

Integrated Project for the Exergy and Sustainable Development of the Agro-Biodiversity through an Interactive Modeling Analysis regarding the Synergy between Rural Ecoeconomy and Bioethics based upon Smart Growth, Eco-innovation and Large Scale Systems

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Abstract

There are parallel focalizations on: **preservation of biodiversity based on Bioethics, and climate change limitation based on Bioeconomy**. This study proposes a synergic focalizations on both: **preservation of biodiversity and climate change limitation**. This study, intended as an integrated project, deals with the conceptual representation and solutioning of the joined problems of both: preservation of biodiversity and climate change limitation; it would take an increased stage and amount of constrains.

Key Words: knowledge / frame, eco-consciousness, holistic capacity, livestock production forecast up to 2050–2100, living support entities, more responsible use of increasingly scarce inputs and natural resources.

1. Introduction

It seems obvious that the representation and solutioning of the joined problems of both: preservation of biodiversity and climate change limitation would take an increased stage and amount of constrains. But, meantime, it may lead to greater common projects - which, within this conceptual prospective stage, would take an increased advantage of innovative approaches - just to elicit an intelligent response to the stage and amount of constrains. Is this a new forum of humankind wisdom? It is proposed, within this conceptual study, to apply an **Interactive Modeling Analysis** regarding the *synergy of the concepts/constructs: Bioeconomy (within classic, modern and contemporary approaches), Bioethics (within important subdomains specialization: rural, integrated rural, juridical, medical, societal attitude regarding animals), sustainable development, environmental sustainability, green power, exergy, agro-food, seafood,*

genetic modified organisms, fork to farm - farm to fork, health and well being, food and drink chain - last but not least, sustainable survival - and all their possible conceptual and praxis reflexivity within the actual development of the Computer Science, Informatics, Automatic Systems, Management, Large Scale Systems [1], [4].

From the large variety of activities which could be supported by the **Interactive Modeling Analysis**, the team of co-authors focalize and will focalize the research mainly according to the content of the next two **Tables** - as an interactive representation of two **inquiries** regarding the *synergy of the above presented string of concepts/constructs*. The **first inquiry** is a conceptual changing direct effect of the demand of non-linear foresight, prospective studies and forecasting methods on the background of the essence of **non-linearity of the actual global (post)crisis**. So, *here and now*, it is proposed a **four dimensional elicitation of an interactive analysis space** (within a spectrum of *logic, methodology and philosophy of science and technique*): **Dimensions: Natural-Artificial Dualism; Monism through Natural Base / Monism through Artificial Base / and dimensions: Monism centered on Computing; Monism centered on Intelligent Computing.**

Through all these expressed above, the team of co-authors invite and will invite the researchers (including those from the *nano, bio, bio-nano and quantum computing*) - toward pluri /inter/ trans /co /cross-disciplinarily approaches regarding the **Social and Societal / (contemporary) Knowledge Society** alongside to the efforts of the **International Consortium Generosity_Creativity_Solidarity**. The title and the content for this conceptual study, means to apply an **Interactive Modeling Analysis** regarding the *synergy of the following concepts/constructs (a minimal string):*

Bioeconomy, Bioethics, sustainable development, environmental sustainability, fork to farm - farm to fork, sustainable survival - and their possible conceptual and praxis reflexivity within the actual development of the Computer Science, Management, Large Scale Systems.

As a first step of the **Interactive Modeling Analysis**, let be the **four dimensional Table**:

Table 1. An interactive analysis space

<i>Interactive Modeling analysis: modes</i>	Monism centered on Computing [Social]	Monism Centered On Intelligent Computing [Individual vs. Community]
Natural-Artificial Dualism [Extending]	Information Society Sustainability (Mihailo Mesarovic / Hierarchical systems co-ordinability)	Knowledge Economy Creative Partnership (John von Neumann / Utility theory within economic behaviour)
Monism through Natural Base // Or // Monism through Artificial Base [Seeking]	New Economy Bioeconomy_ "Green Power" (Nicholas Georgescu-Roegen / Bioeconomy and decol lation insight // Lester R. Brown / Ecoeconomy)	Knowledge Society Sustainable Survival (Herbert Simon - Administrative Behaviour and satisfaction criteria beyond optimality)

Also, this conceptual study is a long term result, and have a scientific background within the **Generosity_Creativity_Solidarity Consortium - as a 2008-2010 active interdisciplinary presence. This affirmation is justified, at least, through the presence of the Generosity_Creativity_Solidarity Consortium as a co-organizer of the two editions of the Interdisciplinary, International and Academic Summer School (i.e. July 2009 and July 2010), and the three (co-)authorship studies (published at the ISI level 2009/2010) on the main and correlated topics of just this project).**

The **second inquiry** is a conceptual addressing to the **risks** and **incertitude** related only and only to/by/through the innovative status of this study. The anterior the **four dimensional Table 1** is the proving pattern to affirm on the minimal level of any scientific and day by day work risk.

So, there is the context for the affirmation on the status of this study (asserting to represent, to solve, and to propose correlated and concordant plan and acts of re-adaptation of the quality of life status -both into the Western and Eastern Europe - relating to the sustained progress on merging of **biodiversity and climate change limitation** - and involving **Generosity_Creativity_Solidarity Triad**. This is a **type of problem - case 4: Subtle (No_)Systems**.

This stage of this study is better comprehended within the following affirmation for the above-mentioned type of problem addressed to the (non)systemic risks and incertitude.

The downward table presents within four cases: the relation between different modeling approaches according to an extended System Theory to a (Non)Systemic Theory - on the background of Knowledge vs. **Frame** concepts.

Table 2. A four-case Knowledge / **Frame** table

<u>Knowledge vs. Frame</u>	<u>Symbolic frame</u>	<u>Numeric frame</u>
<u>Structured knowledge</u>	case 1: Expert Systems	case 2: Probabilistic/Statistical Systems and/or Fuzzy Systems
<u>No structured knowledge</u>	case 4: Subtle (No_)Systems	case 3: Neural Systems (networks)

Within all these four cases (frame vs. knowledge) it is proposed that you make room for the "same" set of problems, and then compare. This study belongs to the **case 4 type of problem**, re-pointing:

- the capacity of representation regarding these "same" set of problems of this study,
- the versatility of problem solving supported by assisted decision makers, and
- the incursion/anticipation force of (re)adaptation of the (non)systemic features of the problematic backgrounds (structure, functionality, organizational nexus).

So, these two explanatory tables (the **four dimensional Table 1** and **A four-case Table 2**) and their corresponding inquiries would support the background for this **Interactive Modeling Analysis** regarding the **synergy of the above presented concepts/constructs (as a minimal string and/or extended string).**

2. On an *emergent cognitive tension* regarding the *constructs Sustainability - and - Partnership* / toward the *synergic focalizations on both: preservation of biodiversity and climate change limitation*

Our world is contemporaneous within the fundamental differentiation between the technological ascending and the quasi-stationarity of human being. It is the locus onto one from the next possibilities: *or* the future identification of a harmonical way between the possibilities of transponding of our models inward the reality, *and*, our probabilities to be happy; *or* the prevailing of an other type of relation beyond the synergy between the individuals' aspirations, in part, *and* the emergence of the real communities [into (who, where, when) we take part: we are, have, act (combine, concord, conduct)]. This dilemma, the representation and its solutions, would be (within a holistic approach) the essence of the *Sustainability* [1].

The present study does not *expose* a middle way between the way of harmonisation and, respectively, the relation beyond the synergy – into the just above shortly expressed statement. But, may be that it expresses into a final stage, an other way of “to planetary live”: *Partnership*.

It is something simpler than the entirely actual complexity within our world. It is and it have the self-defining onto some directions – here, expressing onto those: between *poverty and welfare*, between *despair and hedonism*, between *impossibility and even possibility*. The contemporary dynamics between *conflict and consensus* would trouble any external and homogeneous observer of our world. We, the inside observers, are also tranquillizers through hipersensibilisation, “cloning” too often the too desirable linearity, anywhere and whenever. After a Cold War, within its enough visible parts, but also within its fundamental invisibilities, between *tiredness and terrorism*, between *stupidity and teribilism*, between *hopes and evidence* – our world fundamentally oscillates between *globalisation and regionalisation*, but within an intellectual and pragmatic unity tendency, to happen somewhere, very far and/or very near: according to the innovativeness and profoundness of the contemporary *Management*.

Otherwise, the present study *exposes* a way. An other “the third way” type, through the Creative Partnership construct. It is exposed through the confidence into harmonizing efforts, here and now; it is exposed within the emotion related to the interfaces between the seven parts (authors' chapters) of the work;

work proper to authors from two European zones: developed and developing (and transitional); it is exposed from the real wants (and not conjunctural ones) of theoretical deeper research and from the practical adaptation of each author with the readers (of this work). There is a search and an expectation for the **more and more interactive audience/readers with the authors**. From this side, at least, there is the much possible common authors' base: *Interactive Modeling*.

3. On an *inner cognitive tension* regarding the *constructs Sustainable Survival - and - Creative Partnership* / toward the *synergic focalizations on both: preservation of biodiversity and climate change limitation*

There is the authors' expectation (between them, into a near future), only and only within **audience/readers' reaction**; this expectation is related to a dimensioning of the tension inward the normality of the whole – as our Planet; it is related much more desirable, but also possible, within the systemic unification of the seven parts of the work (within proper professional becoming, onto a long term): the inter /trans-disciplinary approaches upon the 3rd millennium are challenges to reduce the *societal gap between humankind aspiration and limitation*. Focusing on the globalization / regionalization turning point, the contemporary societal gap is a complex reality; nature, society, thinking are the reverted parts of this non-systemic entity: societal gap.

Problem A: After 2.5 millennia (proved within the structural science) of life learning across the unknown environment, eliciting innate profoundness, and transmitting information among the parts of the group and to the next group of living support systems, at the beginning of the IIIrd millennium, with the discover of own humankind genome, the **society is facing with its own increasing complexity. There is a profound societal gap between aspiration and limitation** – within an indirect scientific responsibility.

If there is a constituted problem, then Humankind includes its solution, or there is a collapse. The current humankind tends to (re)solve the constituted problems (**Problem A**, too). Also, there is a dilution of the tension between material and spiritual keen approaches over our worlds; but, thus, the entire responsibility is not increased. Now and here, a possibility consists in an aggregation of the concepts related to:

1. The connected problems of the Planet (poverty/welfare, culture, religion, ideology, science, environment, individual/societal becoming, survival of the becoming);

2. The worth or/and worthless Knowledge Transfer as a basis for the future decisions and actions; the turning point of the individual and societal tensions;
3. The today necessary transition-net: Universal \implies Particular \implies Planetary.

As a becoming of a solution for **Problem A**, the **Rational Subject** minds upon the individual and collective flows of the cycle: **1- 2- 3- 1**, according to the synergy of the increasing knowledge. **It** would stand *between / across / around / besides* **an understanding** and **an explanation** inside / during humankind self-"lost / hidden / unseen". According to all the above are proposed two new challenges and metaphor:

Holistic capacity (*an instant insight and correct representation of an entire context*); here it is metaphorical associated with the **Fire** symbol – regarding the **existence**;

Eco-consciousness (at least, *a harmonic decision versus the contrary tendencies of all the parts*); here it is metaphorically associated with the **Water** symbol – and **reflection**.

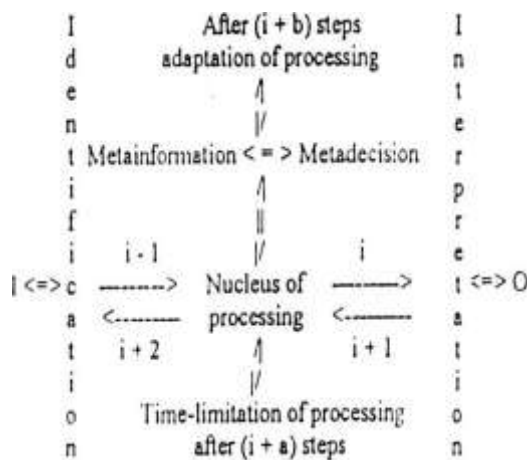


Figure 1. The connections *between*, “intro/extro” Input and Output (I and O) within the representation of the Living Support Entities, Eco-consciousness, Holistic capacity

So, there is a better **contextual understanding / explanation of the connections, Input and Output**. The “*between*” **expand** is assured by reviewing both predictive architecture and operative interaction according to some systemically minimal properties, in order to transfer some heuristics into algorithms, and to improve some heuristics.

Information and **decision** terms describe the respective contemporary linguistic entities if the holistic capacity and eco-consciousness are not attained. If the holistic capacity and eco-consciousness are attained, then the respective linguistic entities may be: **metainformation**

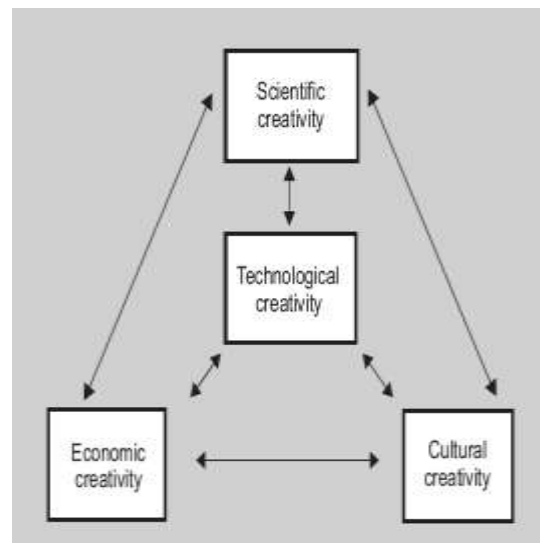
and **metadecision**, at least through the “*between*” **expansion**.

Figure 1 presents a possible insight for Living Support Entities (as an anticipatory sub-processor, at least). The nucleus of the processing would correspond with the predictive model show its variability. Some operative heuristics may be embodied.

According to the above context of **Figure 1** a locally better **explanation** would consist in a **fuzzy approach** to the verb “to have” and, consequently, **associating the belonging universal operator** [as meanwhile, **the verb “to be”**, and, consequently, **the existence universal operator, within a probabilistic context**]. This locally better explanation may be an opening one. It is a minimal explanation, resulting as an “intro/extro” insight; see **Figure 1**.

Humankind development is stepped by paradoxes revealing / revising and by models (re)acquisition. Here it is proposed that the previous models of some paradoxes may be revised *versus* a new approach on the yet classical **Large Scale Systems** [3] .

Let be some interactive scheme as examples, proposing a shifting paradigm [4] on the synergic focalizations on both: **preservation of biodiversity and climate change limitation**:



Source: UNCTAD (2008), *Creative Economy Report*, p. 9

Figure 2. The systemicity of the Creativity (elements and relations)



Source: *New Economic Foundation*,
<http://www.nefa.org/pdf/NEFA>, p. 5

Figure 3. The components of the Creative Economy

4. Toward pluri/inter/trans/co/cross-disciplinarily approaches regarding the Smart Growth, Eco-innovation and Large Scale Systems alongside to the efforts of the *International Consortium Generosity_Creativity_Solidarity*

The European plans and actions regarding the **Social and Societal (contemporary) Knowledge Society** have an innovative turning point through the programmed pluri/inter/trans/co/cross-disciplinarily approaches regarding the **Social and Societal / (contemporary) Knowledge Society** alongside to the efforts of the *International Consortium Generosity_Creativity_Solidarity*. These scientific efforts are indebted to the openness of the **Lisbon Strategy for Growth and Jobs: Europe 2020**. The *European Environment Commissioner Janez Potočnik* have affirmed

(http://ec.europa.eu/environment/etap/published_files) that “Better environmental protection can cost more and can mean administration and regulation but it is necessary and, in the long run, pays dividends by improving our quality of life, stimulating our economies and creating jobs” ; “This is consistent with the broad aims of the successor to the Lisbon Strategy for Growth and Jobs: Europe 2020, through which we will pursue the principle of sustainable development in a knowledge-based resource-efficient economy.” and “This is why sustainability is written through Europe 2020, and why resource efficiency – missing from the Lisbon Growth and Jobs agenda – is one of the seven flagship initiatives proposed in its successor strategy”.

This study representing an integrated project would firstly underline on the possible interface between

the concepts as *Smart Growth and Large Scale Systems*. The initial ideas were connected to the early 1970s challenge of compact cities and communities. The initial projects were focalized on electrical subsidies and smart transportation, and soon was attempted the climate protection, the environmental protection, and as a corollary the public health and the smart housing. The above entitled possible interface between the concepts as Smart Growth and Large Scale Systems would try to associate to the previous experience the needs and the European challenge toward a both Western and Eastern approach toward a *smart rural area*.

Also, last but not least, this study representing an integrated project would underline on the possible interface between the concepts as *Eco-innovation and Large Scale Systems*. The initial ideas were diffused between the comprehension as technologically innovative products and processes that reduce environmental impacts, and, respective a social component, within a status that is more than a new type of commodity, so being associated with the emergence of new broader social and economic activities. Within this dual attempt, a set of new conceptual patterns were and are putted in act: eco-development, ecological design, ecological restoration, eco-efficiency, environmental design, environmental technology, environmental technologies action plan, sustainable agriculture, sustainable design, sustainable development, *sustainopreneurship* - and why not toward a *smart rural area based on eco-innovation*.

This is why the *International Consortium Generosity_Creativity_Solidarity* is preparing to forward a set of grant applications within the open pool of the **Lisbon Strategy for Growth and Jobs: Europe 2020** - this being a long term attempt toward the *synergic focalizations on both: preservation of biodiversity and climate change limitation* - conceptually planning and acting toward a *smart rural area based on eco-innovation*.

5. Synthetic prospect for development of livestock production between 2010–2100 based on integrated rural bioeconomics and ecoeconomics

World livestock production has been analyzed in parallel with the official statistical data regarding the consumption of agro food products and nutrients respectively, as forecast up to 2050–2100 and correlated with population growth, production and consumption demands for vegetal and animal food products, level of poverty and risks on other vulnerabilities: economic, social, environmental, reduction of natural resources, pollution, atmospheric emissions, all correlated with farm production, etc. The analyses made are characterized by:

comprehensiveness, reproducibility, certitude and consistency. Average annual rates of population change show that Africa has experienced considerably faster growth than any other major area, for most of the 1950-2000 periods. Growth rates reached a higher peak in Africa (2.86%) than anywhere else—in the early 1980s, at least 15 years after growth had begun to decline in every other major area.

It is evident that an increasing of 1/3 of actual world population put a lot of different ethics (bio-ethics), economics (bio-economics), medical (bio-medical), ecological, juridical, and philosophical. All these aspects have a strong social impact with a severe and long crisis, including agro-food crisis and unfortunately moral crisis. The projection for Africa, consequently, shows growth declining belatedly, though nevertheless following a downward path similar to that in other major areas. Europe is at the other end of the spectrum, with growth rates having just turned negative and continuing to fall up to 2050. Africa again stands out, not only because of the much lower level of life expectancy but also because it is the only major area where projections show any decline in life expectancy for any period.

There will be significant progress in raising food consumption levels and improving nutrition. There will be significant reductions in the relative prevalence of undernourishment (percent of population affected), but these will not be translated into commensurate declines in the numbers undernourished because of population growth.

Reduction in the absolute numbers of undernourished is likely to be a slow process.

The number of undernourished in the developing countries is not likely to be halved by 2015 from the 823 million of 1990/92 (the 3-year average used as the basis for defining the World Food Summit target). However, the *proportion* of the population undernourished may be halved by 2015 and decline further in the rest of the projection period.

The projected slow progress in reducing undernourishment will reflect the inadequate progress of many countries towards rapid economic development and poverty reduction. However, empirical evidence suggests that in the countries with high dependence on agriculture, assigning priority to the development of food production holds promise of overcoming the constraint to better nutrition represented by unfavourable overall economic growth prospects. This prospect underlies the projection that the countries with long histories of stagnant food consumption levels and high undernourishment could make some progress in the future. Poor agricultural resources may represent a serious obstacle to such prospects, particularly in countries with high demographic growth. Despite this slow pace of progress in reducing the prevalence of undernourishment, the projections imply a

considerable overall improvement. In the developing countries the numbers of well fed (i.e. not classified as undernourished according to the criteria used here) could increase from 3.9 billion in 1999/01 (83% of their population) to 5.2 billion in 2015 (90% of the population), to 6.2 billion (93%) in 2030 and to 7.2 billion (96%) by 2050. That would be no mean achievement.

In conclusion, in many countries, including some of the more populous ones, the relative prevalence of undernourishment (percent of the population) will decline significantly. Fewer countries than at present will have high levels of undernourishment, none of them in the most populous class. The problem of undernourishment will tend to become smaller in terms of both absolute numbers affected and, even more, in relative terms, hence it will become more tractable through policy interventions, both national and international.

The livestock sector plays a crucial role in the provision of global public goods and services. There are opportunities to alleviate many of the risks associated with the expanding sector and to develop its full potential in ensuring benefits for the poor with a gender equality perspective, and to encourage a more responsible use of increasingly scarce inputs and natural resources. This will require dynamic generation and adoption of new technologies, products and services as well as networks and institutional development within an enabling policy and regulatory environment. The vigorous growth of the livestock sector, its importance for income generation, food security, human nutrition and health, and its impact on various public goods and services require careful attention by the international community [1], [2], [5].

6. A human inquiry in the creative process / versus the prayer of the Saint Efreem from Syria - an extended model of self-knowledge interactive modeling analysis and a lesson of openness to the contemporary worldwide ecoeconomy and bioethics.

O Lord and Master of my life, give me not the spirit of sloth, idle curiosity/meddling, lust for power and idle talk.

But grant unto me, Thy servant, a spirit of chastity/integrity, humility, patience and love.

Yea, O Lord and King, grant me to see mine own faults and not to condemn my brother. For blessed art Thou unto the ages of ages. Amen.

The above English translation of the Saint Efreem's prayer (as a Greek version) is the standard form of the prayer, to be found in the Greek Orthodox Church and all those churches that utilize Greek or Arabic in their

services. Minor variations from this text have been found in very early manuscripts. But there is a Church Slavonic version (Pre-Nikonian), in the earliest Church Slavonic translations, this is as an English translation:

O Lord and Master of my life, take from me the spirit of sloth, despondency, lust for power and idle talk.

But grant unto me, Thy servant, a spirit of chastity/integrity, humility, patience and love.

Yea, O Lord and King, grant me to see mine own faults and not to condemn my brother. For blessed art Thou unto the ages. Amen.

All these would strengthen the deep difference (regarding and beyond the temporal distance between the IVth century, when Saint Efreim from Syria had lived - and our contemporary period of the beginning of the XXIst century and the IIIrd Millennium) between: "**give me not the spirit of sloth, idle curiosity/meddling, lust for power and idle talk** " and "**take from me the spirit of sloth, despondency, lust for power and idle talk** ".

So, this is a **human inquiry in the creative process** [3] .

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