of Nature, Quality of Activities and Moral Prestige*. Nothing more but nothing less.

And among these values is that of WEALTH, which due to its importance and overlap with the rest of the values, deserves to advance a complementary mention at the end of this essay, currently underway in AVANCES SISTÉMICOS.

INTRODUCTION

This draft paper will try to make some of the ideas advanced a little more explicit, and to do this it will be divided into three parts:

First, to remember that to achieve efficiency is the essential purpose of the expression $T=Y/X$, both in individual and social systems. Hypothesis that will be the main body of this presentation. Second, to suggest that this expression is so general that it could be related with some principles of thermodynamics in Physics; and

Third, also point out the idea of a certain ethical "sin" against nature, committed by $T=Y/X$ in social systems, which would require, at least, be considered with greater attention (f.i. ecological problems).

FIRST PART

TOWARD THE GREAT METAPHOR OF THE UNIVERSAL TRANSFORMATION: $T = Y / X$

We said that the expression $T=Y / X$, comes to be a kind of great universal formula of the transformation process common to everything we can imagine, from the structure of atoms to the infinite systems of galaxies and stars. But our interest here is focused on the human systems, in the cybernetic guiding of complex social systems such as, for example, the direction of countries by their governments. And for this, it is necessary to start from a referential and **essential** standard of "universal values-ends" (Y) that must be compared to other more secondary or instrumental purposes.

From the individual human being to the most complex social and political systems, the process is the same: people are looking for "values" to satisfy their needs.

Since the human being wakes up from the night sleep, he/she has only one thought: the expression $T = Y / X$, even if the "Y" is only a simple and urgent biological need and the "X" the effort or time devoted to it. And from that moment, the mental calculation of "T" continues tirelessly, be it washing, eating breakfast, taking care of the family, going out to work, etc. The human being will only seek to maximize the level of his personal "T" at all costs. And it will depend on the content of the "Y" (depending on how you want to earn money, investigate, gain prestige, etc.) and the content of the "X" according to the use of sufficient and honest means. And in order to optimize this "T", each person intuitively perceives or copies what other persons do, and many times associates with other creating societies for this purpose. But let us take the government of countries as the most visible example.

And here comes the first criticism to make, because many type of societies forget which are their essential tasks to fulfil, meaning a serious irresponsibility to forget the ultimate ends for which a society is created. For instance, taking into account the Nation-State as the unity of analysis, we all suppose that the political leaders know very well the needs (natural or artificial) of their population. But what happens when it is not?

Could we speak then of a serious and acute Sociopolitical "Sin" of Governments, when they begin by not knowing the system of collective needs from a critical systemic perspective?. For instance, would result important for the population to increase or to reduce the number of ministers in a government? Could it be unconsciously drifting towards the analysis of what is secondary as opposed to what is relevant? Could it have forgotten too often the ultimate aim for which states and governments exist? Should not these questions be asked, not to underestimate what it has done until now, but to claim and foster what it could also undertake? Governmental Science's hypothetical "social sin" would have two dimensions: the first concerns its **socio-ethical** and anti-humanistic consequences (not to see politics from the point of view of the man in the street); the second is **epistemological**, for:

- a) Its focus on partial parts of social systems (forgetting mainly their overall efficiency in terms of Universal Human Rights as an interrelated set;
- b) It does not monitor the internal imbalance (axiological profile) between the values; and
- c) Does not compare this profile with that of a space significantly comparable).

The problem is to abandon practically the final aim for which the polity was created, that is:

- 1) To increase the sum of individual global satisfactions of their needs;
- 2) To reduce differences between these individual global satisfactions; and
- 3) Compare yourself with other systems and set an example of ethical efficiency.

But it seems that this final and only aim of the polity does not worry too much in the terms of anyaxiologically oriented organization.

Assuming that this is the initial motivation, it would be the "expectations of reaching higher degrees of satisfaction", and such expectations alone, that would explain the ultimate aim of living in society through some kind of governmental organization. They would, in a word, represent the "cement" that binds and the force that galvanizes durable societies and polities, inevitably driving individuals to inter-relate with different degrees of intensity and establishing among them an initial attraction that is not necessarily strictly rational. The intensity of that drive is what later makes associations among individuals endure.

The next step must necessarily be to specify such needs or requirements based on Universal Human Rights. Initially and from an intuitive vantage, it does not appear to be particularly difficult to ascertain that people, regardless of time or place, pursue values such as: good physical and mental *health*; a certain level of *material well-being*; *safety* from danger and contingencies; *knowledge* and understanding of the world around them; *freedom* of movement and expression; perceived *justice* in the distribution of the available goods; life in *harmony with nature*; full *development of one's personality* as an intelligent and creative being; and finally, being loved or admired by others; These NINE requirements (based on Maslow's needs) would constitute a Reference Pattern based only on so-called "universal" needs, or needs common to the human race and distinguishable from a much broader spectrum of so-called cultural needs. And they form a very well-known suite of natural rights generated on the basis of the most innate and desirable of human aspirations. (See the concept of *Reference Pattern of Universal Values* in Parra-Luna, (1983).

This initial list of nine human needs, or any other regarded to be better founded, should be built into a theoretical model that should in turn be appropriate for the systematic definition and measurement of the efficiency of governments.

The role of the “need/value” dyad in governmental Science

Such levels of satisfaction of needs can only be attained by producing the values that represent them. Here we might cite anthropologist C. Kluckhohn for whom “**value** and **need** are two sides of the same coin”; i.e., each need is met by producing the respective value. All the foregoing can be summarized in the following syllogism:

1. People are, by nature, *needy*.
2. If they form societies it is *solely* to better meet their requirements through the greater individual efficiency attained.
3. Therefore the “social efficiency” concept is the construct that *explains* the existence of any social organization and, therefore, all social science deriving from the need to understand and improve such efficiency.

However, Governmental Science seems to have definitively abandoned the study of governmental units as such. And if governmental Science –the science of social groupings – doesn’t attend to this question, who will? Because of the division of scientific-academic fields, each of the specialities studying *social phenomena* ultimately explores and analyzes its respective tree, but none sees the forest as a whole. Specifically, what we should take into account as an object of research is the “*added productivity* gained by a polity as a result of its mere existence”. Any study of that productivity should be based on the fundamental equation of basic efficiency $T=Y/X$ where as we know, “*T*” is the transforming organization, “*Y*” is the Outputs, and “*X*” the Inputs, and from where:

1. **The structure of *Y*, insofar as it describes a complex comprising theoretical dimensions *D* and empirical indicators “*y*”.** Formally: $Y = f(D_1, D_2, \dots D_n)$ where $D_i = f(y_1, y_2, \dots y_n)$. The result in some standardized terms (f.i., 0-100) is an axiological profile (or “system of values”) depending on the relative accent put on each one of the indicators defining also the kind of ideological regime. Any governmental system must, then, be aware of its objectives. If they are unknown or unforeseen, or if they are not compared, the theoretical understanding of the governmental unit may be deficient or spurious and its government socially reprehensible, due to the failure of analysts to take account the needs of the members of the unit and the degree to which they are met.
2. **The understanding of *X* in terms of the resources used, “*m*”.** Formally: $X = f(m_1, m_2, \dots m_n)$. Any governmental unit must be aware of the resources it uses and their total cost to obtain the above objectives (*Y*), a measure of utmost ecological or negentropic interest.
3. **The final understanding of *T* in terms of *Y* and *X* in the expression $T= Y/X$,** where, by virtue of the prior standardization of indicators (between 0-100) for averaging, if $T>1$, positive transformation takes place; if $T<1$, transformation is negative; and if $T=1$, it is neutral.

Neglecting any of these three dimensions constitutes a very serious omission. The soft-focus vision of scientific specialities (Ortega and his “barbarian specialists” necessarily come to mind) and the resulting segmented study of society can be likened by analysing only the separate parts of an engine before they are put together: the unity, operation and purpose of the engine as a whole and the *raison d’être* of its parts are lost in the analysis. This is the more galling, because the population votes for or chooses its politicians, for the exclusive purpose of fulfilling this neglected duty. The duty of presenting the overall “system of values” which has been performed, in comparison with the “system of values” governmentally promised, is therefore essential.

What of the socio-governmental systemic approach?

A genuine systemic approach (the understanding of the global system) obliges the analyst to consider:

- a) The ultimate end of the system, which cannot be other than the best possible satisfaction of the citizen's needs (Y).
- b) Due to the inevitable transforming structure of systems (Inputs (X) → Transformation (T) → Outputs (Y)), the ultimate end or "system of values" (Y) should be known.
- c) This knowledge can be worked out in a quantitative form through operational definitions and empirical indicators, both objective (facts) and subjective (opinions).
- d) The relationship $T=Y/X$ allows to calculate a first basic notion of "Governmental Efficiency" which can be useful for time and even space comparisons.
- e) The calculation and drawing of an axiological profile that shows the levels of development of the 9 values of the PRVU.
- f) The comparison of said profile with the average of a comparable environment, will really define the relative ambition of the value system.

These would be the minimum requirements of a systemic approach to the governmental system. But in spite of some past efforts in this direction, the problem has not been undertaken seriously. Points e) and f), are the most ambitious and important, but they are normally ignored by most governments. Professionally, this leads to a disquieting conclusion. We do not even know why the polity exists. Or what could be more serious: it seems that we prefer not to face this question if we have to look at the governmental system from the perspective of the man in the street, that is: its essential needs that are not only materials.

Is there an alternative?

It can be argued that it is both complementary and urgent to tackle the problem of the concept of "governmental efficiency" in its two main dimensions: first, the description and measurement of the expression "Y" which is always a "system of values"; and second, its explanation through the complex set of variables that represent "X" and "Y", and mainly their relationship " $T=Y/X$ " which is the organizational dimension par excellence. A four-step strategic program could then be developed:

- a) To reconsider whether these OUTPUTS can be represented by the **Referential Pattern of Values** composed of the nine following universal values insinuated above: *Health; Security; Wealth; Knowledge; Freedom; Distributive Justice; Conservation of Nature; Quality of Activities; and Moral Prestige.* (See their operational definitions in Parra-Luna 2016 that can be quantified following *Lazarsfeld's methodology from the concepts to complex indexes.*
- b) **To get the Axiological Profile in order to know, from a philosophical point of view, where we are heading as a society.**

- c) **See the possible imbalances between the levels of development of the values in order to balance them in order to achieve continued social progress.**
- d) **See the differences of our profile with that of other comparable systems to try to emulate them in the best way or to give an example of what others can do.**

If these re-considerations could confirm these possibilities, Governmental Science could make an important and decisive step forward. Any polity (f.i., the Nation-State) could be subdivided (because of its fractal property) into a multitude of governmental organizations, big and small, simple and complex, (from the very small town to the global polity) and all of them could be analyzed through this new "transforming" approach where the general rule would be $T=Y/X$. The Humanistic Governmental Science's main concern, then, would logically be, to understand how to achieve the best possible *value system* (Y) for each one of the political subsystems at the minimum ecological cost (X), for the benefit, of course, of their individuals as human beings.

Having reached this point, it is unavoidable to ask:

How is it possible to govern without having in view the axiological profile of the system that is being directed? Why don't we generalize the use of the concept of "comparable axiological profile" as a functional and ethical X-ray of organizations?

How is it possible that Governmental Science, does not take into account, precisely, the motives for which individual people forms political associations? How is it possible to forget that all governmental systems can produce only those universal values which are pursued by people? How is it possible that Governmental Science does not account for and measure the levels at which these different values are produced in order to be able to make rigorously any possible criticism? How is it possible to ignore the ethical dimension that supposes this not looking at the polity from the perspective of people, since it is people who pay? And, if people live together and collaborate between them, is only for reaching a *better life*, (that is nothing but an **"integrated system of values"** or compatible levels of *health, wealth, security, freedom, equity, social prestige, etc.*). Why then, do we not count, register, measure and compare, in a systematic and routine way, the "system of values" performed by any type of governmental organization –their "raison d'être"– from the small municipality to the nation-state? Is it so difficult?

The difficulties we may find, according to the specialized literature, is because we take as axiomatic the following mimetic principle: we consider that the expression $T=Y/X$ is too general, too ambitious, and too unfashionable in the age of microanalysis of modern Physics and Biology, where to publish a good piece of research must be centered on a very small portion of the problem. And also because organizational scientists still add three outdated and comfortable fallacies:

1. It is not possible to agree on a single "Reference Pattern of Universal Values" that has to be performed by any kind of society, so that we could establish time and even space comparisons.
2. Even if we would agree on the universal values, we would not have enough and good quantitative data to define them operationally and validly. And
3. Even if we could define values validly, it would not be useful to work out a complex index ($T=Y/X$) of organizational efficiency.

Three clear fallacies to show that most organizational analysis could be committing a grave social "sin" because they scorns, systematically, the only thing the voters are looking for: to improve globally their lives.

The generalization of the problem: different levels of applications

- a) **Actions:** each separate action committed by a person or social organization, it is itself a "transforming system" that is governed by $T = Y / X$, and hence it can be positive, negative or neutral.
- b) **Persons:** As nothing would escape this formula $T = Y / X$, human beings will always try to maximize this relationship by increasing "Y" (improving their health, earning more money, making sure, feeling freer, etc. and all with the least possible effort or monetary cost (X).
- c) **Family:** Between buying or renting a home, giving the best education to children, achieving harmony and love at home, saving money, or living with superficial luxuries, there are components of "Y" that will have to be weighed and limited by the possibilities in "X".
- d) **Organizational (from small groups to big organizations).**

Get hits for a sports club; faithful people for a church, profits for a commercial company, or practicing humanitarianism for an NGO, etc, will always be the "Y's" that must be weighed against the "X's" available in each organization to maximize the inevitable expression $T = Y / X$.

A first conclusion

Although put in another way and as a first conclusion about complex socio-political systems, only four words should be remembered: **PRVU; Data; Profile** and **Criticism**.

- 1. PRVU (list of values to pursue, p.e., the Referential Pattern of Universal Values)
- 2. Data (objective and subjective, secondary or by own research)
- 3. Profile (make the obtained data comparable)
- 4. Criticism (comparing the shape of the profiles)

All social systems in general could apply this simple four-step rule to try to achieve a better world.

e) **Global.**

Worrying about achieving the best possible balance on planet Earth, be it among all the inhabitants, or in the hands of a global organization such as the UN, will require monitoring and quantifying what is done in each of the nine great values of the RPUV, which will imply that burning problems such as forced emigrations due to famines or wars, ecological problems due to the destruction of nature, the unfair distribution of rents, the lack of political freedom, corruption, or the storage of nuclear weapons that put endangered world security, they will necessarily be components of the "Y" that will have to be related to the "X" of means used to maximize the expression $T = Y / X$. In thermodynamic terms it would express the passage from the First Law of Thermodynamics (Carnot) where energy is neither created nor destroyed, to the Second Law (Clausius) where the universe would move towards its maximum disorder, cooling or death (entropy).

As a summary, we repeat, nothing could escape this expression which becomes the great Metaphor of Universal Transformation, both at the micro level (manipulations in the subatomic world) or macro level (manipulations in the interplanetary world).

SECOND PART

KEY QUESTIONS TO IASCYS MEMBERS FOR A REFLECTION

1. Do you think that the expression T (Transformation) = Y (Outputs) / X (Inputs) inevitably sums up all conscious human activity, be it individual or social?
2. Do you think that the expression $T = Y / X$ is one of the best ways to understand and optimize the behavior of any individual or society?
3. Do you think that the expression $T = Y / X$ is transferable to any type of transforming activity, be it physical, mechanical, biological, spiritual or other.
4. In addition, could then this $T = Y / X$ express the **great metaphor of universal transformation** towards values even if the only value pursued affects the *Conservation of Nature* like in thermodynamic terms, or mainly the value of *Security* like in religious terms?
5. Could in that case, $T = Y / X$ express also the two laws of Thermodynamics as follows?:

- FIRST PRINCIPLE (COURNOT): $U = Q - W = 0$, where U = energy, Q = added heat and W = work.

And now, if we represent "U" by T , Q by Y and W by X , the expression $T = Y / X = 1$ would be equivalent to the first principle ? In other words, both "U" and "T" would perform a neutral behavior where nothing is created or destroyed, but only transformed?

- SECOND PRINCIPLE (CLAUSIUS): $dS = DQ / T < 0$, where dS = differential energy, DQ = energy flow and "T" is absolute temperature.

And if we take again our expression $T = Y / X$ and represent dS by T , DQ by Y and T by X , **then, would be $dS = DQ / T$ equivalent to $T = Y / X \leq 1$?** Both tends to the decrease of "T" or entropy.

It is also interesting to highlight the difference between the entropic and pessimistic behavior of thermodynamic principles, and the negaentropic and optimistic behavior of human systems in pursuit of PROGRESS.. In other words, the expression $T = Y / X$ is functionally positive and creative by enhancing the increase in "T", in contrast to the thermodynamic formulas that express inert or self-destructive states.

6. How do you see this attempt to relate the expression $T = Y / X$ with the principles of thermodynamics?

THIRD PART

ETHICAL ASPECTS

But this happens because individual and social systems are "energy stealing" systems with respect to their physical environment. This conclusion leads us to formulate, in principle, a certain ethical "sin" of human systems against the physical environment which raises in principle a troubling corollary. However, the notion of EQUILIBRIUM of social systems requires to achieve an equivalent level of development in the nine values of PRVU, among them the Conservation of Nature, and at the same time, the notion of PROGRESS in social systems demands to be as close as possible to level 100 in the nine values of the RPUV.

This will lead us to rethink the hypothesis that the second principle of thermodynamics is not always fulfilled. From our total ignorance one can think that a person using a simple pulley is capable of lifting "n" times a weight much higher than his own body, thus contributing more energy to the system (lifting utility) than the additional energy expended in feeding of the person using the pulley. Some of this seems to express the Fluctuation Theorem of Evans and Searles (2002). In this case $dS = DQ / T > 0$ and $T = Y / X > 1$.

Corollary: In any case, if the "T" in social systems were able to maintain this double great goals: to achieve EQUILIBRIUM and at the same time PROGRESS, then any ethical criticism for taking energy from the physical form would cease to have sense.

7. (Additional question). Would it be possible to contemplate that the expression $T = Y / X$ could, through technological development, end up creating as "Y" an amount of information / energy greater than the information / energy consumed as "X", and then not complying with the second principle of thermodynamics at the universal scale? Wouldn't the physical world accumulate more energy after the construction of the atomic pump in the 1940s?

These are questions that in any case highlight the generalization of the transforming process $T = Y / X$.

By Francisco Parra-Luna

References

- Evans D.J. and Searles, D.J. (2002), "The Fluctuation Theorem", in *Advances in Physics*, vol. 51, issue 7.
- Parra-Luna, F. (1983) "Elementos para una teoría formal del sistema social", Edit. Universidad Complutense de Madrid.
- Parra Luna F. y Montero de Juan (1989) "A Cybernetic Approach to reduce Un employment in Spain", *Kybernetes, The International Journal of Cybernetics and General Systems*, vol. 18 n. 5.
- Parra Luna F. (1997), "The Notion of System as a Conceptual Bridge between the Sociology of Organizations and Organizational Efficiency", *Kybernetes*, 26, num. 6/7.
- Parra-Luna, F., (2000) "An Axiological Systems Theory: Some Basic Hypotheses", *Systems Research and Behavioral Science*, vol. 18, p. 479-503.
- Parra-Luna, F. (2008) "A Score Card for Ethical Decision Making", *Systems Research and Behavioral Science*, vol. 25.
- Parra-Luna, F. (2013), "On the "Social Sin" of Political Analysis: a Critical Quantitative Approach from a Systemic Perspective", *Systems Research and Behavioral Science*, 30, p. 661-676.
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THE ANSWERS FOR THIS QUESTIONS



Prof. Dr. Gerhard Chroust

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Dear Francisco!

Could you help me with my basic interpretation of the 'formula $T=Y/X$ '.

I believe that the Y/X is NOT a mathematical formula but a symbolism of saying 'A transformation transforms inputs into output.

If i am correct then the choice of '/' is misleading because it implies either a division or a restriction of values of Y to those compatible with X

('all Y' such that ... a condition on the Y)

Also what dimensions do Y and X have. Obviously not numbers.

Thirdly I have a problem to see where the environment comes in, assuming that the formula does not describe a closed system.

Best regard, Gerhard.

Dear Gerhad;

I will try to do it from my humble point of view.

In the expresion $T=Y/X$, "Y" is a vector of numerical values, that when they are standarized, f.i. 0-100, the aresumable.

For example, I am attaching my last work where you can check, even without saying it, that "Y" is the arithmetic mean of the means, that is, in table 1:

$Y = (8,17 + 40,16 +14,10) / 9$, which express percentage positions reached by the countries in Health, Material Wealth, Safety, Knowledge, etc.

That is, dear Gerhard, "Y" is a vector of empirical quantities, just as "X" can be, and therefore it is a mathematical formula that expresses the "axiological profitability (in terms of universal values) of any social system, large or small, from the individual as a person to the UN representing all the people of the world.

If you want you can see F. Parra-Luna, "A Score Card for Ethical Decision Making", in Systems Research and Behavioral Science, num. 25, 2008, where the formula $T=Y/X$ is applied.

And if you have still daubts, tell me please.

Best regards, Francisco.

A COMMENT FROM PROF. NICOLAE BULZ



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Commentary on the seven inquiring statements of the study

"ABOUT THE ROLE OF THE EXPRESSION $T = Y / X$ IN SCIENCE: A PROPOSAL FOR IASCYS MEMBERS"

by **Professor Emeritus Francisco Parra-Luna** - December 2020

ISSUES RAISED :

1. Do you think that the expression T (Transformation) = Y (Outputs) / X (Inputs) inevitably sums up all conscious human activity, be it individual or social?
2. Do you think that the expression $T = Y / X$ is one of the best ways to understand and optimize the behavior of any individual or society?
3. Do you think that the expression $T = Y / X$ is transferable to any type of transforming activity, be it physical, mechanical, biological, spiritual or other.
4. In addition, could then this $T = Y / X$ express the **great metaphor of universal transformation** towards values even if the only value pursued affects the Conservation of Nature like in thermodynamic terms, or mainly the value of Security like in religious terms?
5. Could in that case, $T = Y / X$ express also the two laws of Thermodynamics?

ANSWERS :

1. YES. An expression as **T (Transformation) = Y (Outputs) / X (Inputs)** is ideally the analytical locus *to declare the significance of 'all' contingent variables of the notion of "Governmental Efficiency" (1.1).* Then, to operate with the existing data related to specific cases of this *explicit-integrative study.* One case (1.2), at least, must be presented into an *experimental phase of the implementation project (1.3),* and to 'have' an *attributing- section (1.4)* (i.e. a metaphoric Occam's razor) in *space / time / conceptual amplitude (1.5).* So, it is a summing up (calculus) of the *conceptual-existing and numerical-validated societal data (1.6),* within a *'coherent' flow of systemic and cybernetic bordering (1.7)* 'around' a conceptual nucleus related to the *organizing major task (1.8) of an existing social entity (1.9).*

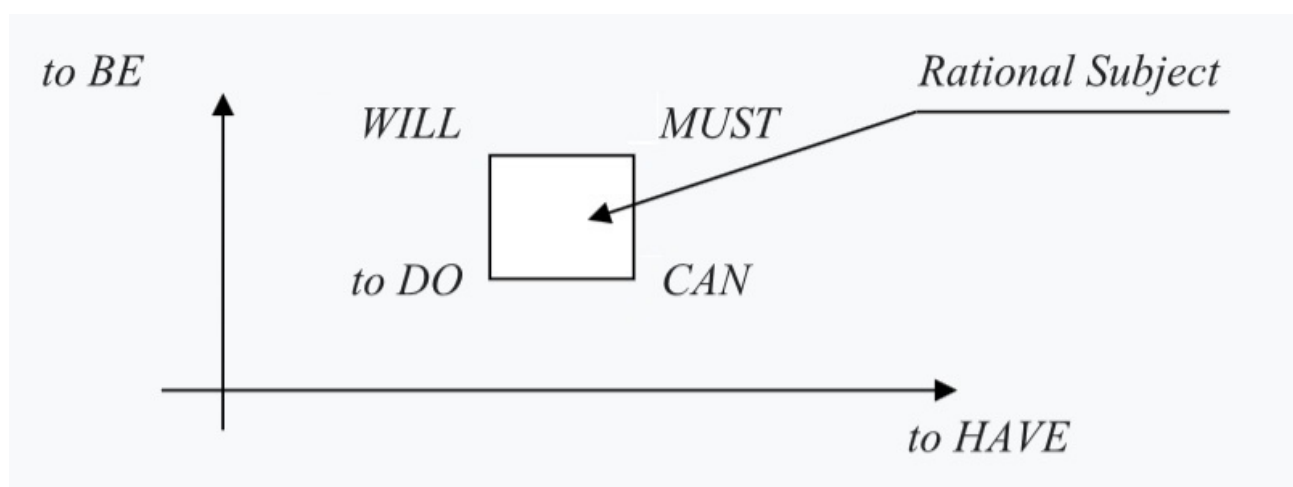
Then, maybe after more than two great-iterations [of *project self-adaptation: i.e. calculus, editing and boarding the current results - a critical evaluation - re-dimensioning the project - re-start of another great-iteration*] it would be an explicit *re-sizing of the entire self-adaptive project (1.10).*

Also, there would be an implicit *aggregation of the individual human beings to the respective social entity*, and an implicit *disaggregation of the respective social entity to the individual human beings* (1.11).

So, within this above presented 'in-ovo' brief analysis, there could be assigned and assured the 1.1 :- 1.11 (at least) inner tasks of this study as project.

The study presents a major part of these inner tasks. E.g. the **nine** *conceptual entities* assigning the **Referential Pattern of Values**.

2. YES. The study expression **T** puts into form a *complex analytic way*. Another one can be a *structural (algebraic) way embedding the (natural) linguistic patterns* associable to the study-project. A brief scheme [related to <http://papers.ssrn.com/abstract=2600048>]:



Here would be the intuition that an *interactive couple* between the above briefly presented *structural (algebraic)* way and the *complex analytic way* could exist if the both ways address the study expression **T** in a kind of a dual progress.

3. It could be stated sometime alongside/within the 1.1 :- 1.11 (at least) inner tasks of this study as project. The 'present' foresight is YES.

It is possible that for each type of transforming activity to be elicited a '*specific "Efficiency" frame*'; maybe these four or more frames to strictly imbricate themselves, or only for some parts, or for a '*towards wholeness*' *ideal* [to be defined ...].

4. The 'present' foresight is YES, if an integrative concept as *Responsibility* could *meta-systemically aggregate* two (at least) sub-concepts: the sub-concept *Evolution*, and the sub-concept *Security*. Then, it is the hard task to deal with the *Conservation of Nature* as a *Contemporaneous Correct, Legal and Just Responsibility* ... redressing and asserting a *Contemporaneous Truth* on.

Maybe so, or otherwise, an *elaborated (dynamic) Truth* would tend towards a **great metaphor of universal transformation** / also, '*towards an intro-open wholeness*' *ideal* [to be defined ...].

5. The 'present' foresight is YES, if the (sub-)concepts pointed at **3** and **4** are supposed to be elicited. Concordant and correlated with all these, there would be considered *matter (substance; energy; information)*, and the 'static' *determinism* would be enlarged within a *heuristic determinism* (with a representation for the *objective-subjective Rational Subject*, and the *communities as non-linear elaborated aggregations*).

Also, the distinction *information/knowledge* would be as descriptive as mostly enlarging the **two laws of Thermodynamics**. Maybe all these would stand towards two laws of *Human and Communities (substance; energy; information; knowledge) Dynamics*.

6. In a brief, the expression $T = Y / X$ [as a *societal turning point* to the classical principles of thermodynamics] axiomatically correlates the terrestrial (at least) conceptual and praxis stance on three systemic properties:

- *magellanity* property [dynamic (re)search for revealing the *non-observable circularities*],
- *reflexivity* property [beyond the *representation o representation* within a *tension on a holistic capacity*], and
- **organizational efficiency** property [within and beyond the *reflection of reflection* from a *tension on an eco-consciousness*]

[related to <http://papers.ssrn.com/abstract=1743165>].

Then, as in **5**, it is to point on the presence and the role of a *heuristic determinism* and also on *the Rational Subject and the Communities Dynamics* ['if', 'how' and 'how much'] could stand up a *selective determinism* within the *social universe* ['between' *Microcosm, Bios, and Macrocosm*].

Maybe the classical probabilistically [*to BE*] and statistic view on Our World could be enlarged on a fuzziness way [*to HAVE*] towards a *subtleness* re-view [*to BE X to HAVE*]. [related to <http://papers.ssrn.com/abstract=1743149>](see, also, **2**).

7. Stating in brief on a *Moral Market : Creative (e-)Partnership* [related to <http://papers.ssrn.com/abstract=1736179>] it is to refer the national data from Institutes of Statistics, and data from international entities as the source for responding to this additional question. According to *our reflection on $T = Y / X$ in social systems*, it is not only to take on board the exponential energy consumption, the green energy quasi-positive stance on, but to understand/explain on *Our World, Our Cosmos, and Great Universe as 'different' matter reservoirs*. I.e. the role and the responsibilities of a *terrestrial being* from step by step discoveries/inventions, to smart evolution consumption, towards a subtle source for an emerging type of *intro-open consciousness* ... [related or foreseen partaking an *intro-open wholeness ideal* – see 4; and the difficulties to constitute a *terrestrial eco-consciousness* ...].

It is worth to 'duplicate' all above related on a dynamic evolving **ethical "sin"** mostly within *societal-political interfaces*.

So, maybe an involvement of a quasi-relation inspired by Heisenberg's principle of uncertainty (position - velocity --- within a wave-particle duality), addressing *uncertainty* in a *kind of duality* {eco-consciousness - **ethical "sin"**} could proficiently be represented ...

Another level addressing *uncertainty* could be pointed within {Biodiversity AND Spirituality} [related to <https://papers.ssrn.com/abstract=3593259>].

But it seems that any positively creative approach of a '*coherent*' flow of systemic and cybernetic bordering (1.7) of our reflection on $T = Y / X$ could enhance us and Our World with a superior comprehension and praxis to achieve **efficiency**, to attain *more happiness and less alienation within our low resilient entities to global crisis ...*, to advance synergy and non-entropy into our social systems.

'Not what it is, but what it could be ...'

A BRIEF ANSWER FROM F. Parra-Luna

Dear Nicola:

Thank you very much for your comments on $T = Y / X$.

I must say that I have been impressed by the degree of depth and linkage of your analysis in each of the seven points. And above all as you accumulate compatible principles from point 1 to 5 until it is possible to reach the conclusive points 6 and 7. It can be a way to continue integrating physical and social sciences, And I am also glad that you mention the Occam's razor because it coincides with the methodological principle in social sciences of H. Simon when he recommends: "Simplify: since there will be time to add complexities".

So, dear Nicola, I hope that your general conclusions on the expression $T = Y / X$ will be received by our IASCYS colleagues with the attention they deserve.

Best regards, happy 2021 and above all good HEALTH.

Francisco.

AN APPLICATION OF $T = Y / X$ TO THE SPANISH ECONOMY 2021

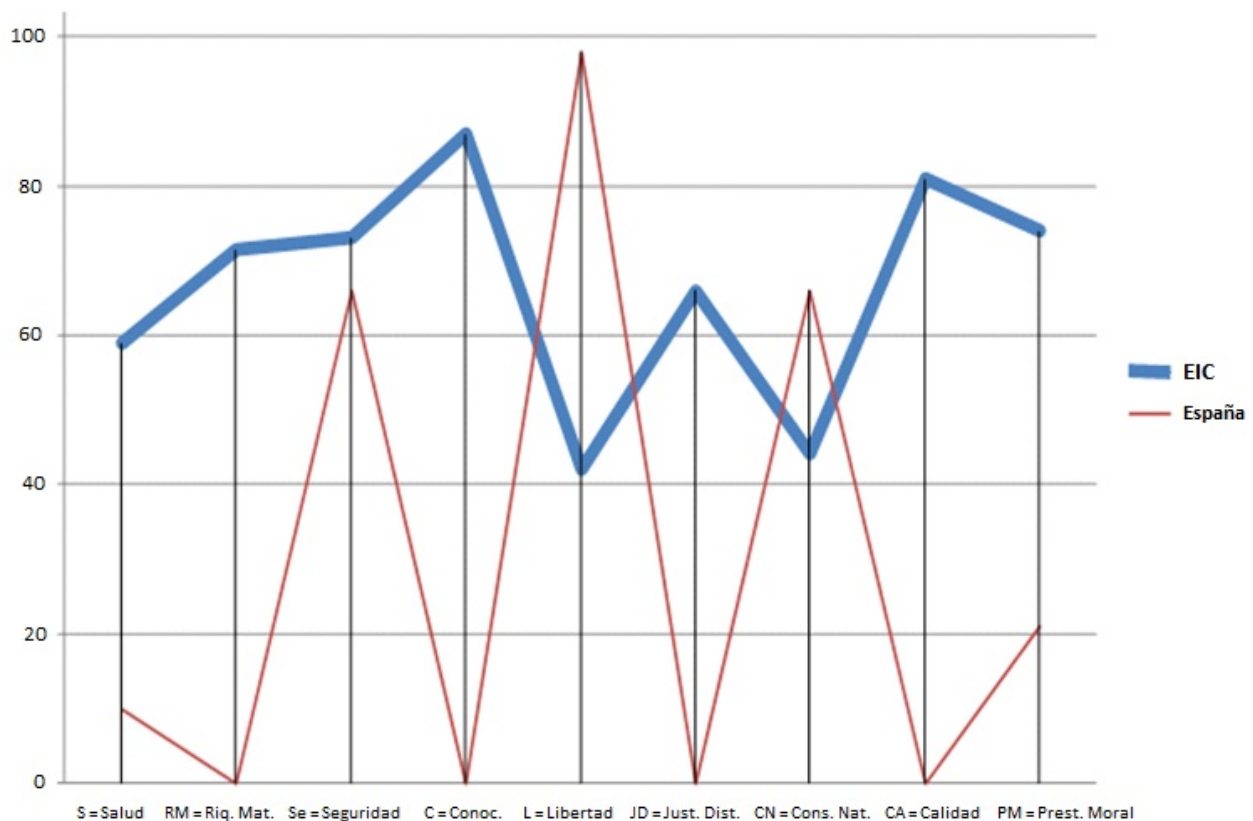
(This is only a preview of the content of the future AVANCES SISTÉMICOS NUM. 11)

Logically, the economic subsystem has its corresponding $T = Y / X$. Simplifying to the extreme, it could well be said that the expression GDP_t / GDP_{t-1} accounts for the economic progress (or change) achieved from period $t-1$ to t . And if we want to introduce the circumstances (c), favorable or unfavorable during the period "t", we multiply them by GDP, to have $GDP_t (ct)$, which will be equivalent to "Y"; while PIB_{t-1} will be equivalent to "X". It is a simplification but it would be a first application of $T = Y / X$.

The problem with the economic subsystem is double: first, it is too important and determinant for the whole "system of values"; and second, in turn, each of the components of the global "value system" is influencing and determining the economy. Corollary: in a complex society it is difficult to separate the values of one from the other as interwoven as they are. And this being the case, there is no choice but to match the "Y" of both (society and economic subsystem) representing the nine values-ends of the PRVU. That is why AVANCES SISTÉMICOS has posed to some illustrious Spanish colleagues, most of them economists, the following four requirements to be able to manage the Spanish economy:

1. The need to follow a **model of values** that guides where you want to go as an integral society. For instance the REFERENTIAL PATTERN OF UNIVERSAL VALUES (RPUV) composed of the nine main universal values-end: *Health, Wealth, Security, Knowledge, Freedom, Distributive Justice, Conservation of Nature, Quality of Activities and Moral Prestige*.

2. The need to know the **profile** of values achieved about these values and its difference with the one pursued in relation to an International Comparable Space (ICS) "Comparable International Space" (EIC) such as eg., the ten most developed countries in Europe (*U.K, Germany, France, Italy, Netherlands, Belgium, Sweden, Austria, Denmark, and Finland*).



SISTEMAS DE VALORES DEL ESPACIO "EIC" Y ESPAÑA

3. Could be acceptable the results of the model that applied these principles?;

Año	Crecimiento del PIB	Paro alcanzado
2021	0,95 %	13,7 % Pobl. Activa
2022	3,08 %	13,6 %
2023	4,08 %	10,5 %
2024	6,90 %	9,5 %

Table 2: Results of the model ("Modelo por Valores-SETCU 2021-24 para España") 30-10-2020

4. Do you agree with the six requirements to reset the Economy, where the following six requirements are mentioned?:

- a) Adopt a Reference Pattern of Universal Values as a government guide.
- b) Define the concept of social PROGRESS based on these values.
- c) Reach a necessary balance between the values of Freedom and Distributive Justice.
- d) Make GDP growth depend on the level of employment.
- e) Make the reduction in Debt depend on GDP growth.
- f) To grant the State the role required by the imbalance of the value system.

Having sent these four questions at about a hundred colleagues from various Spanish universities without any personal knowledge, we obtained the 11 evaluations within the following scores (0 = rejection, and 10 = acceptance), according to Table 3:

SCORES FOR THE MODEL IN THE FOUR EXPOSED DIMENSIONS					
	VALUES	PROFILE	RESULTS	RESET	MEAN
Prof. Prades (Economista)	10	9	9	10	9,5
Prof. Gravia (Economista)	10	10	3	2	6,2
Prof. Carbajo (Economista)	10	10	10	10	10
Prof. Garmendia (Sociólogo)	8	7	6	5	6,5
Prof. Asgusti (Economista)	(Rechazo del modelo por ideologizado)				
Prof. Mella (Politólogo)	9	9	5	8	7,7
Prof. Robino (Economista)	10	8	6	6	7,5
Prof. Gómez (Economista)	8	8	8	8	8
Prof. Ros (Filósofa)	8	10	9	8	8,7
Prof. Caselles (Economista)	10	10	8	10	9,5
Prof. Huera (Economista)	(Aceptación del Modelo, pero no proporciona puntos)				
Prof. Escot (Economista)	7	7	4	6	6
Puntuación obtenida por el "MODELO POR VALORES-SECTU"					7,9

Small sample of acceptance that can give an idea of the degree of change of orientation that the neoliberal economic subsystem would need. At the next number 11 of AVANCES SISTÉMICOS will see the arguments given by these colleagues about the validity of the model.

AN ONGOING INVESTIGATION

In the application of $T = Y / X$ for Spain, the AVANCES SISTÉMICOS team is currently handling the necessary data. Thus, the "Y" will come out directly from the average of the values of table 1 (or axiological profile of fig 1): The "X" will come out of operationalizing the "X" through, for example in the current Spanish case, its most important dimensions: x1 = pending productive needs; x2 = unemployment rate; and x3 = inverse of the fiscal pressure. At that moment we will have an "X" in a dimension 0-100 that will be comparable to the "Y" obtained also in said interval. And at this moment we will see if $T = Y / X$ is =, > or < than "1".

OBITUARIES :

In memory of prof. **Felix Geyer**

A relevant figure in the field of systemics and socio-cybernetics. According to recent news received from Amparo Almaguer, President of RC51 of the International Sociological Association, Felix Geyer left us on August 23. And at this moment I must pay tribute to the one who relaunched with the necessary force the Systems Theory Working Group that I myself had created in 1984, but it was a great job for Felix to transform it into the current RC51 under the name Sociocybernetics. in 1998. It only remains to wish him to rest in peace and with the intimate satisfaction of having left a job well done.

In memory of prof. **Alfonso de Esteban**

AVANCES SISTÉMICOS regrets having to report the death of one of the members of its Advisory Council, the professor of Sociology D. Alfonso de Esteban, who was Dean of the Faculty of Political Science and Sociology and a member of the Central Electoral Board. Apart from the great personal friendship that united us and the unconditional support he gave during the birth of this modest Newsletter, Alfonso de Esteban was a person endowed with unlimited generosity that leaves a magnificent memory in those who treated him thoroughly. Let us hope that your soul or your memory remain eternally in the privileged place that corresponds to them.

In memory of prof. **Mary Catherine Bateson**

We just heard the news of the death of Prof. Mary Catherine Bateson on January 2nd, AVANCES SISTÉMICOS wants to express its condolences for the death of such an illustrious colleague and the loss it entails for IASCYS.

CONGRESSES AND MEATINGS

Ciclo de Conferencias

"El Gran Caribe: un espacio de interlocución política y cultural, siglos XIX y XX (Enero-junio 2021)"

De Vie, 22/01/2021 - 17:00 hasta Mar, 15/06/2021 – 17:00

XVII Congreso Internacional sobre

Sostenibilidad Medioambiental, Cultural, Económica y Social

*Acelerando la transición a la sostenibilidad:
Soluciones políticas para la emergencia climática*

24–26 de febrero de 2021

Vrije Universiteit Amsterdam
Amsterdam, Países Bajos



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ABOUT SUSTAINABLESOCIETY 2021

We warmly welcome each and every social researcher to our "[2nd Global Summit on Sustainable Development and Society](#)" to be held on 19th and 20th of April 2021 in the magnificent city of Berlin, Germany, under the theme "**Promoting Sustainable Development Goals.**"

Conama 2020

Congreso Nacional del Medio Ambiente

Cuándo: 19/04/2021 - 22/04/2021

Dónde: Madrid, España

<http://www.fundacionconama.org>



ABOUT **ARTIFICIALINTELLIGENCE-2021**

[Meetings International](#) extends our immense pleasure and honoured to invite you to attend the “[International Conference on Artificial Intelligence & Robotics](#)” hosted on May 24-25, 2021 at Dubai, UAE. This conference focusing on the theme: “New Innovations in the future of Robotics” unite Computer Engineers, Researchers and Scientists in the area of interest from all over the world, which would provide a platform to discuss and enhance expertise ideas and exploration for future research aspirants in various fields of Artificial Intelligence & Robotics.

[KA SOCIAL 2021] IX Congreso Internacional de Ciencias Sociales **with the support of Sinnergiak Social Innovation (UPV-EHU)**

Junio 2, 2021 – Junio 4, 2021





XIII Congreso Internacional de la Asociación Española de Historia Económica AEHE

De Mié, 01/09/2021 hasta Sáb, 04/09/2021
Lugar: BizkaiaAretoa UPV/EHU (Bilbao)



2021 IEEE INTERNATIONAL CONFERENCE ON SYSTEMS, MAN, AND CYBERNETICS (SMC)

Date: October 17, 2021 - October 21, 2021

Location: Melbourne, Australia

Categories: [SMC Society Conferences](#)

Please join us for the 2021 IEEE International Conference on Systems, Man, and Cybernetics (SMC) from 17-20 October 2021. For more information, visit the website: <https://ieeesmc2021.org/>.

ABOUT CYBERSECURITY-2021

We are delighted to announce our upcoming **International Conference on Cyber Security** will be scheduled in **France, Paris** during **November 18-19, 2021** which includes prompt keynote presentations, Oral talks, Workshops/Symposia, Poster presentations, and Exhibitions.





Año 4, Número 10, Enero 2021



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EXISTE

PARA POTENCIAR CINCO FINES FUNDAMENTALES EN EL ANÁLISIS DE LOS HECHOS SOCIALES

1. *Demostrar que en el análisis de cualquier fenómeno, si no se toman todas las variables relevantes, los resultados serán espurios, lo que obliga al menos a clasificar las variables intervinientes en esenciales, secundarias y despreciables, todo en función de los fines de la investigación y los medios disponibles. Gracias a esta operación epistemológica, el enfoque sistémico ha logrado descifrar, p.e., enigmas de textos literarios no resueltos desde hacía siglos.*
2. *Señalar que salvo los objetos inertes, todos los funcionales, tanto naturales como artificiales, son sistemas de “transformación” (T) cuyo fin es maximizar las Salidas (Y) a partir de la menor utilización posible de Entradas (X), de manera tal que la expresión $T=Y/X$ se convierte en la expresión ecológica por excelencia maximizadora de la negaentropía universal.*
3. *El paso de los sistemas biológicos o mecánicos a los humanos cambia su naturaleza hasta el punto de convertir sus “salidas” en “valores universales” que responden a “necesidades universales” sentidas por los seres humanos que los componen en todo tiempo y lugar. De aquí el papel de un Patrón Referencial de Valores Universales (PRVU) que debe servir de medida de las realizaciones de todos los sistemas humanos, sean individuales o sociales, naturales o artificiales. Representa el enfoque humanista absolutamente necesario en el análisis de los sistemas sociales.*
4. *Esta naturaleza axiológica de las salidas en los sistemas humanos clasifica y explica la naturaleza profunda de las ideologías, que no son otra cosa que una fijación excesiva de preferencias sobre unos valores a costa de la minusvaloración de otros. Representa la crítica de las ideologías como meras actitudes mentales anquilosadas de naturaleza axiológica.*
5. *Además del tratamiento científico exigido, AVANCES SISTÉMICOS mantendrá una vocación internacional y ética, de tal forma que los problemas a plantear serán los que estén incidiendo gravemente en cualquier sitio del mundo, en un intento de introducir alguna luz en sus orígenes y posible solución.*

Avances SISTÉMICOS

Año 4 , Número 10 , Enero 2021



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