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ECONO - SCIENCES VERSUS ECONO - DISCIPLINES

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Abstract. *Some definitional and methodological aspects regarding science, economics and econo-sciences are detailed in the introduction of the paper. The first section presents the concept of econo-discipline, taxonomy and diversity of this enriched educational group or population, derived from economics combined with other disciplines and the importance and the impact of this contemporary paradigm. The second section is a direct approach to the complexity of modern economics, and, using a systemic investigation, it underlines the collaboration of, and the adversity between different sciences, especially disciplines inside present and future economics and its econo-sciences and econo-disciplines. The third section details the gap between contemporary econo-sciences and the classic econo-disciplines and the expected trends in economics as a complex reunification of these econo-subsystems. Some final remarks reflect an optimistic vision for the future of the econo-disciplines of the third rank of complexity.*

Keywords: *science, disciplina, econo-sciene, econo-discipline.*

1. INTRODUCTION

Either classic or modern, *science*, a term derived from the Latin word *scientia*, with its static meaning of *knowledge* or *body of knowledge*, can be defined in many different ways, as follows in the next six conceptualizations:

a) *a special case of the combination of experience and reason (a study of reality beginning with the material aspect of the universe, where inspiration or intuition often plays an important role)* [1];

b) *a systematic enterprise that builds and organizes knowledge in the testable explanations and predictions forms about the universe* [2];

c) *a particular way of knowing about the world, in which explanations are restricted to those that can be inferred from the confirmable data and the results obtained through observations and experiments that can be substantiated by other sciences (a search for natural explanations for natural phenomena, where natural means existing in nature or the observable world, neither supernatural nor magical)* [3];

d) *a discovery (that nature generally enacts regularly enough to be described by laws and even by mathematics), as well as an invention (devising the techniques, abstractions, apparatus, and organization for exhibiting the regularities and securing their law-like descriptions)* [4];

e) *a knowledge or a system of knowledge covering general truths or the operation of general laws, especially as obtained and tested through scientific method* [5];

f) *an ensemble of knowledge connected with nature, society, and reasoning or thinking (the four major elements of a science are, and remain the following: a characteristic piece of reality, a method for investigation, an original theory and a special model for projection and all of these are somehow similar to the earth, air, water, and fire of scientific thought, combining the dangers of the new connexion between reality and theory, with idealization and pragmatism, sometimes even in an excessive manner)* [6], etc.

Science has another dynamic meaning that of *a process of permanent discovery*, a process of asking questions about the reality and testing answers to those questions, but only if the answer can be reliably reproduced every time the test was

performed, no matter who does the test. Ever since Aristotle's time, science (*episteme*), as the final result of a research process, could be of an applied type (*techne*) or theoretical (*theoria*), which reflects a *duality of science as a whole* which still applies nearly two and a half millennia after the Greek cultural miracle. Nearly half a century ago, in his *Truth and Method*, Hans-Georg Gadamer said that scientific research, which is in a constant search for truth, may be completely different in the so-called hard sciences and natural sciences, where the essential goal was, and remained, that of the forecast, compared to the so-called spiritual sciences, which have as an objective knowledge "with no prediction" [7], and Roger Penrose, in his book *Our Daily Mind* [8], tried to determine still finer shades for the previous distinction or cleavage, acknowledging the existence, in the field of knowledge and research, of four types of theories: *superb, useful, tentative, and "apparently" misguided or targeted*.

Science as a process that allows scientists to link isolated facts into some comprehensive understandings of the coherent surroundings known as reality or natural world, has a lot of static and dynamic characteristics: a) non-linearity and interactivity contents; b) iterativity and successive investigations; c) unpredictability, non-predetermination and serendipity; d) originality, complexity, alternativity and possibility of access through different paths; e) testing hypotheses and theories; f) identification of solutions to the problems of a specific reality; g) intertwined with society; h) accuracy and consistency of the logic arguments; i) new assumptions, new investigation and new applications; j) true or false controversy; k) diversity and specializations; l) new predictions and new expectations, etc.

The knowledge gained through research and generated by science must be a powerful and reliable process and continually refining and expanding its area, without being really "finished". An answer is scientific only if you get that answer every time you do the test, no matter who does the test. A general remark underlines the importance of the study of reality as the primary focus for the science, by means of a characteristic pattern or model, as well as all the methods of acquiring knowledge must use specific concepts and variables, data collections associations and correlations, experimental and applied aspects, predictive trends or normative formal limits. The criterion of validation for science remains the most difficult problem. Karl Popper, in his *Logic of Research*, published in 1934, greatly clarifies the problem of the demarcation between science and pseudoscience, listing four distinct lines along which a theory can be tested and evaluated critically, following its intention to become a true science [9; 10]: 1) controlling the internal consistency of the theory as a hypothetical-deductive system; 2) examining the logical form of the theory or future science to determine if its content is informative, or the theory or science is somewhat tautological; 3) comparing or confronting the empirical consequences derived from such a theory or future science with those derived from competing theories or sciences to determine whether or not the first has a knowledge value superior compared to the other, assuming that it will successfully pass the tests the empirical evidence proposes; 4) assessing the future science or theory in light of these tests.

The distinction between science and pseudoscience may be restricted to a key by Popper, in 1934, fully valid in exact sciences or in natural sciences, i.e. the amount and value of knowledge that various scientific theories and future sciences possess, which depends on the degree of falsifiability (defined by the relationship between theory and the basic statements) or of testability (the degree of testability increases with the degree of generality and precision of the theory or future science), and the involvement in empirical predictions that prohibit a considerable part of the possible observations selecting finally, out of all the theories that pass all the tests, those with a true value of knowledge (superb or useful, in the sense assigned by Penrose. *The success of a science depends on the structural properties of the phenomena investigated, and also on understanding that nature or the outside world has a high degree of order, perceived by human reason as objective laws* [11]. However, general sciences includes withal the sciences of the spirit, in the specific sense given by Gadamer, the value of which is recognized through their vast amount of explanatory power, or of knowledge “with no forecast”, i.e. those which Roger Penrose refers to, as tentative and “apparently” *misguided or targeted*.

To be able to properly understand the content of a *superb* science, it is necessary to start with an example, belonging to Albert Einstein, developed in his inaugural speech to the Prussian Academy of Sciences in 1914, and *On the method of theoretical physics* in 1934, namely that of a superb science whose value was deducted from his predictions, namely physics. The scientific research or process of the physicist can be phased in: a) *formulating the concepts and basic principles of a new physical theory* (the product of creativity or of the activity of creative imagination, which is not guided by any rule, except by facts, observations, experiments and so on, and cannot practically be learned); b) *formulating all the consequences that may be derived from them* (being driven solely by rules and logical regulations, it can always be learned) [12]. A science like physics is by definition *unifying*, bringing together an increasingly large number of facts and experimental observations, hence its maximum value of knowledge in the world of scientific research (which exceeds even that of the kind of science, specific to logic, mathematics, etc.) [13]

But even science has its own limits, such as: a) questions that science does not answer; b) moral or aesthetic judgments that science cannot make; c) the adequate use of scientific knowledge that science does not indicate; d) supernatural explanations that science does not draw conclusions about, etc. However, questions that arise within these domains generally cannot be resolved by science, but the future solution could be the extension of the scientific community in some so called “forbidden domains”, such as ethics, aesthetics, religion, etc. that provides the cumulative knowledge base on which a new universe of science could be built.

Researchers have noted that they understand explanations that come from many scientific studies, but only a minority of them can understand explanations that come from econo-sciences, cannot identify the fundamental world-view and how it works, and just generally, cannot find the real sense.

Economic science, as any another science, develops itself from *hypothesis*, through *apodeixis* (demonstration), implies gradually and becomes finally a *theoria* or *theoretike* (theory). The science of economics is treated differently even by economists, with the optimists at one extreme, those who say that the only thing preventing economics from becoming a numerical science in a pure sense (like mathematics or physics) is in fact “*the immensity of the equations*” (Pareto, 1894;

Cournot, 1897), and continuing with Jevons, Walras and Schumpeter, who reaches the limit of exaggeration in saying that economics would be “*the most quantitative of all sciences*” because the facts that this science “observes are transformed into numbers by life itself” [14], while the extreme of the pessimists seems to be equally condensed, and their references to the value of knowledge and the degree of precision of the same scientific research in economics, from Knight, who recognizes, as the only merit of economics, the fact that it shows “*what is wrong rather than what is correct*”, to Edgeworth, who highlights the ignorance of economics in modelling the specific “*qualitative factors*”, or Veblen, correlated economics with cultural development, and Hayek, who would emphasize the link between economics and “*understanding how people think*”, both types of modelling being difficult to achieve in economic research.

Of course the truth lies along the “royal road” between the two extremes, having virtually “*no strict evidence*” of total validation or total invalidation of any economic model resulting from science of economics, as underlined by N. Georgescu-Roegen in *The law of entropy and the economic process* [15]. Ludwig von Mises tries to emphasize the status of economics as a pure science and thus he proposes the concept of “*praxeology*” (as the logic of action) for the branch of knowledge exemplified by economics [16], and describes economic reasoning, which consists of the following:

- 1) *an understanding of the categories of action and the meaning of a change occurring in such things as values, preferences, knowledge, means, costs, etc;*
- 2) *a description of a world in which the categories of action assume concrete meaning, where definite people are identified as actors with definite objects specified as their means of action, with some definite goals identified as values and definite things specified as costs.*
- 3) *a logical deduction of the consequences which result from the performance of some specified action within this world, or of the consequences which result for a specific actor if this situation is changed.*

Praxeology requires from economics to be a *useful* science, and thus economics must be deductible by means of formal logic from the incontestably true material knowledge regarding the meaning of action [17].

Some academics and scientists have offered major critiques to economics concerning the classification as a useful science and sometimes even to the quality of science for economics.

The offer of economics includes theories that work in restricted areas and regions or in horizontal or longitudinal levels of aggregation, and purely formal attempts to condense them into a single science, a lot of unfounded axioms and relative laws (such as the Adam Smith’s claim that all content of economic processes can be reduced to the price role as an invisible hand), and some phenomena that do not fit into the accepted framework are many times suppressed, ready to put emphasis on manipulating nature and leading it inevitably to manipulate economies and countries, as well [18;19].

Some exemplified convictions that greed is good within relative limits, that demanding interest is useful or that all production in the world can be split into labour and capital, are not pure scientific truths, but relative doctrinal statements. A new econo-phenomenology appears and tries not to disregard global economics as a pure science, and calls other sciences to join for openness to the natural and alternative resources of the world, and to help humanity to undo the damage done by a classical economics that takes part in the utilitarian exploitation of the natural world. [20].

In the history of science classification one can find only two major moments and personalities: Ikhwan al-Safa' who are believed to have lived in Basra in Iraq in the course of the 10th century and described in *Epistles of the Brethren of Purity (Rasa'il Ikhwan al-Safa)* two systems of scientific classification [21]; the first of a hierarchical nature and the second as set out by the coterie of scholars in *Epistle VII* (his unique work consisting of approximately fifty-two epistles (*rasa'il*) and Charles Sanders Peirce, who elaborated the first modern classification of the sciences in 1902 and 1903 [22], inspired by the biological taxa of Louis Agassiz [23].

Again, Arabian culture seems to be the first to refer to economics in term of economic growth, in 1377, when Ibn Khaldun, a historian well known for his remarkable mind, for the first time in *Muqaddima*, wrote on economics, relating his thoughts to the division of labour: the greater the social cohesion, the more complex the division may be, the greater the economic growth and he offered one of the most famous examples of the distinction to be made between the transmitted sciences and the intellectual sciences. [24]

These paper's proposals for redefining econo-sciences and econo-disciplines through new perspectives inspired by reality and adequation of the original taxonomies offer a little more advanced and updated description of economics components mentioned and detailed in Wikipedia (https://en.wikipedia.org/wiki/List_of_academic_disciplines). There are many options or alternative solutions to detail economics, from the only two econo-sciences or branches like macro- and micro-economics, to more econo-components of "economics, finance and business" reunited as a general econo-science, a category being a part of the domain or field of the social sciences, and containing either five distinctive sub-categories of econo-sciences like Business and Management, Economics and Econometrics, Finance, Industrial relations and other economic sciences, or more than 50 econo-sciences (Annex 1). The most synthetic fields of science, used to be classified in the contemporary concept of R&D, include: a) natural sciences; b) engineering and technology; c) medical and health sciences; d) agricultural sciences; e) social sciences (including economics); f) humanities (<http://www.uis.unesco.org/>). There are many general classification schemes like: a) universal decimal classification (<http://udcdata.info/>) Dewey decimal classification (<http://www.oclc.org/dewey/>); Dutch Basic Classification (<http://www.kb.nl/vak/basis/bc04.pdf>) or specialized in economics like: Journal of Economic Literature (JEL) Classification System (http://www.aeaweb.org/journal/jel_class_system.php), etc.

Over the last two centuries, many economists practiced economics as a doctrinal *disciplina* and not as useful science, introducing from time to time a bit of *dogma* and doctrinal reasoning in economics and, thus, transforming a normal relation between any science and its appropriate disciplines or derived from it, into a typical adversity between econo-science and its corresponding econo-discipline.

2. THE PARADIGM OF THE DISCIPLINA AND THE SPECIFICITY OF THE ECONO-DISCIPLINES

Scientific or scientology currently represents the science of science, an investigation into the way in which the study of nature through observation and reasoning has evolved all through several millennia of human activity. Sometimes science is defined as a specific process in an educational system (in the university or academia) and this meaning may seem like a collection of isolated and static facts listed in a textbook of a scientific discipline. The scientific discipline as

the primary unit of internal differentiation of science is an invention of the 19th century society. The concept of *disciplina* (or specialism) has a long semantic prehistory as a term for "the ordering of knowledge for the purposes of instruction in schools and universities or as a scientific disciplina it means social and cognitive unit of knowledge production in science"[25], being assimilated with knowledge or wisdom, expertise, skills, people, projects, communities, problems, challenges, inquires, approaches, studies, and research areas and associated with a specific academic fields or areas of study of professional practice (the gravitation being associated with the academic discipline of physics, it is considered to be part of the physics' disciplina, as well as the analysis of the production, distribution, and consumption of goods and services could explain how economics' disciplina works and interacts).

An academic disciplina remains a branch or body of knowledge given to or received by students (disciples). An academic disciplina that is taught and researched at the university level describes *a unity of teaching and research as a norm in university teaching which demands that this teaching has to be based on recent research knowledge or even has to participate in processes of scientific knowledge production* [25] and tends to "co-evolve with systems of professions and closely follows the boundaries of modern academic departments, creating and maintaining disciplinary communities" [26]. Academic disciplina's favourite actions mean to "characterize, classify, specialize, distribute along a scale, around a norm, hierarchize individuals in relation to one another and, if necessary, disqualify and invalidate" [27].

One of the most important of the methodological disciplina is taxonomy. The definition of taxonomy is relative different from source to source, but the core of it remains the same everywhere and anytime, and it means conception, naming, and classification of organism groups or populations. Thus, taxonomy as a major component of systematics encompasses description, identification, nomenclature, and classification [28]. Taxonomy comes from another Latin word, *taxa*, and uses eight levels in classical botany or zoology (domain, kingdom, phylum class, order, family, genus and species), being multiplied to 14 in other modern biology (rank, division, subdivision, class, subclass, superorder, order, suborder, infraorder, superfamily, family, subfamily, tribe and subtribe). A modern and generalized taxonomy could be reduced to only five levels as class, sub-class, family, genus and species form or may be enlarged to 11 levels or 11 points on a *continuum* over a population of disciplines or education processes: a) isolation (fragmentation, anarchy); b) awareness (documentation and communication); c) harmonization (connection, consultation); d) nesting (infusion); e) temporal co-ordination (parallel education or concurrent teaching); f) sharing (joint teaching); g) correlation (concomitant or democratic programme); h) complementary (mixed programmes); g) multidisciplinary (webbed, contributory); h) interdisciplinary (monolithic); i) transdisciplinary (fusion, immersion, authentic) [29; 30].

Braxton and Hargens in their 1996 book chapter titled *Variation among Academic Disciplines: Analytical Frameworks and Research* consider that "the differences among academic disciplines are profound and extensive" [31] and reproduce several taxonomies of sciences or scientific disciplines, including their own scheme or model. The most important taxonomies of the academic disciplines constructed as interesting, viable and reproducible schemes, which have been detailed by Braxton and Hargens in their book are: a) the model of Hagstrom's taxonomy (1964) based on the idea of disciplinary consensus; b) the model of Hargens' taxonomy

(1975), based on normative and functional integration; c) the model of Zuckerman and Merton's taxonomy, based on disciplinary codification; d) the model of Lodahl and Gordon taxonomy (1972), based on levels of paradigm development; e) the model of Biglan's taxonomy (1973), based on three criteria: hard/soft, pure/applied, and life/non-life distinctions [32]; f) the model of taxonomy constructed by Holand based on its own Theory of Occupational Classification (1973), developed by Smart, Feldman & Ethington (2000). John Smart and his colleagues' new classification's schema of scientific or academic disciplines is a taxonomy based on four from the six Holland personality types: *investigative, artistic, social, enterprising*, but not *realistic*, and *conventional*.

The synthesis of Smart's taxonomy schema

Table no 1

Type	Sciences and Scientific Academic Disciplines
Investigative	Biology and life sciences, economics, geography, math/statistics, physical sciences, finance, aeronautical engineering, civil engineering, chemical engineering, astronomy, earth science, pharmacy, anthropology, ethnic studies, geography, and sociology
Artistic	Architecture, fine arts (art, drama, music), foreign languages, English, music, speech, theater, and environmental design
Social	Ethnic studies, home economics, humanities (history, philosophy, religion, rhetoric), library science, physical and health education, psychology, social sciences (anthropology, political science, social work), education
Enterprising	Business, communications, computer/information science, law, public affairs, journalism, marketing, industrial engineering.

Source: (Holland, 1973, 1997); Smart, et al. (2000) [33; 34; 35]

Smart schema postulates that scientific or academic disciplines have a primary category and a secondary category, and thus a field such as economics, for example remains primarily a social field, but also has qualities of an investigative field. The triple stratified classification of scientific disciplines based on criteria of hard/soft, life/non-life and pure/applied categories and which belongs to Anthony Biglan, uses a specific characterization of the academic disciplines, being inspired by a modern and holistic approach and less by a classical one.

Economics inside Biglan's classification of scientific or academic disciplines

Table no 2

	Hard		Soft	
	Life	Non-life	Life	Non-life
Pure	Biology, Biochemistry, Genetics, Physiology, etc.	Mathematics, Physics, Chemistry, Geology, Astronomy, Oceanography, etc.	Psychology, Sociology, Anthropology, Area Study, Political Science, etc.	Linguistics, Literature, Communications, Economics , Philosophy, Archaeology, Geography, History, etc.
Applied	Agriculture, Psychiatry, Medicine, Pharmacy, Dentistry, Horticulture, etc.,	Civil Engineering, Telecommunication Engineering, Mechanical Engineering, Chemical Engineering, Electrical Engineering, Computer	Recreation, Nursing, Education, Conservation, Counseling, Management, etc.	Finance, Accounting, Banking, Marketing, Journalism, Library & Archival Science, Law, Arts, Architecture,

	Hard		Soft	
	Life	Non-life	Life	Non-life
		Science, etc.		Crafts, Dance, Music, etc.

Source: Goel, S. (2010). *Well Rounded Curriculum-An Insight from Biglan's classification of disciplines*, Retrieved [2013.06.10] from <http://goelsan.wordpress.com/2010/07/27/biglans-classification-of-disciplines/>

Economics as a soft-pure and non-life scientific discipline is concerned with particular cases, but without losing the holistic approach, and *rely more on the breadth of intellectual ideas, creativity and expression* [36]. Though the Smart schema of taxonomy has been a popular theoretical classification for identifying differences of the scientific or academic disciplines, the Biglan's classification remains even today one of the most used classification scheme, based on the idea that the disciplines vary in their level of consensus.

The overall structure of the sciences and scientific or academic disciplines' classification is related to the organizational structures of universities and other research institutions and it is similar to all the standard and modern guides or manuals, that contains common divisions as Natural science, Technology, Arts & Humanities and Social Sciences. The most recent classifications like *Frascati Manual (2002)*, revised in 2007, and *Oslo Manual (2005)* are really relevant for the social sciences content, where economics belongs [37; 38; 39].

Structural confrontation between Frascati Manual (2002) and the revision from 2007 (2005)

Table no 3

Frascati Manual Revised (2005)	Frascati Manual (2002)
5. Social Sciences	5. Social Sciences
5.1 Psychology	5.1 Psychology
5.2 Economics and business	5.2 Economics
5.3 Educational sciences	5.3 Educational sciences
5.3 Sociology	5.4 Other social sciences
5.5 Law	
5.6 Political Science	
5.7 Social and economic geography	
5.8 Media and communications	
5.9 Other social sciences	

Source: <http://www.oecd.org/sti/inno/38235147.pdf>

But as well as the scientific truth, the methodologies concerning the taxonomy of the sciences or the classification of disciplines, even the most obvious ones, have their relative aspects and limits and are exposed to revision or new changing proposals. Glänzel & Schubert [40] offer a *new classification scheme of science fields and disciplines*, where *social sciences and disciplines are divided in two sections*:

A) *Social Sciences I (General, Regional & Community Issues)* including two complex subsections: Education & Information and General, Regional & Community Issues;

B) *Social Sciences II (Economic & Political Issues)* containing another two complex subsection like: Economics, Business & Management and History, Politics & Law.

The revisional objectives have been satisfied by three successive steps allowing multiple understand and feedback throughout the entire taxonomic process: a) a multilateral "cognitive" approach (setting the categories) combined with a multiple experience of scientometricians experts; b) a multidisciplinary "pragmatic" approach, adjusted according to some reasonable limits of the economic realities; c) a "scientometric" approach (relatively unambiguously solutions based on the basic fields/subfield structure of economics as a

modern science. The results of this revision of a standard classification had a complex impact on the final economics' system, restructured from nearby 15 to first-level categories (fields) and approximately 70 to 60 second-level categories (subfields) of the sciences in. The results and ranks of a simple statistical investigation of the 15 levels of sciences obtained from a Google's search are presented in Table no.4.

Some relative results and ranks from Google's searches

Table no 4

The investigated domain of science	Results in millions Words references	Google's Rank
Agriculture & Environment	467	III
Biology	243	IX
Biosciences	13	XIV
Biomedical Research	66	XII
General & Internal Medicine	370	IV
Non-Internal Medicine	52	XIII
Neuroscience & Behavior	199	X
Chemistry	305	VI
Physics	300	VII
Geosciences & Space Sciences	10	XV
Engineering (inclusive Computer Science/Information Technology)	353	V
Mathematics	265	VIII
Social Sciences I	15479	I
- Education,	2700	
- Information,	7190	
- General Issues,	2350	
- Regional Issues,	789	
- Community issues	2450	
Social Sciences II (Economical & Political Issues)	10140	II
- Economics,	321	
- Business,	1460	
- Management,	2760	
- History,	3240	
- Politics,	939	
- Law	1740	
Arts & Humanities	113	XI

Source: <https://www.google.ro/>

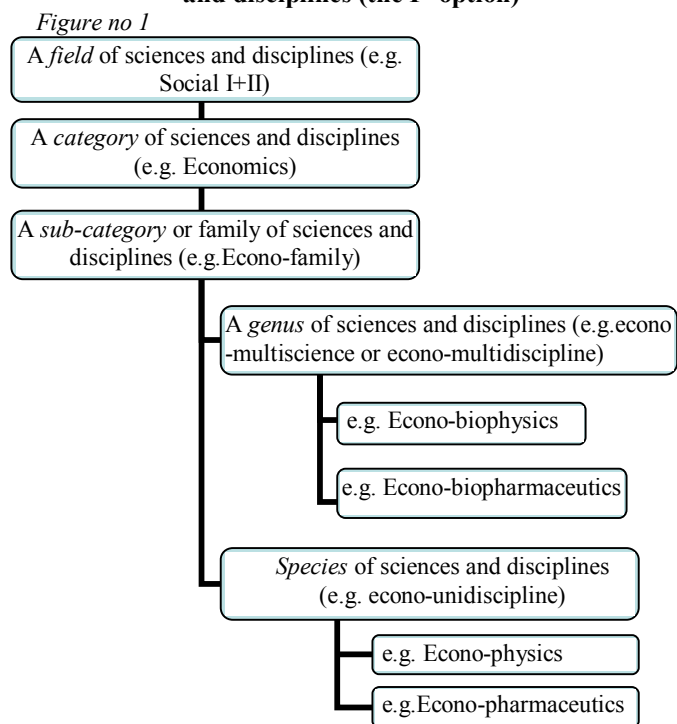
The word "history" in social sciences or disciplines appears about ten times more often than "economics", "management" nine times and "business" five times more frequently than the same word. These statistics underlines the relative trend of the diminishing importance in using for the general term of economics versus history, business and management in the contemporary Internet communication.

Social academic disciplines generally represent the study of society and human behaviour and the authors of this article consider that inside this generous and extended domain economics represents a general class and econo-sciences covered by distinctive econo-disciplines forming a real family. This paper is based on a multidisciplinary approach or a point of view that involves drawing appropriately from multiple econo-disciplines and non-econo-disciplines to redefine and to model phenomena and processes with their specific problems outside of normal boundaries and reach solutions based on a new holistic understanding of complex situations. Thus this paper also proposes two other detailed levels: econo-multidisciplines as genus (e.g. econo-biophysics or econo-biopharmaceutics) and econo-unidiscipline as species (econo-physics or econo-pharmaceutics).

As a synthesis the proposed taxonomy based on "multi-" or "inter-" approaches in modern sciences and derived disciplines could be represented in two different ways changing the idea of classical taxonomy. Thus, the first solution entitled iterative

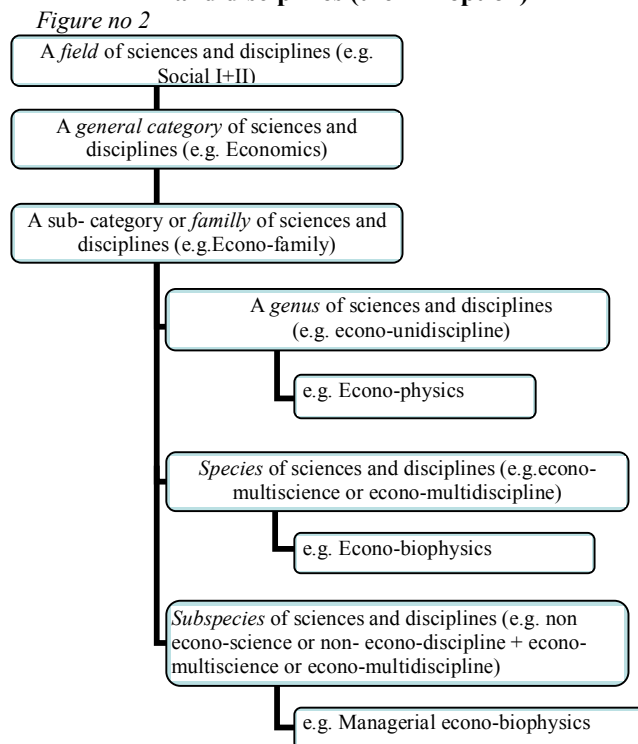
taxonomy can be resumed to a double upside-down pyramid (like a double funnel), successively replaced, as in Figure 1:

A modern exemplified taxonomy of contemporary sciences and disciplines (the Ist option)



There is also an alternative with two faces taxonomy or a symmetrical (mirror or papillon) taxonomy, all of it being centred on a family of science and allowing adaptation to the evolution of the modern multidisciplinary sciences through the formation of new interdisciplinary sciences that can allow to enlarge the angles of analysis and to create more open scientific investigation over complex contemporary reality (as in figure no. 2)

A modern exemplified taxonomy of contemporary sciences and disciplines (the IInd option)



The econo-sciences' family explores the major aspects or the essence of economics, and each new econo-science implies not only many econo-disciplines, but even a lot of other non-econo-disciplines. Classical taxonomy is not able to reflect the changes and the enlarged trend of complex reunion between econo and non-econosciences and disciplines. The functional relations between sciences and disciplines have revealed not only simultaneous connection and cooperation, but also adversity. What is the contribution of a general class as economics? A classic answer was given by Alfred Marshall, the author of the first modern academic lectures, printed and entitled *Principles of Economics* [41] and places emphasis on the "man's actions in the ordinary business of life" and "how man gets his income and how he uses it", while George Stigler opinion is entirely different [42], underlying that this class of sciences describes "operations of economic organizations, based on social arrangements to deal with the production and distribution of economic goods and services."

A more detailed structure of the family of contemporary econo-disciplines is presented in the Table no. 5:

Some contemporary Econo-disciplines and their content

Table no 5

No	Econo-disciplines	General content
1	Behavioural economics	Usual effects of social, cognitive and emotional factors on the economic decisions of individuals and institutions and the consequences for market prices, returns and the resource allocation
2	Bioeconomics	Applied laws of thermodynamics to economic theory
3	Comparative economics	Comparative study of different systems of economic organization
4	Computational economics	Interface between computer science and economic and management science
5	Development economics	Economic aspects of the development process in low-income countries
6	Economic geography	Location, distribution and spatial organization of economic activities across the world
7	Economic history	Economies or economic phenomena in the past
8	Economic sociology	Both the social effects and the social causes of various economic phenomena
9	Energy economics	Broad scientific subject area which includes topics related to supply and use of energy in societies
10	Economic methodology	Methods, especially the scientific method, in relation to economics, including principles underlying economic reasoning
11	Econometrics	Application of mathematics and statistical methods to economic data
12	Financial econometrics	Application of econometrics to financial economics
13	Economic statistics	Collection, processing, compilation, dissemination, and analysis of economic data.
14	Experimental economics	Application of experimental methods to study economic questions
15	Entrepreneurial economics	Entrepreneur and entrepreneurship within the economy.
16	Environmental economics	Complex environmental issues
17	Evolutionary economics	Mainstream economics as well as heterodox school of economic thought that is inspired by evolutionary biology
18	Financial	Allocation and deployment of economic

	economics	resources, both spatially and across time, in an uncertain environment
19	Heterodox economics	Schools of economic thought that are considered outside of "mainstream economics" and sometimes contrasted by expositors with neoclassical economics
20	Green economics	Improvement of the human well-being and social equity, while significantly reducing environmental risks
21	Feminist economics	Highlighting the androcentric biases of traditional economics through critical examinations of economic methodology, epistemology, history and empirical study
22	Islamic economics	Islamic studies literature that "identifies and promotes an economic order that conforms to Islamic scripture and traditions" based on interest-free Islamic banking system or Sharia's condemnation of interest (riba)
23	Industrial organization	Theory of the firm in examining the structure of, and boundaries between, firms and markets.
24	International economics	Effects upon economic activity of international differences in productive resources and consumer preferences and the institutions that affect them
25	Institutional economics	Role of the evolutionary process and the role of institutions in shaping economic behaviour
26	Labor economics	Understanding the functioning and dynamics of the markets for labour
27	Law and economics	Application of economic methods to analysis of law
28	Managerial economics	Economic conceptualization, economic analysis to the problems of rational managerial decisions
29	Mathematical economics	Applied mathematical methods to represent economic theories and analyze problems posed in economics.
30	Monetary economics	Economics that historically prefigured and remains linked to macroeconomics
31	Neuroeconomics	Explaining human decision making, the ability to process multiple alternatives and how to choose an optimal course of action.
32	Public finance	Role of the government in the economy
33	Public economics	Government policy through the lens of economic efficiency and equity
34	Real estate economics	Economic techniques to real estate markets
35	Resource economics	Supply, demand, and allocation of the Earth's natural resources.
36	Political economy	Production, buying, and selling, relations with law, custom, and government, as well as with the distribution of national income and wealth, including through the budget process
37	Socioeconomics	Behavioral interactions of individuals and groups through social capital and social markets (not excluding for example, sorting by marriage) and formation of social norms
38	Time series	Sequence of data points, measured typically at successive time instants spaced at uniform time intervals
39	Transport economics	Allocation of resources within the transport sector and has strong linkages with civil engineering.
40	Welfare	microeconomic techniques to evaluate

economics	economic well-being, relative to competitive general equilibrium within an economy and economic efficiency or the resulting income distribution associated
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Source: https://en.wikipedia.org/wiki/Outline_of_science

If modern Economics explains somewhat diffusely how economies work and how economic agents interact, and even how peoples access to income and use it, the econo-sciences family tries to extend and to specify more accurately by combining with other scientific areas, taking methods and models from other sciences to estimate with a higher level the future.

The general types of classical economies as systems of human activities related to the production, distribution, exchange, and consumption of goods and services of a country or other area can be structured on multiple criteria: a) based on a political and social ideological basis (capitalist economy, communist economy, corporate economy, fascist economy, laissez-faire, mercantilism, natural economy, primitive communism, social market economy, socialist economy, etc.); b) by scope (Anglo-Saxon economy, American school, hunter-gatherer economy, information economy, new industrial economy, palace economy, plantation economy, token economy, traditional economy, transition economy, national economy, international economy or world economy, etc.); c) based on their regulation (closed economy, dual economy, gift economy, informal economy, market economy, mixed economy, open economy, participatory economy, planned economy, subsistence economy, underground economy, virtual economy, etc.). This structural process of economics is not even finished. Anyone can find other new criteria to classify the economy from different points of view like: coordination, regional model, sectors, transition, etc.

Economics as a general class of econo-disciplines as components of the multi-, trans-, and interdisciplinary programmes in education can be identified in US Classification of Instructional Programs (CIP) created by National Center for Education Statistics (NCES), detailed and codified in Integrated Postsecondary Education Data System (IPEDS). Statistical data and Information about economics from CIP are the closest to the idea of the new approach and the specific taxonomy proposed in this article, and can integrate this new solution in many sciences using either the general class of economics, or the necessary family of econo-disciplines (see Table no. 6)

Economics as a general class or an econo-discipline component of the educational programme in US

Table no 6

Code & subcode	Domain/Class/Family of econo- sciences or economics applied multi, trans & interdisciplinary
01/01/03	Agriculture, Agriculture Operations, and Related Sciences / Agricultural Business & Management/ Agricultural Economics
	An application of economics to the analysis of resource allocation, productivity, investment, trends in domestically and internationally agricultural sector (including instruction in economics)
03/02/04	Natural Resources and Conservation/ Natural Resources Management and Policy/Natural Resource Economics
	An application of economic concepts and methods to the analysis of issues such as air and water pollution, land use planning, waste disposal, invasive species and pest control, conservation policies, and related environmental problems (including instruction in cost-benefit analysis, and studying how environmental developments

	affect the economic system)
13/13/08	Education/Teacher Education& Professional Development Specific Subject Areas/Family and Consumer Sciences/ Home Economics, Teacher Education
	An application of preparing individuals to teach vocational home economics programs at various educational levels
19/04/02	Family and Consumer Sciences/Human Sciences/ Family and Consumer Economics and Related Studies/Consumer Economics
	An application of micro- and macro-economic theory to consumer behaviour and individual and family consumption of goods and services. Includes instruction in modelling, economic forecasting, indexing, price theory, and analysis of individual commodities and services and/or groups of related commodities and services.
28/07/99	Military Science, Leadership and Operational Art/Military Economics and Management/Military Economics and Management, Other
	Any instructional program in military economics and management
45/06	Social Sciences
45/06/01	Economics, General
	A systematic study of the production, conservation and allocation of resources in conditions of scarcity, together with the organizational frameworks related to these processes (including instruction in economic theory, micro- and macroeconomics, comparative economic systems, money and banking systems, international economics, quantitative analytical methods, and applications to specific industries and public policy issues).
45/06/02	Applied Economics
	An application of economic principles and analytical techniques to the study of particular industries, activities, or the exploitation of particular resources (including instruction in economic theory; microeconomic analysis and modelling of specific industries, commodities; the economic consequences of resource allocation decisions; regulatory and consumer factors; and the technical aspects of specific subjects as they relate to economic analysis).
45/06/03	Econometrics and Quantitative Economics
	A systematic study of mathematical and statistical analysis of economic phenomena and problems (including instruction in economic statistics, optimization, cost/benefit analysis, price theory, economic modelling, forecasting and evaluation)
45/06/04	Development Economics & International Development
	A systematic study of the economic development process and its application to the problems of specific countries and regions (including instruction in economic development, industrialization, land reform, infrastructural development, investment policy, the role of governments and business in international development and organizations, and the study of social, health, environmental influences on economic development)
45/06/05	International Economics
	A systematic study and analysis of international commercial behaviour and trade policy (including instruction in international trade theory, tariffs and quotas, commercial policy, trade factor flows, international finance and investment, currency regulation and trade exchange rates and markets, international trade negotiation, and international payments and accounting policy)
45/06/99	Economics, Other
	Any instructional program or study in economics not listed above.
51/20/07	Health Professions and Related Programs/Pharmacy, Pharmaceutical Sciences, and Administration/Pharmacoeconomics/Pharmaceutical Economics
	An application of economics and policy analysis to the study of the relationship of pharmacy services, pharmaceutical processes and products to the health care system and their impact on health care organizations (including instruction in health economics, pharmaco economics, health care systems, health care organization and management, statistics and biostatistics, outcomes research, health care policy, pharmacy services, pharmaceutical industry operations)
52/06/01	Business, Management, Marketing, and Related Support Services/ Business/Managerial Economics/ Business/ Managerial Economics
	An application of economics principles to the analysis of the

organization and operation of business enterprises (including instruction in monetary theory, banking and financial systems, theory of competition, pricing theory, wage and salary/incentive theory, analysis of markets, and applications of econometrics and quantitative methods to the study of particular businesses and business problems)

Source: <http://nces.ed.gov/ipeds/cipcode/browse.aspx?y=55>

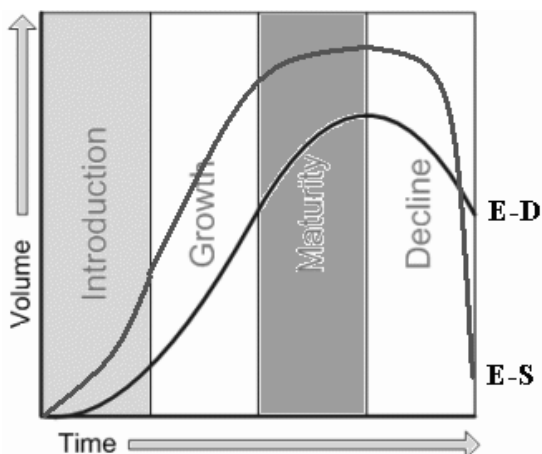
The econo-disciplines are contiguous disciplines and extend their areas day by day. While the econo-disciplines may share a common classical science such as economics, specifically a respect for knowledge and intellectual inquiry into the precarity of the resources and about growth and welfare [43], differences between them are vast, and important in creating many adversities and sometimes even wars.

3. THE GAP BETWEEN CONTEMPORARY ECONO-SCIENCES AND THE CLASSIC ECONO-DISCIPLINES

In the history of science, there was a real war between sciences. In fact, this science war took place principally in the United States, and this was a series of intellectual exchanges, between scientific realists and postmodernist or poststructuralist critics, about the nature of scientific theory and intellectual inquiry. The first group of scientific realists (Norman Levitt, Paul R. Gross, Jean Bricmont and Alan Sokal and others) have accused the postmodernists or poststructuralists (Jacques Derrida, Gilles Deleuze, Jean-François Lyotard and others) of having effectively rejected scientific objectivity, the scientific methods and models, and even scientific knowledge, and considered and declared their work to be incomprehensible or meaningless (this war included many scientific fields in this trend, including cultural studies, cultural anthropology, feminist studies, comparative literature, media studies, and science and technology studies). *Contemporary econo-sciences and econo-disciplines are not in a real war, but there a lot of adversities and conflicts.* Indeed the economics is becoming more a focus of study, with increased attention to the disciplinary impacts on academic organization and leadership, between the lifecycle of an econo-sciences and econo-disciplines the gap, is truly less than it was one hundred years ago, but still continues to exist, as can be seen in Figure no. 3.

The gap between life cycles of econo-sciences (E-S) and econo-disciplines (E-D)

Figure no 3



Another important aspect is the level of importance generated by the volume of research papers and books,

institutions and all other applied aspects and the intensity of the decline. All econo-sciences are higher both as level or volume and as time it takes to reach the climax, but the decline is really more emphasized than in an econo-discipline case. In better understanding econo-discipline is a pale shadow of the econo-science during the introduction or appearance but its characteristics are manifested in moderate way, compared with econo-sciences groups, during the rest of the life cycle. This is easy to demonstrate following the modern econo-sciences like: Financial econometrics, Econophysics, Quantum economics, Neuroeconomics, Sociophysics, Econo-engineering, Thermoconomics, etc.

This approach could generate a new a theory of science – discipline differences, more visible in economics than elsewhere, in the changing universe of the sciences and the disciplines.

Much of the disciplines variation focused primarily on the volume, but the most important remains the slope of decline. The problem of the new war is not group of scientific realists versus empiricists vs postmodernists or poststructuralists (underlying the rejected scientific objectivity, and emphasizing the absence of methods, models or knowledge), but econo-sciences versus econo-disciplines, because the gap highlight the desire of resistance and survive more specific to econo-disciplines than to the sciences. Econo-sciences mean too many assumptions, methods, models, many of which are hard to believe, validate or even used in the real economic phenomenon and this transform the econo-sciences' life cycle in its last part in graphic more pronounced decline. An example is the so called socialist economy as econo-science that is now really in a generalized real decline, but the econo-discipline continues to survive.

It is that econo-science is too axiomatised a way to deliver something accurate concerning its own crisis prediction. And in this case of less room to experiments for an econo-science like socialist economics was, how could econo-discipline with the same name survive?

It is absolutely true that we need both approaches and life cycles: econo-sciences models and methods, and econo-disciplines methodology and education to give coherence to this adversity framework and to multiply the empirical findings. However, the gap is shorter than the period of the last decades. Because an academic econo-disciplina may be said to possess knowledge and the privilege or responsibility of validating and authorizing new knowledge extensions in particular so-called disciplinary areas the immediate adversity with the new econo-science becomes more and more clear. When reality challenges some claims or just a statement of a classical econo-disciplina then the new econo-science uses its new methods and models and declares it automatically just history or simply obsolete, providing more alternatives in the new science – disciplina approach. Closely associated solutions for econo-sciences in the conflict with disciplina include immediately multi, trans, interdisciplinarity, and even crossdisciplinarity.

4. CONCLUSIONS

A real difference exists between econo-sciences and econo-disciplines that stretch in almost all universities all over the world having a long history, but there is still an opinion about the existence of at least four heterogenous branches of new econo-sciences, all of which point out serious weaknesses in the basic fundamental assumptions of neo-classical economics:

a) Econophysics; b) Ecological economics (Herman Daly and his steady-state economics, 1991); c) Sociophysics; d) Biophysical economics (Hall and Klitgaard, 2006). All these new econo-sciences have represented a great breath of fresh air for decades, destroying the dogmatism of classical economics, dressed in modern mathematics or modern statistics that worked at one time, but do not reference the conditions out of which they sprang.

The new econo-sciences must generate new econo-disciplines during the next years and thus to reinvigorate and revive economics, and build a realistic body of knowledge of economics that is really based on testable theories and hypotheses that have predictive value, on new models from other more competitive sciences. The Economics theory of both science and discipline could get out of the dark ages and apply the world view and techniques of science to the economic phenomenon as a complex dynamic system. New econo-sciences are more flexible than Physics because there is free will, greed and fear to add into the equations... But for this future all the econosciences and econo-disciplines must cooperate and the economists must do the same thing with physicists, engineers and others experts in different domains. Classical and neo-classical economists have about as much to offer, as alchemists had to offer to chemistry in its early days. The new econo-sciences and econo-disciplines do not get diluted or swallowed by classical Economics, because in fact economics is just a part of Sociology, and thus new Sociophysics, Thermoconomics Quantum economics, Complexity economics or econo-complexity science and Evolutionary economics have progressed to the point where our social and economic systems are nothing else but biophysical systems which must obey the laws of thermodynamics and, more general to Quantum Physics and all of the other known constraints on such systems that are known from the study of physics, chemistry, and biology. The adversity between econo-sciences and econo-disciplines must finish soon and the new econophysicists or sociophysicists or econo-engineers must learn the science first, then build on and expand the science-based models, hypotheses, laws, and techniques, and only after that analyse the economic phenomena.

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Annex 1

The contemporary econo-sciences' list and several relative new econosciences

No	Econo-sciences
1	Accounting
2	Agricultural Economics
3	Banking
4	Behavioural economics
5	Bioeconomics
6	Comparative economics
7	Computational economics
8	Consumer economics
9	Contract theory
10	Development economics
11	Business administration
12	Business ethics
13	Economic geography
14	Economic history
15	Economic sociology
16	Energy economics
17	Economic methodology
18	Econometrics
19	Economic statistics
20	Education economics
21	Experimental economics
22	Entrepreneurial economics
23	Environmental economics

24	Finance
25	Financial economics
26	Heterodox economics
27	Green economics
28	Feminist economics
29	Islamic economics
30	Industrial organization
31	International economics
32	International Trade
33	Institutional economics
34	Labor economics
35	Law and economics
36	Managerial economics
37	Marketing
38	Mathematical economics
39	Monetary economics
40	Political economy
41	Praxeology
42	Public finance
43	Public economics
44	Real estate economics
45	Risk management and insurance
46	Socioeconomics
47	Transport economics
48	Welfare economics
Relative new econo-sciences	
1	Bioeconomics
2	Biophysical economics
3	Complexity economics/econo-complexity science
4	Collective bargaining and game theory
5	Constitutional economics
6	E-Business
7	Evolutionary economics
8	Ecological economics
9	Econo-engineering
10	Econo - information technology
11	Econo-health informatics
12	Econo-organizational studies
13	Econophysics
14	Econo-regional science
14	Econo-systems science
15	Econo-pharmaceutics
16	Financial econometrics
17	E-managerial economics
18	Management information systems
19	Military economics
20	Natural Resource Economics
21	Neuroeconomics
22	Quantum economics
23	Social and economic choice theory
24	Sociophysics
25	Thermoeconomics
26	Time series in economics etc.

MASTERING OF EVEN SIMPLE SOCIO-PHYSICS MODELS – A STRATEGIC ADVANTAGE FOR LEGAL PROFESSIONALS

I. COMMENTS ON AND SUGGESTIONS, BASED UPON NEWTONIAN MECHANICS MODELS, TO IMPROVE THE 19.06.2013 DRAFT LAW OF REVISION OF 2003 ROMANIA'S CONSTITUTION

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Abstract. *If considering that the Human Society is being composed of many individuals (its members), relatively similar one to another, the Principles of functioning of the given Society composed of members – humans, natural ad legal entities, are somehow analogous to the Principles of Classical, Newtonian (Macroscopic) Physics, valid for bodies composed of many molecules.*

The authors, not implied in political debates or in the activity of any political party, introduce in the next, as a scientific contribution¹, Socio-Physics tools, based upon objective Newtonian Mechanics Models, able to assist in improving the June 19, 2013 Draft law of Revision of 2003 Romania's Constitution: Newton's three Laws, Models of equilibrium of bodies; Postulates of Conservation; Dimensional Analysis; Basics of Processing of Experimental Data, averages and errors.

Such simple Physics models when applied to society, might have some characteristics a little different from those of the Physics laws: social laws and the definitions or the conditions for space, time, objects, resources and interactions are relatively less rigorous, more approximate than in Physics, but even objective.

The authors consider Socio-Physics laws, when possible, as being acceptable postulates, based upon partially pragmatismal check.

These models are here applied to the mentioned Draft Law of Revision of 2003 Romania's Constitution's provisions and to a few debates, so offering useful Socio-Physics conclusions, as objective as possible ones.

Physics models and those people mastering them, the socially committed scientists and particularly, the professors of Physics, may assist members of the Revision Commission and all those interested to design, to evaluate and improve, using Socio-Physics, every proposal and suggestion, to find better solutions for the next Constitution's text, to the benefit of the people of Romania, of the European Union and of the world.

The authors are waiting for participants in the debates make adequate use of Physics models and welcome pertinent critics of the authors suggestions and comments, eventually based on Physics models, to improve their research.

Physics models might be considered a higher level of legal common sense.

Keywords: *Newtonian Physics Models, Inertia, Proportionality, Action and Reaction, Conservation postulates, Mechanical Equilibrium, Dimensional Analysis, Dimensional Homogeneity, Data Processing, Socio-physics, Socio-optics, legal common sense.*

¹ The contribution of the authors is in English, being a preliminary version, only. It is like as it was delivered at "Econophysics and Sociophysics" Workshop, University of Pitesti, June 29, 2013.

The authors have made use of the English official version of the 2003 Constitution of Romania and of the Romanian Version (the only official one) of the Draft Law for Revision of the Constitution B/429/2013/Senat, edited by the counsels Maria Ranga and Costel Gruia.

The final text of this paper will be available, entirely in English, upon the issue of the official English version of the Draft Law submitted to public debates, B429/2013.

INTRODUCTION

The humans interact with Nature, subject to the Principles and Laws of Natural Sciences – Physics, Chemistry, Biology a. s. o.

All the above mentioned principles and laws, being natural ones, are independent of the human wish.

The humans interact between them subject to the principles and Laws of Psychology and Sociology.

The functioning of the Human Society is governed, besides objective natural laws, by laws generated by humans themselves – the Laws System (when including institutions – the Judicial System), developed along the History of Mankind, with local variations in space, vicinity, time, time horizon, available resources and environmental conditions, technologies, communications, but aiming, more or less, to the best functioning of a given society in the present and in a shorter or longer runs, depending of the interests of the promoters.

Particularly, because Physics has large spectra of models and because it is studied from the school age as a component of scientific literacy, Physics is called to suggest scientists and to help them to apply Physics laws, principles, postulates, methods, structures, models and ways to identify, describe, understand, manage and control social, political and economic phenomena, by analogy with physical natural phenomena.

If there is considered that the Human Society is being composed of many individuals (its members), relatively similar one to another, the Principles of functioning of the given Society composed of members – humans, natural ad legal entities (persons), are somehow analogous to the Principles of Classical, Newtonian (Macroscopic) Physics, valid for bodies composed of many molecules (mono- or poly-atomic).

If we refer to the social behavior of an individual human, the Quantum Physics seems to the authors as being adequate.

The simple Physics models, when applied to society, might have some characteristics a little different from those of the Physics laws: social laws. The definitions or the conditions for space, time, objects, resources and interactions are relatively less rigorous, more approximate than in Physics, but even, objective.

The authors consider Socio-Physics laws, when possible, as being postulates (acceptable, based upon partial pragmatismal check).

Physics models may and must help, in the authors' opinion, have a better and future oriented Revision of the 2003 Romania's Constitution, based on the Draft Law No. 429/2013 of Revision of Constitution of Romania, issued by the Parliament of Romania, on June 19, 2013, submitted to public debate on June 24, 2013 (debates opened until August 24, 2013).

Physics models and those mastering them, the socially committed scientists and particularly, the professors of Physics may assist members of the Revision Commission and all those interested to debate, design, evaluate and improve, using Socio-

Physics, every proposal and suggestion and to find better solutions, to the benefit of the people of Romania and of its partners in the European Union and North Atlantic Treaty Organization.

Physics models might be considered a higher level of legal common sense.

There are two complementary approaches useful for socially committed scientists:

- to start from an existing Physics model and to find social, political, economic phenomena where that Physics model may, eventually, fit successfully - like in the first part (introducing the Physics models, for the non physicists) of the present paper or

- to find a Physics model to explain a chosen type of social, legal, politic or economic phenomenon – mostly like in the second part reserved to the application to the amendments contained in the Draft Law of the Revision of 2003 Romania` Constitution.

The most general tools, Principles and Laws of the Macroscopic Physics which have correspondents in Social Sciences and in Physics modelling of the functioning of the Human Societies, as Postulates, used by the authors in this present research, are:

- NEWTON` s Laws, next referred as: first, second and third Newton`s Postulates (NP):

NP I - *Status quo ante*

NP II - Postulate of *Proportionality*

NP III – Postulate of *Action and Reaction* or Postulate of *Rights (freedoms) and Duties (obligations)*.

- Models of *equilibrium of a body*.

- Postulates of *Conservation*, mainly referring to non renewable resources.

- *Dimensional Analysis*, particularly the observance of dimensional homogeneity in comparing social “quantities”, by correctly defining them.

- Basics of *Processing of Experimental Data* - averages and errors.

In this paper, the authors comment and eventually make suggestions, in the text, on the Draft Law of Revision the Romania`s Constitution (shortly, Draft Law or even DL, in the next), objectively resulting when considering Classical Physics Models.

Of course, Socio-Physics could not replace human decision-makers. A manager`s domain expertise and tacit knowledge can not be replaced by an automated algorithm. However, a sorrow Socio-physical analysis can support and augment decision-makers` instincts and their reasoning abilities.

I DESCRIPTION OF THE CLASSICAL PHYSICS MODELS USED IN THE PAPER

1. NEWTON`S LAWS OF MOTION

The three laws of motion were firstly compiled by Sir Isaac Newton in his work *Philosophiæ Naturalis Principia Mathematica*, published on July 5, 1687 [1].

Newton used these 3 laws to explain and investigate the motion and the equilibrium of many physical objects and systems.

These laws describe the relationship between the forces acting on a body and the motion of that body due to those forces.

These 3 laws have been expressed in several ways over more than three centuries and may be summarized as follows [2] :

i) First Newton Law (Next in the paper: **NP I** Newton`s first Postulate) – *Status Quo Antem*

“Every body persists in its state of being at rest or of moving uniformly straight forward, except insofar as it is compelled to change its state by the force impressed. If the resultant force (the vector sum of all forces acting on an object) is zero, then the velocity of the object is constant.”

Consequently, an object that is at rest will stay at rest, unless an unbalanced force acts upon it; an object that is in motion will not change its velocity unless an unbalanced force acts upon it.

Newton's first law is often referred to as the *law of inertia*. It permits the introduction of inertial reference frames.

In social life NP I may be found as „*Status quo antem*”

The NP I is well represented in the Draft of the Revision Law, the major part of the paragraphs remaining unchanged, as compared with those existing in the 2003, presently valid, Constitution.

$$\sum \mathbf{F} = \mathbf{0} \Rightarrow \frac{d\mathbf{v}}{dt} = \mathbf{0}.$$

Therefore, the authors will not indicate the use of NP I, in the text of the commented Draft Law.

The unaltered articles of the Constitution are to be ignored, here, with rare exceptions.

ii) Second Newton Law (NP II) – Law of Proportionality

“The net force **F** acting on a particle is equal to the time rate of change of its linear momentum **p**, in an inertial reference frame:

where, for constant-mass systems, the mass can be taken

$$\sum \mathbf{F}_{a,b} = - \sum \mathbf{F}_{b,a}$$

outside the differentiation operator” (by the "constant factor rule" in differentiation). Thus, where **F** is the net force applied, **m** is the mass of the body, and **a** is the body's acceleration. Thus, “the net force applied to a body produces a proportional acceleration”.

Any mass that is gained or lost by the system will cause a change in momentum that is not the result of an external force. A different equation is necessary for variable-mass systems.

Consistent with the first law, the time derivative of the momentum is non-zero when the linear momentum changes direction, even if there is no change in its magnitude; such is the case with uniform circular motion.

The NP II also implies the conservation of the linear momentum: “when the net force on the body is zero, the momentum of the body is constant”.

Any net force is equal to the rate of change of the linear momentum (as a vector, in magnitude or/and in direction).

iii) Third Newton`s Law (NP III) – Postulate of Action and Reaction – Postulate of Rights (freedoms) and Duties (obligations)

“To every action there is always an equal and opposite reaction”; or “the forces of two bodies on each other are always co-linear, equal in magnitude and are directed in opposite directions”

Whenever a first body exerts a force **F** on a second body, the second body exerts a force **-F** on the first body. **F** and **-F** are equal in magnitude and opposite in direction. This law is called the *action-reaction law*, with **F** called the "action" and **-F** the "reaction".

The action and the reaction are simultaneous.

The Third Newton's Law means that all forces are interactions between different bodies and thus that there is no such thing as a unidirectional force alone or a force that acts on only one body.

A force means an interaction; it acts between a pair of objects, and not on a single object. So, each and every force has two ends.

Each of the two ends is similar, except for being opposite in direction. The ends of a force might be considered as mirror images of each other.

Newton's third law may be stated, also, as:

“Given two objects A and B, each exerting a force upon the other, where $F_{a,b}$ are the forces from B acting on A, and $F_{b,a}$ are the forces from A acting on B”.

Newton used the third law to derive the law of conservation of momentum; however from a deeper perspective, the conservation of momentum is the fundamental idea.

2. SOCIAL APPLICATIONS OF NEWTON'S LAWS

$$\mathbf{F} = \frac{d\mathbf{p}}{dt} = \frac{d(m\mathbf{v})}{dt},$$
$$\mathbf{F} = m \frac{d\mathbf{v}}{dt} = m\mathbf{a},$$

To Newton Laws (in social applications – “Newton's Postulates”, “NP”) corresponds, socially, *causality*, which is the relationship between an event (the cause) and a second event (the effect), where the second event is a consequence of the first, in the special situation when antecedence is reduced to simultaneity, understood as for social phenomena (as having a much larger time constant).

Though cause and effect are typically related to events, but candidate quantities in social life may include: objects, resources, processes, properties, variables, facts, rights, obligations, actions.

The quantitative analysis of causes and effects of a process, based on the three Newton Laws (social Postulates) may stay at the basement of any social analysis, particularly at legal judgements.

i) “*Status quo antem*” corresponds to 1st Postulate: “no action leads to no change in motion”.

This Postulate suggest to add in the 1st article of the Constitution : “Romania is a member of the European Union and of the North Atlantic Treaty Organization”, because the accessing to these organizations, after the passing of 2003 Constitution, do change the content of the rest of Art. 1.

ii) Principles and rules of *proportionality* in many social fields may correspond to the 2nd Postulate.

Proportionality is an accepted principle in law.

For example, the punishment of a certain crime should be in proportion to the severity of the crime itself. In practice, systems of law differ greatly on the application of this principle.

The proportionality principle, moreover, is regarded as a fundamental element of regulatory policy and public administration.

Over the past half century, NP II has become a preferred procedure for managing disputes involving an alleged conflict between two rights claims, or between a rights provision and a legitimate state or public interest.

The principle of proportionality has played an important role in preventing undue invasions of basic rights for the purposes of countering terrorism.

The characterizing of the causal relationship may be the subject of much debate, in each case.

Contiguity, implied in causality, postulating that cause and effect, must be in spatial contact or connected by a chain of intermediate things in contact (Born, 1949 [3]), is always implied.

The Postulate of Proportionality may be used to settle debates on some topics in the Draft Law on Revision of Romania's Constitution. E.g.:

A new paragraph added as the Art.1.- (1') of the Revised Constitution by the 2013 Draft Law for the Revision of Constitution of Romania is intensely debated: « România recunoaște rolul istoric, în constituirea și modernizarea statului român, al Bisericii Ortodoxe și al celorlalte culte religioase recunoscute de lege, al Casei Regale și al minorităților naționale » (En.: « Romania recognizes the historical role in the founding and in modernizing the Romanian State of the Orthodox Church and of other religious cults, recognized by law, . . . »).

Some representatives of a few other religious cults, weakly represented in Romania (all together, 1/8 of believers) demand the names of their cults be included explicitly in the text of this amendment, pleading as being discriminated by the present amendment. But, if there is considered the number of printing signs of the provision to be relatively proportional with the relative number of specific believers, the proposed text is, in fact, discriminating the majoritary Orthodox Church (18 letters and ~ 7/8 of total population being Orthodox believers) when compared with the present space allotted to all other churches together (48 letters, but only ~1/8 of total believers).

From the point of view of NP II, it is to mention that in a few places of D L 429/2013 there are discriminated majorities, e.g., of:

- Romanian ethnics
- procreative families.

iii) N. P. III social applications

3rd Newton's action-reaction Law has analogies in many non physical issues.

The Physics Action-Reaction Law acts as an action-reaction postulate (ARP), when modelling non physical phenomena. These phenomena might have a few characteristics different from those of the Physics law of action–reaction, but not, essentially, affecting it. For example, the time constant might be different, the nature of the reaction might be also different of nature of the action.

In the theories on Law, N P III is a basic principle, the rights being always accompanied and conditioned by duties. If the action means more rights, the reaction would mean more duties. The reverse allegation is also valid.

A civic principle asks that oneself should take responsibility for one's own mistakes.

Complying with the Action – Reaction Postulate (rights, freedoms vs. duties, obligations) is at the basement of judges' reasoning.

Offer and demand, income and spending, creditors and debtors, excedent and deficit, are action-reaction pairs, essential in Economics.

The observation of the Action-Reaction Postulate is evident in the major part of provisions of international treaties as well as in national constitutions, but, due to disequilibrium in the obligations and the rights in the past, to re-establish a balance at the moment of their passing, many treaties and constitutions explicitly mention more rights than duties, proving a later disequilibrium between rights and duties, so tempting many

citizens, companies, Non Governmental Organizations and even Government bodies to think only to value their own rights, neglecting to comply with their legal duties.

Even members of the three independent powers in the state structure of powers: legislative (MP), judiciary (judges) and executive (ministers) show, sometimes, a feeling of impunity and a lack of responsibility (like a total functional immunity).

To increase the personal responsibility of all of them and diminish their feeling of impunity, the Revised Constitution must include provisions to correct this situation for judges and ministers and too, for the MP which "In the exercise of their mandate Deputies and Senators shall be in the service of the people" (Constitution of Romania [4]), but not in the private interests of some individuals or groups, deeply interested to be favoured, as have been accusations, sometimes.

There are to be mentioned here, too, the unhappy titles of some important international treaties like e.g., "Human Rights Charter" or names of prestige institutions like "Courts of Human Rights" which encourage the abuse of *requiring more rights* by those who *do not observe their correspondent obligations* (by infringing NP III).

Rarely, in constitutions there are systematically approached pairs – *a right vs its corresponding obligation*.

In the valid 2003 Constitution of Romania [4], for example, in Title 2 - "Fundamental rights, freedoms and duties", the Chapter II - "Fundamental rights and obligations" contains **31 different rights and freedoms** (Art. 22-52) but the Chapter III - "Fundamental duties" contains only **4 duties** (Art. 54-57). Even the Name of Title 2 is unbalanced: rights + freedoms vs duties, only (obligations not being mentioned).

From the point of view of NP III, it would be necessary to treat rights and obligations, simultaneously as pairs – each right + its corresponding obligation.

By approaching rights and duties in pairs, could be avoided many sources of disequilibrium in the functioning of the State

When referring to groups, human groups with opposite characteristics are to be treated simultaneously. But, e.g., in the Draft Law there are not even mentioned the *overgifted Romanians* which honour their country with their international prizes in sciences, sport, engineering and contribute in the middle and long runs to the progress as compared with the support given to *disabled* people.

Typical examples of breaking Action-Reaction Postulate (ARP) using constitutional provisions, are offered by political parties which, during electoral extended campaigns, to gain votes, do pass laws providing for uncovered budgetary future expenses, which shall lead to future chronic State Budget Deficits and structural unbalances, to bear on the ane evolution of the country's economy.

This unbalance, rights vs duties, may facilitate "fraud on law"; some constitutional provisions might be infringed by other constitutional provisions, not observing NP III requirements, this resulting in the breaking of some provisions of the implied constitution and in conflicts of laws, leading, e.g. to the extending the duration of legal procedures outside the maximum operational duration and reducing the efficiency of of the law and of the judicial system.

The solutions for the Parliament would be to amend those laws making possible "fraud on law", through an adequate revision of the constitution.

For the present Revision of the Constitution, it seems necessary, as regards legislation procedures, to improve the legislation regulations leading to the passage of laws in Parliament or of adopting Ordinances by the Government or of

issuing institutional advices and reports, at different hierarchical levels.

A sorrow analysis of the content, at the Revision of a Constitution, by systematically considering the mentioned Postulates (of inertia, proportionality and of rights, freedoms, duties and obligations) seems necessary.

For educating a responsible citizen, there is important to teach the citizens to try to be inventive, creative in observing the action-reaction and proportionality postulates, not to try to be creative and to develop solidarity in finding ways to infringe the laws.

3. LAWS OF CONSERVATION

The Newton laws of conservation may be stated simply: "*In an insulated system, momentum, energy and angular momentum can neither be created nor destroyed.*"

In Modern Physics, *the laws of conservation of: linear momentum, P, angular momentum, M, and energy, E*, are of more general validity than Newton's motion laws, since they apply to both light and matter, and to both classical and non-classical physics.

Conservation of energy was discovered nearly two centuries after Newton's lifetime, the long delay occurring because of the difficulty in understanding the role of microscopic and invisible forms of energy such as heat and infra-red light.

The 3rd Newton's law, the action-reaction law is, in Physics, the result of conservation laws of quantities *non regenerative and non perishable in a conservative system* (referring to total energy, total linear or circular momenta), to ensure the stability of the system, in its stationary evolution.

4. APPLICATIONS OF CONSERVATION LAWS AS SOCIAL POSTULATES

Conservation laws are present, too, in human social life, when having, e.g., a limited non renewable, non regenerative resource for a defined social group, under specified conditions, subject to defined space and time horizons and technological limitations.

The *conservation postulates* might indicate limits of the social development, particularly at global level (in industry, agriculture, tourism, e.g.) mainly due to the consumption of limited, non-regenerative world resources (fossil fuels, e.g.).

The conservation laws impose that a further development of developed countries by observing traditional patterns is not a workable solution, if there is to be considered a worldwide homogenizing of the level of development. Some world finite resources might limit the world development to a couple of years, only.

May be, there is the case to introduce into Constitution the concepts of 're-development', 're-industrialization' and of other 'intelligent' ways of development and to put constitutional limits to the use of contry's nonregenerative resources, such as 0.5% of the possibly extractable by yearly extraction of non regenerative minerals.

In case of being possible a sustainable increase of known resources, the speed of this possible increase of available resources put limits to the sustainable rhythm of development. May be, it is to be provided in the Revised Constitution that the rhythm of use be only a part of the rhythm of discovery of new resources, f.e. to a half one.

To protect presently unknown exactly new resources, there is necessary to be provided in the Revised Constitution, the protection of by-products, which may be extremely valuable in

the future, e.g. of gold sub-products, which contain rare earths or of the bottom of sea deposits.

Of course, the progress in science, technology, education and management in replacing limited resources with others, regeneratives or less scarce ones, make a sustainable development possible on a longer run, on a larger human and geographical scale, for those societies advanced in research and development.

The conservation laws may require redistribution of world resources or of their rhythms of consumption and these requirements might generate conflicts. The participation of Romania in defending treaties is essential to ensure its security and is to be mentioned in the Constitution in the right position (Art. 1).

A financial debt on the Future is not an unlimited resource as it is seen by some governments, but it is leading to a spiral of debts, taxation, discouraging business but promoting corruption and regress in the middle run and more, in the long run. These debts generated by an egocentric generation are to be paid by future generations. The Constitution might put a superior limit to debts, correctly defined, e.g. by limiting the State Budgets Deficits.

5. MECHANICAL EQUILIBRIUM OF A BODY

The **equilibrium** may be considered in Physics as “*an unchanging condition or state of a body, a system, a.s. o., resulting from the balance or cancelling out of the influences or processes to which it is subjected*”.

An alternative, equivalent, definition of equilibrium that applies to conservative systems and often proves more useful, based on the fundamental relationship between force and energy, is:

“*Equilibrium is the condition of a system that has its total energy distributed among its component parts in the statistically most probable manner*”.

However, the definition involving energy can be readily extended to yield information about the stability of the equilibrium state.

The necessary conditions for *mechanical equilibrium* for a system of particles are:

- (i) the *vector sum of all external forces* be zero and
- (ii) the *vector sum of the moments (torques) of all external forces* about any line be zero.

As applied to a rigid body, the necessary and sufficient conditions are to be satisfied simultaneously six equations, they expressing the equilibrium of a rigid body in 3 dimensions:

3 scalar sums of forces on each direction be zero:

$$\sum F_x = 0, \sum F_y = 0, \sum F_z = 0$$

and 3 scalar sums of momenta on each direction be zero:

$$\sum M_x = 0, \sum M_y = 0, \sum M_z = 0$$

These equations may be used to determine unknown forces applied to the rigid body in space or unknown reactions exerted by its support.

These equations may be solved for just six unknowns. If they involve more than six unknowns, the body is said to be statically indeterminate. If they involve fewer than six unknowns, the body is said to be partially constrained. The statement above is not valid absolutely. The solvability of the six equations depends on the properties of the system matrix.

Generally speaking, the problem of the *equilibrium of a body* is always transformed to the problem of the *equilibrium of the system of forces* that act on the body.

From what has been said, it follows that the equilibrium of a particular force system is always simpler than the general case.

A key concept is the center of mass (center of gravity in a uniform gravitational field) of a body at rest: it represents “*an imaginary point at which all the mass of a body resides*”.

The position of this point relative to the foundations on which a body lies determines its stability in response to external forces.

With the exception of a theoretical spherical rigid object, the foundations (support) must have an area different of zero, that meaning that *the equilibrium implies at least three non co-linear points of support* (a triangle, at least).

An object is in **equilibrium** if:

- i) the *linear momentum of its center of mass is constant*:

$$\mathbf{P} = \text{constant}$$

$$\text{If a body is in translational equilibrium then } d\mathbf{P}/dt = 0; \mathbf{F} = 0$$

and if

- ii) its *angular momentum (torque) about its center of mass is constant*:

$$\mathbf{M} = \text{constant.}$$

If a body is in rotational equilibrium, then $d\mathbf{M}/dt = 0$

A system that is in equilibrium shows no tendency to alter over time (Postulate of Inertia, NP I).

If a system is in *static equilibrium*, there are no net forces and no net torque in the system.

If a system is in *stable equilibrium*, small disturbances to the system cause only a temporary change before it returns to its original state.

Rest implies stationarity, equilibrium implies a resultant force or respectively, moment, of zero.

A rigid body in mechanical equilibrium is undergoing neither linear nor rotational acceleration; however it could be translating or rotating at a constant velocity. For example: a sky diver at terminal velocity, where resistive forces are equal to the force of gravity. This means that a body can be in equilibrium and not at rest, but a body at rest MUST be in equilibrium, otherwise it would move.

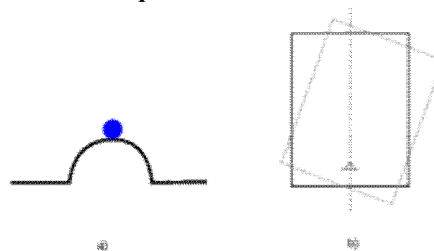
An other definition of equilibrium, based on its potential energy is “*a system is in mechanical equilibrium if its position in configuration space is a point at which the gradient with respect to the generalized coordinates of the potential energy is zero*”.

From elementary calculus, we know that a necessary condition for a local minimum or a local maximum of a differentiable function is a vanishing first derivative (that is, the first derivative is becoming zero).

To determine whether a point is a minimum or a maximum, one may be able to use the second derivative (of the potential energy vs position) test.

The consequences to the stability of the equilibrium state are as follows:

- i) **Unstable equilibria.** The second derivative < 0

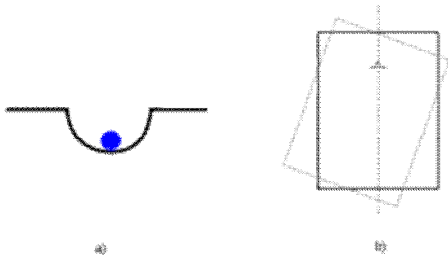


The potential energy is at a local maximum, which means that the system is in an *unstable equilibrium* state. If the system is displaced an arbitrarily small distance from the equilibrium

state, the forces of the system cause it to move even farther away.

The center of gravity of a body (at left – the center of the circle (sphere), at right, the center of the rectangle (parallelepiped) lies above the point of suspension or support (the small triangle, at right), the body is said to be in *unstable equilibrium*.

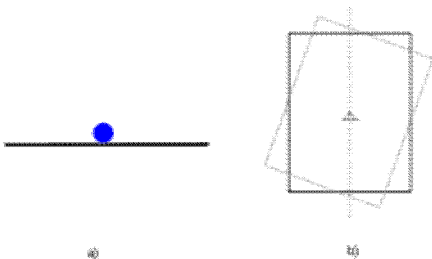
ii) Stable equilibria. The second derivative > 0 .



The potential energy is at a local minimum. This is a *stable equilibrium*. The center of mass is below the point of suspension. The response to a small perturbation is a force that tends to restore the equilibrium.

If more than one stable equilibrium state is possible for a system, any equilibria whose potential energy is higher than the absolute minimum represent *metastable* states.

iii) Indifferent equilibria. The second derivative $= 0$ or does not exist.



The center of mass is coinciding with the point of suspension. The response to a small perturbation is no force that eventually would tend to alter the equilibrium state.

The second derivative test fails, and one must typically resort to using the first derivative test. Both of the previous results are still possible, as is a third: this could be a region in which the energy does not vary, in which case the equilibrium is called *neutral* or *indifferent* or *marginally stable*. To lowest order, if the system is displaced a small amount, it will stay in the new state (here – position).

In more than one dimension, it is possible to get different results in different directions, for example stability with respect to displacements in the x -direction but instability in the y -direction, a case known as a saddle point. Without further qualification, “*an equilibrium is stable only if it is stable in all directions*”.

If the *center of gravity projection* of a body exists outside the foundations, then the body is unstable because there is a *torque* acting: any small disturbance will cause the body to fall or topple. If the center of gravity exists within the foundations, the body is stable since no net torque acts on the body.

To ensure the equilibrium of a body in the gravitational field, there is necessary that it has a support enough large that the center of mass' vertical rests inside the horizontal pojection of the support during the considered process. Even if a cilinder is no vertical but slighly tilded that cilinder may rest in equilibrium. A very kown such object is the Tower of Pisa (Italy).

The Leaning Tower of Pisa

Figure no 1



This tower, which dates from 1173, tilted because the ground beneath a part of it shifted, over the cetnuries. Now it has stopped its leaning, because, since 1993, about 780 tons of lead, have been placed at a zone of its base side, as a counterweight and have halted the tower's tilting. The measurements show that the ~ 55 m high tower has reached equilibrium, for the moment. The tower leans now five degrees ~ 5 m off the perpendicular, but the vertical of its center of mass lyes inside the basement. The simplest support for an object is the *tripod*, the preferred foundation, since prehistory, when e.g. manufacturing three-legged wood stools and tables.

A beautiful illustration of the equilibrium of a body on a three-legged suport is offered by the sculptor Alexander Calder, whose “*Trepied*” may be used to explain Physics modelling of “balances and checks „of 3 independent powers in a state structure and the role of the head of state.

ALEXANDER CALDER, “Trepied”, 1972 painted metal (285.1 x 300.4 x 315 cm). [5]

Figure no 2



By considering a tripod, it is evident that if one of its legs is much too long or too short as compared with the other two legs, the body may not be stable.

The instability may appear when the vertical of the center of mass be outside the area of the tripod, when, e.g. the point of support of a heavy arch be much lateral.

6. SOCIAL EQUILIBRIA

In sociology, a system is said to be in *social equilibrium* when there is a *dynamic* working balance among its interdependent parts (Davis & Newstrom 1985. [6]). Each subsystem will adjust to any change in the other subsystems and will continue to do so until an equilibrium is retained. The process of achieving equilibrium will only work if the changes happen slowly, but for rapid changes it would throw the social system into chaos, unless and until a new equilibrium can be reached.

By analogy with the mechanical equilibrium of rigid bodies, which need at least three points of support to define an equilibrium, the theorists of state have applied to "three-part" political systems.

The term (Fr – "tripartite") is ascribed to French Enlightenment political philosopher Baron de Montesquieu, 1748 (see [7]) Montesquieu described division of political power among: a legislature, an executive, and a judiciary powers. He based this model on developments in Ancient Greece, on the Constitution of the Roman Republic and on the British constitutional system. Montesquieu took the view that the Roman Republic had powers separated so that no one could usurp complete power. In the British constitutional system, Montesquieu perceived a separation of powers among the monarch, Parliament, and the courts of law.

The separation of powers is a model for the contemporary governance of a state (or who controls the state). Under this model, the state is divided into branches, each with separate and independent powers and areas of responsibility so that *no branch has more power than the other branches*.

The three powers – *legislative, executive and judiciary* must preserve a relative equilibrium among them to insure the stability of the center of mass (which might correspond the president or to the king, the head of state, representing it).

The first three articles of the U.S. Constitution call for the powers of the federal government to be divided among three separate branches: *the legislative, the executive, and the judiciary* ones. Under the separation of powers, each branch is independent, has a separate function, and may not usurp the functions of another branch. However, the branches are interrelated. They cooperate with one another and also prevent one another from attempting to assume too much power. This relationship is described as one of *checks and balances*, where the functions of one branch serve to contain and modify the power of another. Through this elaborate system of safeguards, the Framers of the U. S. A. Constitution sought to protect the nation against tyranny.

The states of the U. S. A., also follow this *three-part model* of government, through *state governors, state legislatures, and the state court systems*.

The system of government in the United States is largely credited to James Madison, who, in the Constitutional Convention of 1787, played a leading role in persuading the majority of the Framers to incorporate this three-part concept into the Constitution.

In the political governance systems, in the world, appear and other independent state bodies.

For example, Belgium is currently a federated state that has imposed the *trias politica* on different governmental levels. The constitution of 1831, is based on three principles and the horizontal separation of powers.

It established the three supreme powers as the legislature, executive, and judiciary branches, but also created *two other autonomous state organs* that have equivalent power, but not equivalent rank. The first is the Supreme Elections tribunal (electoral branch) which controls elections and makes unique, unappealable decisions on their outcomes. The second is the office of the Comptroller General (audit branch), an autonomous and independent organ.

In Hungary, there are *four* independent branches of power (*the Parliament, the Government, the Court system, and the Office of the Public Accuser*, which are divided into six bodies: *Parliament, Government, Supreme Court, Constitutional Court, Chief Public Accuser, President of the Republic*).

The independent pillar status of the Hungarian public accuser's office is a new construction, loosely modelled in 1991, after the anticommunist revolution, based on the system Portugal introduced after the 1974 victory of the Carnation Revolution. In Taiwan, according to Sun Yat-sen's idea of "separation of the five powers", the government of the Republic of China (Taiwan) has five branches: Executive Yuan - led by the premier but, in actuality, it is the president who sets policy – executive; Legislative Yuan - unicameral – legislature; Judicial Yuan - its Constitutional Court (highest) and Supreme Court having different jurisdictions – judiciary; Control Yuan - audit branch; Examination Yuan - civil service personnel management and human resources. In Romania 2003 Constitution there were defined 3 independent powers (Art. 1 (4))

The Draft Law defines two new autonomous powers – the Ombudsman (Art.58 (1)) and the National Bank of Romania (Art. 137 (1)), not mentioned in the Art. 1(4).

From the point of view of Socio-Physics modelling, an important progress in political structure of the Romanian State is the provision set forth in the Draft Revision Law which has extracted the President from the executive power (Art. 4(1)), but gives him the role of the Head of State (Art. 80), the President playing the role of center of mass of the body, in the Physics models of equilibrium.

A new structure is introduced: the regions and mentioned the Principle of Subsidiarity.

The new role of the President, the introduction in a state structure of two new autonomous powers and a new hierarchic level are to change many things in the power relationships among the powers of the state, in their balance and checks, and to have a long run influence on the State Governance of Romania.

7. DIMENSIONAL ANALYSIS

The basic principle of Dimensional Analysis was known to Isaac Newton (1686) (see [8]), who referred to it as the "*Great Principle of Similitude*". Important contributions were made by the 19th century French mathematician Joseph Fourier [9], based on the idea that the physical laws (like NP II, $F = ma$) should be independent of the units employed to measure the physical variables.

This led to the conclusion that "*meaningful laws must be formulated as homogeneous equations in their various systems of units of measurement*".

In Physics, D. A. refers to the operations with *dimensional equations* (using “*fundamental dimensions*”) and with *units* describing the nature of physical quantities. In other sciences, D. A. operates with other specific quantities, the physical ones (e.g. space, time) being implied, too.

Because physical quantities may be connected in many ways, there is necessary to select a set of physical quantities to be considered a *fundamental* (basic, primitive or primary) *set*, from which all others physical quantities, the *derived* (secondary) *quantities*, could be defined.

The choice of the basic set of dimensions is, thus, partly a convention, but cannot be arbitrary, because the dimensions must form a basis: they must span in a multi-dimensional space and be linearly independent.

Mass is a dimension, while kilogram is a scale unit (choice of standard) in the mass dimension. Dimension is a more abstract concept than scale unit.

All the commonly used systems of units in physical sciences have the property that the number representing the magnitude of any quantity (other than purely numerical ratios) varies inversely with the size of the unit chosen (e.g. 100 cm = 1m; 1 cm = 1/100 m).

This universal property of unit systems, often known as the “*absolute significance of relative magnitude*”, determines the structure of all dimensional formulas.

In Socio-Physics the relative magnitude play an important role in comparing magnitudes of the same phenomenon, in different contexts and different phenomena.

Basic units are defined for fundamental quantities, possibly, in different ways in different fields, in different historic periods.

In Physics, the fundamental quantities (and the corresponding symbols) and their units (and symbols), currently agreed, established by international convention, form the *International System of Units* (SI). They are:

Length, **L** (m, meter); time, **T** (s, second); mass, **M** (kg, kilogram); electric current, **I** (A, ampere); thermodynamic temperature, **Θ** (K, kelvin); amount of substance, **μ** (mol, mol); luminous intensity, **J** (cd, candela).

This set of fundamental dimensions may be seen as a vector space over rational numbers.

In other fields of knowledge, one may define and other fundamental dimensions, like for example *money*, in financial computations or *hierarchical level* in the social power structures.

The units of chosen fundamental quantities in a system of units are chosen by convention, but the units for the derived quantities are to be established as to preserve *simultaneously valid the equations for physical quantities* and for *magnitudes* (the *numerical* values) of these quantities, in the chosen system of units and therefore to be able to eliminate parasite factors of conversion between the units for the same quantity.

Such a system of units is called a *coherent system of units*.

Any physical equation:

$$\mathbf{X}_1 = \mathbf{X}_2$$

may be written as :

$$x_1 [\mathbf{X}_1] = x_2 [\mathbf{X}_2] ,$$

where \mathbf{X}_1 , \mathbf{X}_2 are physical quantities, x_1 and x_2 are the numerical values expressed in the corresponding units and $[\mathbf{X}_1]$ and $[\mathbf{X}_2]$, units belonging to a coherent system of units.

When using units belonging to a coherent system, the functional equation for magnitudes (numerical values):

$$\mathbf{x} = \mathbf{F}(\mathbf{x}_1, \mathbf{x}_2, \mathbf{x}_3, \dots, \mathbf{x}_n)$$

would be of the same form as the functional equation for the physical quantities:

$$\mathbf{X} = \mathbf{F}(\mathbf{X}_1, \mathbf{X}_2, \mathbf{X}_3, \dots, \mathbf{X}_n).$$

The coherence of a system of units is the result of recognizing the existence of essential relationships among physical quantities.

Strictly speaking, when like dimensioned quantities are added or subtracted or compared, these dimensioned quantities must be expressed in coherent units so that the numerical values of these quantities may be directly added or subtracted, the equations connecting the magnitudes only, being exactly like the physical equations.

Therefore, all conversion factors have to be equal to 1 and could be disregarded in practical work.

It can be proved that “*every secondary quantity which satisfies the condition of the absolute significance of relative magnitude is expressible as a product of powers of the fundamental quantities*”

For example, the physical quantity, *speed*, may be measured in units of meters per second, miles per hour, multiples of the velocity of sound a.s.o. but regardless of the units used, speed is always a length divided by time, so we say that the dimensions of speed are length divided by time, or simply $[\mathbf{v}] = \mathbf{L}/\mathbf{T}$.

Because every secondary quantity which satisfies the condition of the absolute significance of relative magnitude is expressible as a product of powers of the fundamental quantities, *all physics relationships have corresponding dimensional equations*.

A necessary condition for the correctness of any equation is that the two sides have the same dimensions, are measured in the same units, within the same system of units, that meaning that the equation may be true only when there is observed the propriety of *homogeneity* of the equation with respect to all fundamental physical quantities.

The *homogeneity check* may be easily done by expressing each of the quantities in the physical equation in the fundamental units in which the solution is required, too.

The homogeneity being observed implies that the numerical values of the two members ($\mathbf{X}_1 = \mathbf{X}_2$) , when using a coherent system of units, are also equal:

$$x_1 = x_2 .$$

The condition of dimensional homogeneity has to be observed for each equation and for each term.

For social modelling there be necessary to introduce specific dimensions for specific fields.

Therefore, there is always compulsory to observe in each case (products, powers), the equalities of the exponents (dimensions) of each basic physical quantity which enters in any term and in each member of a dimensional equation as any relationship among dimensional expressions be homogenous relatively to all fundamental physical quantities.

Dimensional analysis may be used as a sanity check of physical equations: any equation ($\mathbf{X}_1 = \mathbf{X}_2$) must be “*dimensionally homogeneous*”, for all fundamental dimensions.

Scalar arguments to transcendental functions such as exponential, trigonometric and logarithmic functions, or to inhomogeneous polynomials, must be dimensionless quantities.

Therefore, the dimensionless constants could not be computed by D. A.

The choice of the dimensions or even the number of dimensions to be used in different fields of physics (and not only) is to some extent arbitrary, but consistency in use and ease of communications are very important.

The most basic consequence of dimensional analysis is that only commensurable quantities (quantities with the same dimensions) may be compared, equated, added, or subtracted.

D. A. analysis is a tool to understand the properties of physical (or other specific) quantities, independently of the units used to measure them.

D. A. may be always used to check the dimensional homogeneity of physical equations and not only. It is a help in the check of complicated analytic expressions. It affords a convenient means of checking equations used in other sciences.

D. A. may be approached as a primary tool for obtaining information about physical (and other) systems, too complicated for full mathematical solutions to be feasible.

Dimensional analysis is most often used in Physics, Chemistry, Engineering - and in the Mathematics thereof - but finds applications largely outside of these fields as well.

For D. A. modelling there may be necessary to introduce specific dimensions for specific fields.

Dimensional Analysis (D. A.), largely used by almost all scientists, not only by physicists, is easy to be understood and applied, allows and stimulates creative approach, may be largely applied almost everywhere in sociology, including in analyzing the proposals for the Revision of 2003 Romania's Constitution.

8. SOCIAL APPLICATIONS OF DIMENSIONAL ANALYSIS

In Law, Dimensional Analysis (D A) is essential to understand principles and to design legal norms [10].

D. A. applied in Sociology, by sociophysicists, have lead to solutions of problems that have not been solved before in regard to decisions, intentions, emotion, cognition [11, 12].

In Finance, Economics, and Accounting, Dimensional Analysis, as a part of Econophysics, is most commonly used in interpreting various financial, economics and accounting ratios [13].

The authors suggest Dimensional Analysis [14]. be introduced for the systematic analysis of the Draft Law of the Revision of Romania's Constitution. To this end, there is necessary to introduce new convenient specific fundamental dimensions, e.g.:

- A "*hierarchical level*" dimension may be useful, considering the arrangement of social structures e.g. competences in statal structure based on hierarchy and subsidiarity, in which, at different distinct levels, there are specific different competences. This may apply to make distinction, e.g., among European, national, regional, county and local levels. In the Constitution there are mentioned many other hierarchies of different types of social structures.

- Abstractly, a hierarchy can be modelled mathematically as a rooted tree: the root of the tree forms the top level, and the children of a given vertex are at the same level, below to their common parent.

An equality may be defined only horizontally, between quantities having the same hierarchic dimension, having a common direct or indirect superior.

This is akin to two co-workers or colleagues (e.g. ministers); each reports to a common superior (the prime minister in this

example), but they have the same relative amount of authority.

Organizational forms exist that are both alternative and complimentary to hierarchy. Heterarchy (sometimes abbreviated HT) is one such form.

The hierarchic level dimension is useful in modelling and dealing with *subsidiarity*, too. Subsidiarity is an organising principle of decentralization, stating that a matter ought to be handled by the smallest, lowest, or least centralised authority capable of addressing that matter effectively. A central authority should have a subsidiary function, performing only those tasks which cannot be performed effectively at a more immediate or local level.

The "hierarchic competence level" is necessary when analyzing the relationships between the the structures of legislative, executive, judicial and financial powers.

- A "*procreation*" fundamental dimension, may be useful when defining the family in the Constitution.

Reproduction (or procreation) is the biological process by which new "offspring" individual organisms are produced from their "parents". Reproduction is a fundamental feature of all known life; each individual organism exists as the result of reproduction.

Sexual reproduction is a biological process by which organisms create descendants that have a combination of genetic material contributed from two different members of the species. Each of two parent organisms contributes half of the offspring's genetic makeup by creating haploid gametes. The two sexes are referred to as male (producing sperm or microspores) and female (producing ova or megaspores).

The sexual reproduction has a bigger advantage by itself, since it allows gene shuffling (hybrid or recombination between multiple loci) among different members of the species, that permits natural selection of the fit over these new hybrids or recombinants that are haploid forms.

From the dimensional point of view, due to the "*procreation*" dimension, the families are of two heterosexuals. They are majoritary in a society.

The homosexual couples, minority in a society, represent the human society in its biologic terminal generation stage, not being able to ensure, by themselves, the next generation.

Therefore, NP II and D A show that there is necessary to make use in the Constitution of another term than "*family*", to describe homosexual couples.

- The "*time horizon*" dimension is to be introduced to be able to compare the effect in time of different constitutional provisions, e.g. for the "reasonable time".

- There might be considered: "*strategic*" or "*tactic*" dimensions when analyzing equalities.

Other specific fundamental dimensions may be introduced to make easier the analysis of legal texts.

The D.A. permits, e.g., to quantitatively evaluate the responsibility of the members of the Parliament or to demonstrate that Taxation of all financial activities is dimensionally correct [15, 16].

9. PROCESSING OF EXPERIMENTAL DATA. AVERAGES AND ERRORS

Other Physics tools in modelling the socio-economic life are Physics common procedures in processing the experimental data and particularly in finding and controlling averages and errors.

9.1 True and actual values

Measurement is the basis of any scientific applied study. The results of all measurements are, however, approximate values only (not true values) within the limitation of measuring device, measuring environment, process of measurement and its understanding and human error.

To these sources of errors there must be added, in a dynamic environment, like the social and economic environments are, the uncertainty due to the change of the measured object and even of the measuring procedures or measuring agent during the process of measurement itself. Usually, the goal is to minimize uncertainty and hence error to the lowest extent possible.

Further, there is the important aspect of reporting measurement. It should be consistent, systematic and revealing in the context of accuracy and precision.

9.2. Errors

Any figure reported in measurements, in accounting, in statistics is affected by *errors*.

If one measures N times a quantity X whose true value is x , the got *results* of the readings would be x_j . But which of them is the *true value*? All the results are equally trustful, no one may be considered as more privileged to be the real value. There is to be defined an other quantity to replace in computations the true, a priori unknown, value.

The quantity

$$\Delta x_j = |x_j - x|$$

is the *absolute error* of a reading j on (with respect to) the true value x .

The absolute error of a measured quantity x represents the modulus of the maximum possible difference between the measured and the real value, within given confidence limits.

The relative error,

$$\varepsilon_x = \Delta x / |x|$$

is expressed by the ratio between the absolute error and the modulus of the true value (under the condition that the denominator is non-null).

Errors are broadly classified in three categories :

- systematic error;
- random error;
- rough error.

It is supposed that:

An accepted “*true*” measurement of a quantity is an *average of the readings*, when errors on all accounts are minimized.

“*Accuracy*” means *how close* the measurement is with respect to “*true*” measurement. It is associated with *systematic* error.

“*Precision*” of measurement is related to the ability of an instrument to *measure values in greater details* (e.g., 0.01 MRON instead of 0.1 MRON, in Macro-economic Romanian accounting). It is associated with the *random* error.

Systematic errors

A *systematic error* results due to faulty measurement and /or recording practices. The error of this category is characterized by *deviation in one direction* from the true value, for example, when systematically ignoring some types of expenditures.

It means that if a systematic error be present the readings are either less than during the whole process of measuring (or reporting) or either greater than the true value.

Whatever the causes of systematic errors may be, the value of an individual measurement *differs from the true value with the same value*, every time we repeat the measuring, under the same conditions. For this reason, the calculation of errors for

indirect measurements (for the derivated quantities) is done in the same way for all systematic errors.

Systematic error impacts the *accuracy* of measurement (recording) – not the precision of the measurement (recording).

Systematic error results from: faulty instrument, faulty measuring process, faulty process of processing data and personal bias.

This type of error can not be minimized or reduced by repeated measurements. A faulty machine for counting banknotes, for example, will not improve accuracy of measurement by repeating measurements.

A personal bias, e.g., is introduced by human habits, which are not conducive for accurate measurement. Consider for example, the habit of an auditor to emphasize only the surpluses in audited documents. The report, therefore, includes errors on accounts, in one direction only.

The systematic errors may be completely eliminated by correcting the observer’s working method.

Random errors

Random error, unlike systematic error, *is not in the same direction (sense)*. Some of the measured values are greater than true value; some are less than true value. The errors introduced are sometimes positive and sometimes negative with respect to true value.

It is possible to *minimize this type of error by repeating measurements* and applying statistical technique to get closer value to the true value.

Another distinguishing aspect of random error is that *it is not biased*. It is there because of the limitation of the instrument in hand and the limitation on the part of human ability. *No human being can repeat an action in exactly the same manner*. Hence, it is likely that same person reports different values with the same instrument, which measures the quantity correctly.

Least count error results due to the inadequacy of resolution of the instrument. We can understand this in the context of least count of a measuring or reporting device. In accounting a *least count error* may be 1 RON for a tax-payer or a 0.1 MRON in macroeconomic statistics. *The least count error is equal to the smallest division written*.

When reading or reporting the values (f.e. kRON or 0.1 MRON), we have the dilemma of limiting ourselves to the exact measurement up to the precision of primary evidence or should be limited to a step higher.

There is a definite chance of error due to limitation in reading such small divisions.

The measured object may change, too. Generally, the accepted level of error in writing the smallest division is considered the least count error.

The rough errors

These errors have as their causes either the observer’s lack of attention or some accidental malfunction of the measuring device and must be eliminated from calculations. Generally, this is easy to do, because these values are strongly different from the others. However, there are defined accurate criteria for eliminating the rough errors.

9.3 Average. Mean value of a measured quantity.

Implicitly assuming that measurement is free of “systematic errors” and of “rough errors”, the *random error*, including that of least count error, can be *minimized by repeating measurements*.

Because errors are not uni directional (in one way only), if one takes the *average* of the measurements from the repeated measurements, it is likely that he minimizes error by canceling out errors in opposite directions.

The averaging of the repeated measurements, therefore, gives the best estimate of "true" value. As such, average or mean value of the measurements (excluding "off beat" measurements) is the notional "true" value of the quantity being measured. As a matter of fact, *average* value is reported as true value, being considered as the *best estimate*.

The average is calculated by combining the measurements related to a set and to compute a number as being the average of the set. Average error is reduced $n^{1/2}$ times, for n readings.

The most common method is the *arithmetic mean* used when measuring at a given instant, in similar conditions.

Another important average is the *geometric mean* used to compute average percentage return, in its time evolution.

9.3.1. Arithmetic mean, AM

If n numbers are given, for the readings of the magnitude of the quantity A , each number denoted by a_i , where $i = 1, \dots, n$, the arithmetic mean is the sum of the a_i 's divided by n or

$$AM = \frac{1}{n} \sum_{i=1}^n a_i$$

The mean is not less than the minimum nor greater than the maximum value. Changing the order of the three members of the list does not change the result: This summation method is easily generalized for lists with any number of elements. However, the mean of a list of integers is not necessarily an integer. "The average family has 1.7 children" is a jarring way of making a statement that is more appropriately expressed by "the average number of children in the collection of families examined is 1.7".

9.3.2. Geometric mean, GM

The geometric mean of n numbers is obtained by multiplying them all together and then taking the n th root. In algebraic terms, the geometric mean of a_1, a_2, \dots, a_n is defined as

$$GM = \sqrt[n]{\prod_{i=1}^n a_i} = \sqrt[n]{a_1 a_2 \dots a_n}$$

Geometric mean can be thought of as the *antilog* of the arithmetic mean of the *logs* of the numbers.

Example: Geometric mean of 2 and 8 is $GM = \sqrt{2 \cdot 8} = 4$.

The AM and the GM for the same set of data are not equal. The Arithmetic mean is larger or equal than the Geometric mean for any set of positive numbers.

Most commonly, the error Δx on a quantity x , is given as the *standard deviation*, σ which is the positive square root of *variance*, σ^2 .

σ^2 may be computed using all Δx_j as an arithmetic mean value of their squares.

The value of a quantity and its error are often expressed as $x \pm \Delta x$, but rarely in accounting, where Δx is usually ignored.

If the statistical *probability distribution* of the variable is known or can be assumed, it is possible to derive *confidence limits* to describe the region within which the true value of the variable may be found. For example, the ~68% confidence limits for a variable belonging to a *normal distribution* are $\pm \sigma$, one standard deviation from the value, that is, there is a ~68% (~ two thirds) probability that the true value lies in the region $x \pm \sigma$.

Among the different kinds of errors there are currently used the *absolute errors on average quantities* which are attractive

to lay men and media and the relative *errors on average quantities* which are to be used to compare quantities of different nature, for advanced users.

These relative errors for a same quantity may be relatively larger or smaller depending of how high is the level of trust in the average figure.

9.4. Propagation of uncertainty

In *statistics*, *propagation of uncertainty* (or *propagation of errors*) is the effect of more than one *variables' uncertainties* (or *errors*) on the uncertainty of a *function* based on them. The uncertainty is frequently defined by the *absolute error*. Uncertainties can also be defined by the *relative error* $\Delta x/x$, which is usually written as a percentage. It is computed by advanced users.

10. PROCEDURES OF STATISTICAL EVALUATION AND CONTROL OF AVERAGES AND ERRORS IN SOCIOLOGY

Such procedures, might be used in improving the control of public expenditures, e.g., when selecting a winner of a public auction for services or goods (highways, mines, army goods, I. T. systems a. s. o.) or for public-private partnership investments, by changing the current regulations, such as to observe common procedures in processing the errors on physical experimental data [17].

The authors have used D. A. in developing models to compute the propagation of errors in economic forecasts [15, 16].

The authors suggestions to change the current auctions regulations, as to limit the after auction increase in the price invoiced to be paid, possible by posterior agreements of the implied parties correlated with the existing high level of corruption in allotting public expenses on goods and services, would allow a significant reduction on public spending at auctions, by legally introducing the above proposed by the authors limitations. They seem being quite possible in some countries.

This approach may be useful to reduce e.g. corruption in the judicial system, by statistically checking the frequency of decisions taken by judges not validated at superior level,

The mastering in applying physical laws, together with the developing abilities for measuring, will make easier the process of modelling non physics phenomena [18-31], eventually of preparing, passing, granting and implementing the human (judicial) laws.

II CLASSICAL PHYSICS MODELS TO IMPROVE THE DRAFT LAW OF REVISION OF ROMANIA'S 2003 CONSTITUTION

Following, there are displayed the main provisions of the the June 24, 2013 Draft Law of Revision of Romania 2003 Constitution, submitted by the Senate of Romania to public debates until August 24, 2013 as the Draft Law No. 429 B/2013, with the comments and suggestions of the authors, using Classical Physics previously exposed models.

COMMENTS AND SUGGESTIONS ON THE PROPOSED AMENDMENTS TO THE CONSTITUTION OF ROMANIA PROVIDED IN THE DRAFT LAW 429/B

DRAFT LAW 429/B; PARLIAMENTARY COMMISSION AMENDMENTS. SOCIO-PHYSICS' SUGGESTIONS AND COMMENTS
1(1) <i>DIMENSIONAL ANALYSIS (DA) , 1st and SECOND NEWTON POSTULATES (NP II and NP II) SUGGESTS TO ADD HERE:</i> 1(2') "ROMANIA IS A MEMBER OF THE EUROPEAN UNION (INSTEAD OF 10 (2')) 1(3'") "ROMANIA IS A MEMBER OF THE NORTH ATLANTIC TREATY ORGANIZATION." (INSTEAD OF ART 55 (4)) <i>COMMENT: 1 (2') AND 1 (3') RESULT FROM THE IMPLICIT CHANGES OF THE CONTENT AND EXTENSION OF THE PROVISIONS OF 1 (1), BY THE NEW MEMBERSHIPS AFTER 2003 (WHICH ARE A GUARANTEE OF THE PROVISIONS OF 1 (1))</i>
Art.1.- (1') <i>România recunoaște rolul istoric, în constituirea și modernizarea statului român, al Bisericii Ortodoxe și al celorlalte culte religioase recunoscute de lege, al Casei Regale și al minorităților naționale.</i> <i>O. K. ! - THE NEW (underlined) TEXT IS COMPLYING WITH THE SECOND NEWTON'S POSTULATE (NP II) - OF PROPORTIONALITY, THE NEW TEXT BEING CORRELATED WITH THE RELATIVE PROPORTIONS OF BELIEVERS OF EACH RELIGIOUS CULT; IN ROMANIA.</i>
La art.1, după alin.(2), se introduce un alineat nou, alin.(2 ¹), cu următorul cuprins: <i>Art.1.- (2¹) Demnitatea umană este sursa tuturor drepturilor și libertăților fundamentale și este inviolabilă. Toate formele de autoritate publică trebuie să respecte și să protejeze demnitatea umană.</i> <i>THE NEW (underlined) TEXT DOES NOT OBSERVE THE III rd NEWTON'S POSTULATE (NP III) - POSTULATE OF ACTION AND REACTION. THERE ARE NOT MENTIONED IN THE NEW TEXT THE "FUNDAMENTAL DUTIES".</i> <i>NP III SUGGESTS TO BE INTRODUCED IN THE TEXT:</i> <i>"THE OBLIGATIONS OF NATURAL PERSONS TO OBSERVE THEIR HUMAN DIGNITY"</i>
1 (3) <i>THE NP III - POSTULATE OF ACTION AND REACTION SUGGESTS TO BE INTRODUCED IN THE TEXT:</i> <i>"OBSERVANCE OF THE FUNDAMENTAL DUTIES"</i>
<i>Art.1.- (4) Statul se organizează potrivit principiilor separației, echilibrului și cooperării loiale a puterilor - legislativă, executivă și judecătorească - în cadrul democrației constituționale. <u>Puterea legislativă este reprezentată de Parlament, puterea executivă este reprezentată de Guvern și de celelalte organe de specialitate ale administrației publice centrale, iar puterea judecătorească este reprezentată de Înalta Curte de Casație și Justiție și de celelalte instanțe judecătorești.</u></i> <i>A. SOCIO-PHYSICS' COMMENT: EVERYBODY IN EQUILIBRIUM MUST HAVE, AT LEAST, 3 POINTS OF SUPPORT AND A CENTER OF MASS INSIDE THE AREA DEFINED BY THE THREE POINTS OF SUPPORT.</i> <i>SUGGESTION: HERE, MAY BE, EXPLICITLY, INTRODUCED THE IMPORTANT THEORETICAL INOVATION OF THIS DRAFT LAW OF REVISION (FROM THE POINT OF VIEW OF SOCIO-PHYSICS), FROM ART 80 (1):</i> <i>"THE PRESIDENT OF ROMANIA - AS THE CHIEF OF STATE" (CORRESPONDING TO THE PHYSICAL "CENTER OF MASS", NOT TO A "LEG" - WHICH IS A PART OF EXECUTIVE POWER; SEE ART. 80 (2),)</i> <i>B. THE NEW (underlined) TEXT DOES NOT OBSERVE THE NP II - THE POSTULATE OF PROPORTIONALITY, THE ROLE OF NOT MENTIONED HERE OF OTHER COMPONENTS BEING NEGLECTED.</i> <i>CONSIDERING THE DIMENSIONAL DIFFERENCES BETWEEN THOSE RESPECTIVE COMPONENTS (f.e. GOVERNMENT - PRESIDENCY or GOVERNMENT - PARLIAMENT or HIGH COURT OF CASSATION AND JUSTICE - CONSTITUTIONAL COURT) D A AND NP II SUGGEST: THE TEXT TO BE CHANGED.</i> <i>C. IN THE DRAFT LAW; IN OTHER ARTICLES THERE ARE EXPLICITLY INTRODUCED OTHER AUTONOMOUS</i>

DRAFT LAW 429/B; PARLIAMENTARY COMMISSION AMENDMENTS. SOCIO-PHYSICS' SUGGESTIONS AND COMMENTS
<i>POWERS: THE OMBUDSMAN (58 (1)) AND THE NATIONAL BANK (137 (1)) , WHICH, EVENTUALLY, ARE TO BE MENTIONED HERE.</i>
Art.3.- (3) Teritoriul este organizat, sub aspect administrativ, în comune, orașe, județe și regiuni. În condițiile legii, unele orașe sunt declarate municipii. <i>COMMENT: THE NEW (underlined) TEXT DOES NOT OBSERVE THE DIMENSIONAL HIERARCHICAL LEVEL DIFFERENCES - COMMUNES AND TOWNS HAVE THE SAME HIERARCHICAL POSITIONS IN THE ADMINISTRATIVE STRUCTURE OF ROMANIA, BUT COUNTIES, AND RESPECTIVELY REGIONS, ARE TO BE DESCRIBED AT DIFFERENT HIERARCHICAL LEVELS</i>
Art.4.- (2) România este patria comună și indivizibilă a tuturor cetățenilor săi. <i>Orice discriminare bazată pe sex, culoare, origine etnică sau socială, trăsătură genetică, limbă, credință sau religie, opinii politice sau de altă natură, apartenența la o minoritate națională, avere, naștere, dizabilități, vârstă sau pe orice altă situație este interzisă.</i> <i>THE NEW (underlined) TEXT DOES NOT OBSERVE THE SECOND AND THE THIRD NEWTON'S POSTULATES. HERE, SOME MAJORITIES ARE DISCRIMINATED (NOT BEING EVEN MENTIONED): THE NATIONAL MAJORITY PEOPLE - THE ROMANIANS AND RESPECTIVELY THE SAME PEOPLE.</i> <i>SUGGESTION: "THE OVERGIFTED PEOPLE (NOT ONLY THE DISABLED PEOPLE) ARE TO BE EXPLICITELY MENTIONED OR THE TEXT BE CHANGED WITH A NEUTRAL ONE.</i> <i>THE NATIONAL MINORITY MAY BE AN ETHNICAL ONE BUT, ALSO, BE A RELIGIOUS ONE, A S. O.; ALL THE CITIZENS OF ROMANIA HAVE THE NATIONALITY OF "ROMANIANS" - AS IT MENTIONED IN THEIR PASSPORTS.</i> <i>SUGGESTION: REPLACE "NATIONAL MINORITY" WITH "ETHNICAL MINORITY"</i>
Art 5 (1) (1) Romanian citizenship can be acquired, retained or lost as provided by the organic law. <i>NP II SUGGESTION: TO BE ADDED: 5(1'). "ROMANIAN CITIZENS ARE CITIZENS OF THE EUROPEAN UNION"</i>
<i>Art. 6 NP I, NP II AND D A SUGGESTION: TO BE INTRODUCED BEFORE 6 (1): "ROMANIAN CITIZENS HAVE THE RIGHT AND OBLIGATION TO IDENTITY FEATURES: PERSONAL CODE NUMBER, DOMICILE, FISCAL CODE NUMBER, SOCIAL INSURANCE CODE NUMBER, IDENTITY CARD, PASSPORT.</i>
6 (1) The State recognizes and guarantees the right of persons . . . belonging to national minorities to the preservation, development <i>D A SECOND N.'s P. : THERE IS A CONFUSION IN THE DRAFT LAW BETWEEN NATIONAL AND ETHNIC MINORITIES.</i> <i>F.E., THE DISABLED PERSONS, THE SERBIANS OR THE NON BELIEVERS BELONG ALL TO SPECIFIC NATIONAL MINORITIES, BUT ONLY SERBIANS ARE, IN THIS EXAMPLE, AN ETHNIC NATIONAL MINORITY</i> <i>SUGGESTION: REPLACE "NATIONAL" WITH ETHNICAL. OR IF THE ACTUAL TEXT IN THE DRAFT LAW IS MAINTENED, there is TO BE ADDED: (1). „ROMANIAN AND . . .</i>
<i>Art.6.- (1') <u>Reprezentanții legali ai minorităților naționale pot înființa, potrivit legii privind statutul minorităților naționale, organe proprii de decizie și executive, cu competențe privind dreptul la păstrarea, dezvoltarea și exprimarea identității lor.</u></i> <i>THERE ARE INFRINGED THE SECOND AND THIRD POSTULATES. THE MAJORITY OF POPULATION SEEMS DISCRIMINATED IN THE TEXT</i> <i>THE NATIONAL ETHNIC MAJORITY PEOPLE ARE TO BE EXPLICITEDLY MENTIONED OR THE TEXT BE CHANGED TOWARDS A NEUTRAL ONE</i>
Art.6.- (3) <i>Deciziile autorităților publice centrale și locale se vor lua, după consultarea organizațiilor cetățenilor aparținând minorităților naționale, cu privire la păstrarea, dezvoltarea și exprimarea identității lor etnice, culturale, lingvistice și religioase.</i> <i>THERE IS INFRINGEMENT OF D A, SECOND AND THIRD</i>

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POSTULATES – THE MAJORITY OF POPULATION IS DISCRIMINATED THE NATIONAL MAJORITARY PEOPLE ARE TO BE EXPLICITEDLY MENTIONED OR THE TEXT BE CHANGED TOWARDS A NEUTRAL ONE
Art.7.- Statul sprijină întărirea legăturilor cu românii din afara frontierelor țării, <u>indiferent de denumirea sub care sunt cunoscuți</u> , și acționează pentru păstrarea, dezvoltarea și <u>exprimarea liberă</u> a identității lor etnice, culturale, lingvistice și religioase, <u>cu respectarea legislației statului ai cărui cetățeni sunt sau unde se află acestia, precum și a dreptului internațional.</u> III rd N. P. – O. K.
Art.10.- România . . . 1.” întreține și dezvoltă relații pașnice cu toate statele și, în acest cadru, relații de bună vecinătate, precum și cu celelalte subiecte de drept internațional și acționează în politica sa externă pentru realizarea interesului național, pe baza respectului reciproc și în conformitate cu principiile, cu tratatele internaționale la care este parte și cu celelalte norme general admise ale dreptului internațional...” .2...” . . . Art.10.- (2) <u>România este stat membru al Uniunii Europene.</u> SUGGESTION: 1. TO BE INTRODUCED THE TEXT: “ROMANIA, AS A MEMBER OF THE EUROPEAN UNION” III rd N. P. – SUGGEST TO BE ADDED: 2. “TO ENSURE THE OBSERVATION OF THE ROMANIA’ S RIGHTS AND OBLIGATIONS” .
Art.12.- (1) Drapelul României este tricolor . . . 1 ., <u>având pe fondul galben stema țării</u> ; culorile sunt așezate vertical, în ordinea următoare începând de la lance: albastru, galben, roșu. NP II AND DIMENSIONAL ANALYSIS (DA) SUGGESTION. TO BE ADDED: 1 “OF RECTANGULAR FORM, ”
Art.12.- (5) <u>Minoritățile naționale își pot folosi în mod liber, în spațiu public și privat, propriile simboluri naționale care reprezintă identitatea lor etnică, culturală, lingvistică și religioasă.</u> A. GRAMMAR SUGGESTION (THE TEXT BEING AN INFRINGEMENT OF N P II): “SPATIILE . . .”; “IDENTITATILE” (AT PLURAL) OR AS ADJECTIVE “ETHNICAL, LINGVISTICAL, . . . “ B. INFRINGEMENT OF II SECOND AND THIRD POSTULATES – THE MAJORITY OF POPULATION IS DISCRIMINATED. THE NATIONAL MAJORITARY PEOPLE ARE TO BE EXPLICITEDLY MENTIONED OR THE TEXT BE CHANGED TOWARDS A NEUTRAL ONE OR “ETHNICAL GROUPS”
TITLE II Fundamental rights, freedoms and duties . . 1 . . NP III SUGGESTION: TO BE ADDED 1 „AND OBLIGATIONS”
Art.15.- (1) <u>Cetățenii români se nasc și trăiesc liberi, se bucură de drepturile și libertățile garantate și stabilite prin Constituție și alte legi și au obligațiile prevăzute de acestea.</u> NP III: – O. K.
Art.16.- (4) Cetățenii Uniunii Europene care îndeplinesc cerințele legii organice au dreptul de a alege și de a fi aleși în autoritățile administrației publice locale . 1 .” DIMENSIONAL SUGGESTION: TO BE ADDED: 1 IN ROMANIA”
Art. 20 (1) Constitutional provisions concerning the citizens’ rights and liberties shall be interpreted and enforced in conformity with the Universal Declaration of Human Rights, . . . 1 . .with the covenants and other treaties Romania is a party to. DIMENSIONAL SUGGESTION ADD: "UE AND NATO TREATIES AND"
Art.21.- (4) <u>Jurisdicțiile administrative speciale sunt gratuite.</u>
CAP II SEE AND CHAP. III FOLLOWING “FUNDAMENTAL DUTIES” A. THERE IS AN EVIDENT INFRINGEMENT OF THE NP III, NOT BEING MENTIONED HERE AND IN EACH PARAGRAPH THE CORRESPONDING DUTIES AND RESPECTIVELY, IN CHAP. III THE CORRESPONDING RIGHTS AND FREEDOMS. B. STRONG QUANTITATIVE UNBALANCE (INFRINGEMENT OF NP II) BETWEEN “RIGHS AND FREEDOMS” (31 ITEMS) AND RESPECTIVELY “DUTIES” (ONLY 4 ITEMS)

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CHAP. I I AND III ARE TO BE REFORMULATED, EVENTUALLY APPROACHED SIMULTANEOUSLY !
Art.23.- (4) <u>În mod excepțional și motivat, cercetarea și judecarea în procesul penal se fac cu privarea de libertate a persoanei. Arestarea preventivă se dispune de instanța de judecată competentă în condițiile legii și numai în cursul procesului penal.</u>
Art.23.- (8) Celui condus administrativ, reținut sau arestat i se aduc de îndată la cunoștință, în limba pe care o înțelege, . . . “motivele conducerii administrative, ale reținerii sau ale arestării, iar învinuirea, în cel mai scurt termen; învinuirea se aduce la cunoștință numai în prezența unui avocat, ales sau numit din oficiu. NP III AND D A SUGGESTION, TO AVOID THE ABUSE OF PROTECTION: TO BE ADDED “UPON HIS OR HER PREVIOUS BINDING WRITTEN DELARATION THAT DO NOT UNDERSTAND ROMANIAN OR AN U. E. INTERNATIONAL LANGUAGE” . . .
Art.23.- (14) <u>Este interzisă folosirea probelor obținute ilegal. . .” .</u> NP III : TO BE, EVENTUALLY, ADDED TO THE AMENDMENT: “BY ANY OF THE PARTIES IMPLIED”
Art.24.- (2) In tot cursul procesului, părțile au dreptul sa fie asistate de un avocat, ales sau numit din oficiu și de a dispune . . . 1 .” de timpul și înlesnirile necesare pentru pregătirea apărării. DIMENSIONAL SUGGESTION, TO DISCOURAGE ABUSE: TO BE ADDED: . . 1 “REASONABLE” . . .
Art.24.- (3) <u>În faza de judecată a procesului penal este garantat principiul egalității de arme între acuzare și apărare.</u> NP III : O. K. !
Art.26.- <u>Viata intimă, familială, privată și datele cu caracter personal</u>
Art.26.- (1) Autoritățile publice garantează dreptul la viață intimă, familială și privată NP III : TO BE ADDED IN THE AMENDMENT: “WITH THE OBLIGATION TO OBSERVE THE LAW”
Art.26.-2 (2) <u>Persoana fizică are dreptul sa dispuna de ea insasi, daca . . . 2’ . . . nu incalca drepturile si libertatile altora, sau ordinea publica.</u> III rd N.’ s P.: TO BE ADDED TO THE AMENDMENT: (2) “COMPLYING WITH HIS OR HER DUTIES AND NOT” <u>Dreptul la protecția datelor cu caracter personal este garantat. Autoritățile publice au obligația de a lua măsuri de protejare a datelor cu caracter personal</u> <u>Respectarea acestor norme se supune controlului unei autorități autonome</u>
Art.27.- (3) Percheziția se dispune de instanțele de judecată competente și se efectuează în condițiile și în formele prevăzute de lege. NP III : O. K. !
Art.28.- (1) Secretul scrisorilor, al telegramelor, al altor trimiteri poștale, al convorbirilor telefonice, al altor comunicări efectuate prin mijloace electronice, . . . , al datelor de trafic și al celorlalte mijloace legale de comunicare este inviolabil. NP II SUGGESTION : TO INTRODUCE: “OPTICAL” MEANS, WHICH ARE FUTURE OF THE COMMUNICATION MEANS
Art.28.- (2) <u>Autoritățile publice garantează secretul corespondenței.</u> (3) <u>Reținerea predarea sau percheziționarea trimiterilor poștale, interceptarea convorbirilor și comunicărilor, interceptarea în mediul ambiental, percheziția informatică și accesul la un sistem informatic și la un suport de stocare a datelor informatice, obținerea datelor informatice, inclusiv a datelor de trafic și a datelor de localizare, identificarea abonatului, proprietarului sau utilizatorului unui sistem de comunicații electronice sau a unui punct de acces la un sistem informatic ori alte asemenea tehnici se dispun de judecător, în condițiile legii.</u> (4) <u>În cazul în care există urgență deosebită în luarea uneia din măsurile prevăzute la alin.(3), procurorul poate să dispună prin ordonanță, cu respectarea condițiilor prevăzute de lege, luarea măsurii pe o perioadă de cel mult 48 de ore. Îndată după luarea măsurii, procurorul se adresează instanței de judecată competente care decide</u> ,’ 1 . ,’ asupra măsurii dispuse de procuror și, dacă s-a cerut, asupra luării măsurii în continuare. Dacă măsura dispusă de procuror este infirmată, instanța va dispune, când este cazul, distrugerea probelor obținute, care se realizează de procuror pe

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<i>bază de proces-verbal, ce se depune la instanță.</i> DIMENSIONAL AND SECOND N.'s P. SUGGESTION: PRECISE . . . 1 "WITHIN THE ABOVE MENTIONED TIME PERIOD" ...
Art.29.- (4) Sunt interzise orice forme, mijloace, acte sau acțiuni de învrăjpire religioasă.
Art 29 (6) Părinții sau tutorii au dreptul de a asigura, potrivit propriilor convingeri, educația copiilor minori a căror răspundere le revine, respectând principiul interesului superior al copilului. . . ' .6' . , " D A AND NP II SUGGESTION, TO BE ADDED: (6) "AS ESTABLISHED BY LAW OR BY A COMPETENT BODY" . .
Art.30.- (3) Libertatea de exprimare implică și libertatea de a înființa mijloace de comunicare în masă.
Art.30.- (4) Niciun mijloc de comunicare în masă nu poate fi suspendat sau suprimat. . . ' . 1 . ' . . D A AND NP III SUGGESTION, TO BE ADDED: . . . 1 , , " IF IT IS ACTING WITH THE OBSERVANCE OF LAW" . . .
Art.30.- (5) Mijloacele de comunicare în masă au obligația de a declara public sursele finanțării și structura acționariatului. Procedura declarării se stabilește prin lege.
Art.30.- (7) Sunt interzise de lege defăimarea țării și a națiunii, profanarea drapelului național. I . . , îndemnul la război de agresiune, la ură națională, rasială, de clasă sau religioasă, incitarea la discriminare, la separatism teritorial sau la violență publică, precum și manifestările obscene, contrare bunelor moravuri. NP II: TO BE ADDED: 1 "OF NATIONAL ANTHEM, OF STATE SEAL, OF NATIONAL COAT OF ARMS AND OF THE NATIONAL DAY "
Art.30.- (8) Răspunderea civilă pentru informația sau pentru creația adusă la cunoștință publică revine, după caz, autorului, celui care exercită răspunderea editorială sau mijlocului de comunicare în masă, în condițiile legii. Delictele de presă se stabilesc prin lege. NP II : O.K.
Art.31.- (2) Autoritățile publice, potrivit competențelor ce le revin, sunt obligate să asigure informarea corectă și promptă a persoanelor . . . ' (1) . . . ' asupra treburilor publice și asupra problemelor de interes personal. . . ' 2 . . . ' . D. A. AND NP I SUGGESTION: TO BE ADDED: . . (1) . . , " LAGAL AND NATURAL" . . AND . (2) , "CORRESPONDING TO THE SPECIFIC SITUATION" . . .
Art.31.- (2') Proiectele de acte normative ce urmează să fie adoptate de autoritățile și instituțiile publice, cu excepția celor care au caracter de urgență. . . ' 1' . . . ' potrivit legii, sunt supuse, cu cel puțin 30 de zile înainte de adoptare, dezbaterii publice. DIMENSIONAL AND SECOND N.'s P. SUGGESTION: TO BE ADDED: 1 " OR BEARING THE LEGAL LABEL OF STATE SECRECY" . .
Art.31.- (5) Serviciile publice de radio, de televiziune. . . ' 1 . . . ' și agențiile de presă sunt autonome. Ele trebuie să garanteze grupurilor sociale și politice importante exercitarea dreptului la antenă. Organizarea acestor servicii și agenții de presă, precum și controlul parlamentar asupra activității lor se reglementează prin lege organică. DIMENSIONAL AND SECOND N.'s P. SUGGESTION: TO BE ADDED: . . (1) , , ' AND INTERNET , "
Art.32.- Dreptul la educație NP II TO ADD: "AND DUTY "
Art.32.- (1) Accesul la educație este garantat, în condițiile legii.
Art.32.- (1) Dreptul la educație este garantat, în condițiile legii, și se asigură prin învățământul general obligatoriu . . ' 1 . . . ' , prin învățământul liceal și prin cel profesional, prin învățământul superior, precum și prin alte forme de instrucție, de formare profesională și de formare continuă. DA AND NP III : TO BE MENTIONED: 1 "THE OBLIGATION OF CITIZENS TO LIFE LONG LEARNING" . . .
Art.32.- (1') Educația trebuie să urmărească dezvoltarea deplină a personalității umane și întărirea respectului față de drepturile omului și libertățile fundamentale . . 1 , D A AND NP III : TO BE ADDED: 1 "AND OF FUNDAMENTAL DUTIES AND OBLIGATIONS"
Art.32.- (2) Învățământul general se desfășoară în limba română. În condițiile legii, învățământul se poate desfășura și într-o limbă de

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circulație internațională. . . ' . 1 . . ' .
DIMENSIONAL AND SECOND N.'s P. SUGGESTION: TO BE ADDED: . . . , 1 , " WITH THE OBLIGATION OF GETTING COMMUNICATION ABILITIES IN ROMANIAN LANGUAGE ' .
Art.32.- (4) Învățământul , . 1 . . , de stat , este gratuit, potrivit legii. Statul acordă burse sociale de studii copiilor și tinerilor proveniți din familii defavorizate și celor instituționalizate, în condițiile legii. . . 2 . . . COMMENT : IF SOMETHING (HERE, EDUCATION) IS COMPLETELY FREE IT WOULD BE NOT VALUED. NP III SUGGESTION TO BE ADDED : 1. "COMPULSORY" ; 2. "THE STATE SUPPORTS THE REST OF EDUCATION OF THE MERITUOUS PEOPLE, BY COMPETITION, OFFERING TAX EXEMPTIONS, FELLOWSHIPS A.S. O. AND BY LENDING MONEY FOR FEES TO ALL INTERESTED".
Art.32.- (5) Învățământul general se desfășoară în unități de stat, particulare și profesionale, în condițiile legii. Statul stabilește standarde de calitate în educație pentru fiecare nivel și formă de învățământ și monitorizează respectarea acestora. D A, NP I AND NP II SUGGESTION: TO BE DELETED "GENERAL,"
Art.32.- (6) Autonomia universitară este garantată. Autonomia universitară implică capacitatea instituțiilor de învățământ superior de a-și gestiona direct și nemijlocit patrimoniul, de a-și alege ori, după caz, desemna, în mod independent, structurile și funcțiile de conducere și de a decide fără nicio constrângere exterioară cu privire la misiunile educaționale și de cercetare. . . 1 . NP II AND NP III : TO BE ADDED: 1 "THE STATE SETS STANDARDS OF QUALITY EDUCATION FOR EVERY LEVEL AND TYPE OF EDUCATION AND MONITORS COMPLIANCE".
Art.33.- (1) Statul garantează dreptul la cultură și dreptul tuturor persoanelor de a participa neîngrădit la viața culturală și de a-și manifesta preferințele culturale, cu condiția respectării drepturilor omului și a libertăților fundamentale. . . ' . 1 . . . " D A AND NP II SUGGESTION: TO BE ADDED : . 1 " AS WELL AS OF OBSERVING THEIR FUNDAMENTAL DUTIES," . . ' .
Art.33.- (1') Patrimoniul național constituit din patrimoniul imobil, patrimoniul mobil și patrimoniul material formează elementul de perenitate al moștenirii culturale și al identității naționale și sunt ocrotite de lege.
Art.33.- (3) Statul trebuie să asigure păstrarea identității spirituale, sprijinirea culturii naționale , . 1 . . , stimularea artelor, protejarea și conservarea patrimoniului cultural, dezvoltarea creativității contemporane, promovarea valorilor culturale și artistice ale României în lume. D A AND NP II SUGGESTION: TO BE ADDED: 1 "AND EUROPEAN"
Art.33.- (4) Statul promovează diversitatea expresiilor culturale la nivel național și încurajează dialogul . . 1 . intercultural. COMMENT D A AND SECOND N.'s P.: "DIALOGUE, ONLY?" SUGGESTION TO ADD: 1 "AND CO-OPERATION"
34 (1) Nemodificat D A AND NP II SUGGESTION. TO BE ADDED: "THE NATURAL AND LEGAL ENTITIES MUST OBSERVE THEIR DUTIES TO HEALTH SELF PROTECTION" . . ' .
34 (3) (3) The organization of the medical care and social security system in case of sickness, accidents, maternity and recovery, the control over the exercise of medical professions and paramedical activities, as well as other measures to protect physical and mental health of a person . . 1 . . shall be established according to the law. Nemodificat D A AND NP II SUGGESTION: TO BE ADDED: (1) "AND OF THE PEOPLE" . . .
Art.35.- (2') Statul asigură protecția, utilizarea durabilă și refacerea patrimoniului natural . . ' . 1 . ' . CONSERVATION POSTULATE, DIMENSIONAL ANALYSIS AND SECOND N.'s P. SUGGESTION: TO BE ADDED: (1) "LIMITING THE EXPLOITATION OF NONREGENERATIVE RESOURCES TO 0.5 % OF THE ACTUALLY KNOWN AS EXPLOITABLE; LIMITING THE RATE OF SLOW INCREASING

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RESOURCES TO THE HALF OF THE RATE OF THEIR INCREASE AND FORBIDDING THE EXPORT OF POTENTIALLY USEFUL SUBPRODUCTS OF MINING, TO PROTECT OTHER RESOURCES"(RARE EARTH RESOURCES, E.G.)
Art.35.- (4) Sunt interzise relele tratamente aplicate animalelor , . . . '1. . . ' definite potrivit legii. DIMENSIONAL AND SECOND N.'s P. SUGGESTION: TO BE PRECISED OF KIND OF ANIMALS .
Art.37.- (3) Pot <i>Participa la alegerile pentru Camera Deputaților, pentru Senat și pentru funcția de Președinte al României numai candidații care au avut domiciliul în România cu cel puțin 6 luni înainte de data alegerilor.</i>
Art.38.- Cetățenii români au dreptul de a alege și de a fi aleși în Parlamentul European în condițiile legii , . 1. . . DIMENSIONAL AND SECOND N.'s P. TO BE ADDED: 1 "COMPETING FOR ONLY ONE SEAT IN EU ELECTIONS" AND "STARTING WITH THE AGE OF . . ."
Art.40.- (2) Partidele sau organizațiile care, prin scopurile ori prin activitatea lor, militează împotriva pluralismului politic, a respectării drepturilor și libertăților fundamentale , '1. . . ' ale omului, a principiilor statului de drept ori a suveranității, a integrității sau a independenței României sunt neconstituționale. D AL AND NP III P. SUGGEST TO BE ADDED: (1) AS WELL AS OF NOT FULFILLING FUNDAMENTAL DUTIES" . . .
Nemodificat 41 (1) Dreptul la muncă nu poate fi îngrădit. '1. . . ' Alegerea profesiei, a meseriei sau a ocupației, precum și a locului de muncă este liberă. . . '2 ' . . . DIMENSIONAL AND SECOND N.'s P. TO BE ADDED: 1. ; , 'THE OBLIGATION TO WORK" AND 2 "SUBJECT TO COMPLYING WITH THE SPECIFIC REQUIREMENTS FOR DESIRED JOB"
Art.41.- (2) Persoanele care își desfășoară activitatea în temeiul unui raport de muncă au drepturi la măsuri de protecție socială. Acestea privesc securitatea și sănătatea în muncă, regimul de muncă al femeilor și tinerilor, instituirea salariului minim brut pe țară, repausul săptămânal, concediul de odihnă plătit, prestarea muncii în condiții deosebite sau speciale, formarea profesională, . . . , '1 ' precum și alte situații specifice, stabilite prin lege, . 2. . . . D A AND NP II: ADD: (1) , "PERIODIC KNOWLEDGE UPGRADING" ; 2. "SUBJECT TO OBSERVING THEIR CORRESPONDING DUTIES"
Nemodificat 41 (3) DIMENSIONAL AND SECOND N.'s P. SUGESTION: TO BE PRECISED HOW IT IS DEFINED THE BASE OF THE "AVERAGE" COMMENT: ? YEAR (AS IN AGRICULTURE, CIVIL BUILDINGS INDUSTRY), MONTH (AS IN MANUFACTURING INDUSRY) , WEEK (AS IN ADMINISTRATION OFFICES)?
Art.41.- (4) La muncă egală, femeile primesc remunerație egală cu bărbații. NP III : O. K.
Nemodificat 42 (2) Forced labour does not include: . . . E.G. DIMENSIONAL AND SECOND N.'s P. SUGGESTION: TO BE ADDED: „(F) AS THE COMPULSORY PERIODIC UPGRADING OF THEIR PROFESSIONAL KNOWLEDGE”.
Art.44.- (1) Dreptul de proprietate, precum și creanțele împotriva statului, sunt garantate. Creanțele împotriva statului au același regim juridic ca și contribuțiile fiscale, în condițiile legii. III rd N.'s P.: O. K.
47 2 (2) . . . Citizens have the right to social assistance, according to the law. Nemodificat . . . (1) . . . DIMENSIONAL AND SECOND N.'s P. SUGGESTION: TO BE ADDED: (1) "SUBJECT TO THE FULFILMENT BY THEM OF THEIR SOCIAL DUTIES".
48 1 Nemodificat The family is founded on the freely consented marriage of the spouses, their full equality, as well as the right and duty of the parents to ensure the . . 1 . . . upbringing, education and instruction of their children. COMMENT: D A, THE DIMENSION "PROCREATION" (ENSURING THE NEXT GENERATIONS OF THE HUMAN

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SOCIETY) MAKE THE DIFFERENCE BETWEEN THE TRADITIONAL "FAMILY" AND OTHER DIFFERENT CIVIL UNIONS, UNIONS UNABLE OF PROCREATING AND OF ENSURING THE FUTURE OF THE HUMAN SOCIETY, WHICH, BY THEMSELVES, CONSTITUTE A TERMINAL STAGE OF THE PRESENT HUMAN SOCIETY. THERE IS NECESSARY TO ADD: 1 "GIVE BIRTH" AND TO INTRODUCE A SPECIFIC PROVISION FOR SUCH CIVIL UNIONS, NOT BEING ABLE OF PROCREATION. THEY MUST NOT BE NEGLECTED BY CONSTITUTION.
Nemodificat 49 (1) Children and young people shall enjoy special protection and assistance in the pursuit of their rights. . . 1 . . . NP III SUGGESTION: TO BE ADDED: (1) "AND OF THEIR DUTIES"
50 Protecția persoanelor cu dizabilități
Art.50.- Persoanele cu dizabilități se bucură de toate drepturile și libertățile fundamentale ale omului, în condiții de egalitate de șanse. Statul asigură realizarea unei politici naționale (SEE 1) de egalitate a șanselor și de incluziune, prevenire și tratament în vederea participării efective a persoanelor cu dizabilități în viața comunității, respectând drepturile. . și îndatoririle ce revin . . . '2 . . . ' părinților și tutorilor. DIMENSIONAL AND SECOND N.'s P. SUGGESTIONS 1.: REPLACE WITH , " AT NATIONAL LEVEL" 2. NP III SUGGESTS TO BE ADDED : , "OF THE PERSONS WITH DISABILIRIES , " . . 3. NP III SUGGESTS TO ADD PROVISIONS FOR THE PROTECTION OF OVERGIFTED PERSONS, STARTING WITH THEIR CHILDHOOD.
ART. 51¹.- Dreptul la o bună administrare <i>Orice persoană are dreptul de a beneficia, în raporturile sale cu administrația publică, de un tratament imparțial, echitabil și într-un termen rezonabil . . . '1. . . ' .</i> DIMENSIONAL AND III rd N.'s P. SUGGESTION: TO BE ADDED . (1) . , "AND THE OBLIGATION TO OBSERVE ITS CORRESPONDING DUTIES" . . .
Art.52.- (1) Persoana vatamata intr-un drept al sau ori intr-un interes legitim, de o autoritate publica, printr-un act administrativ sau prin nesoluționarea în termenul legal a unei cereri, este îndreptățită să obțină recunoașterea dreptului pretins sau a interesului legitim, anularea actului și repararea prejudiciului printr-o despăgubire echitabilă. . . . '1. . . ' . . . '2 . . . ' DIMENSIONAL, II AND III rd N.'s P. SUGGESTION: TO BE ADDED: . . (1) , "IN CHARGE OF THE RESPECTIVE AUTHORITY" . . and (2) , "Statul exercită dreptul de regres, în condițiile legii" (EN – "STATE EXERCISE THE RIGHT OF REGRESS, SUBJECT TO THE PERTINENT LAW", SEE PAR. 52 (3)) .
Art.52.- (3) Statul răspunde patrimonial pentru prejudiciile cauzate prin erorile judiciare. Răspunderea statului este stabilită în condițiile legii, inclusiv în ceea ce privește magistrații care și-au exercitat funcția cu rea-credință sau prin gravă neglijență. Statul exercită dreptul de regres, în condițiile legii. COMMENT: D A, NP II AND ART 54 (2) SUGGEST THAT THERE ARE TO BE CONSIDERED IN THE CONSTITUTION THE PREJUDICES GENERATED BY THE MEMBERS OF THE PARLIAMENT AND BY THE MINISTERS, DUE TO THE SAME REASONS.
Art.53.- (2) Restrângerea poate fi dispusă numai dacă este necesară într-o societate democratică. Măsura trebuie să fie proporțională cu situația care a determinat-o, să fie aplicată în mod nediscriminatoriu, pentru o perioadă limitată și fără a aduce atingere existenței dreptului sau a libertății. NP II : O. K.
Art.55.- (4) România este stat membru al Organizației Tratatului Atlanticului de Nord. D A , NP II AND NP III: ART 55 (4) be moved as 1 (3) AND MENTIONED IN 10 (3'). THE MEMBERSHIP IN NATO IS A GUARANTEE OF THE PROVISIONS OF 1 (1) AND 10 (1)
CAP IV Nemodificat
Art.58.- (1) Avocatul Poporului este instituția autonomă, cu rol în protejarea și promovarea drepturilor omului, în raport cu autoritățile publice. . . '1. . . ' .

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COMMENT: "OMBUDESMAN" IS TO BE DEFINED AS AN OTHER AUTONOMOUS POWER, IN THE 1ST CHAP., EVENTUALLY AS 1 (4') <u>DIMENSIONAL AND III rd N.'s P. SUGGESTION: TO BE ADDED: .I. "SUBJECT TO COMPLYING BY THE PETITIONER WITH THE FUNDAMENTAL DUTIES"</u> <u>(1¹) Avocatul Poporului este numit pe o durată de 5 ani. Adjuncții Avocatului Poporului sunt specializați pe domenii de activitate.</u> <u>DIMENSIONALa. AND SECOND N.'s P. SUGGESTION: TO ADD HERE THE LEGAL CONDITIONS TO COMPLY WITH OF THE ADVOCATE OF THE PEOPLE AND OF ITS ADJOINTS</u>
Art.61.- (1) Parlamentul este organul reprezentativ al poporului român, <u>forul suprem . . . , " . I . , "</u> de dezbatere și de decizie al națiunii și <u>unica</u> autoritate legiuitoare a țării. COMMENTS: THE CONDITIONS OF BALANCE AND CHECKS OF POWERS NO DO NOT PERMIT SUCH A "SUPREMACY" FOR ONE OF THE THREE MAIN POWERS. SUGGESTION: TO BE DELETED : "SUPREME" THE EQUILIBRIUM MODEL SUGGESTION: TO TAKE CARE, HERE AND IN THE NEXT NOT TO DESTROY THE BALANCE OF POWERS BY FAVORING A POWER, BY INCREASING ITS COMPETENCES AND UNFAVOURING OTHER POWERS.
61 2 <u>Nemodificat</u> (2) The Parliament consists of the Chamber of Deputies and the Senate <u>D A, NP II AND THE RESULTS OF THE VALID REFERENDUM OF 2009 REQUIRE THAT THE REVISED CONSTITUTION DO ONLY PROVIDE FOR A ONE-CHAMBER PARLIAMENT WITH 300 MEMBERS, THAT MEANING FOR THE AUTHORS, NOT TO DISCUSS, IN THIS PAPER, THE SPECIFIC PROVISIONS OF THE DRAFT LAW, CONCERNING THE SENATE AND THE CHAMBER OF DEPUTIES, SEPARATEDLY AND THEIR RELATIONSHIPS.</u>
62 (2) <u>Nemodificat</u> Organizations of citizens belonging to national . 1. minorities, . 2. . . , which fail to obtain the number of votes for representation in Parliament, have the right to one Deputy seat each, under the terms of the electoral law, . . 3. . . <u>DIMENSIONAL AND SECOND N.'s P. SUGGESTION: TO BE PRECISED</u> <u>ADD: 1 "ETHNICAL"</u> <u>2 " HAVING A NUMBER OF MEMBERS OVER . . . % OF TOTAL POPULATION, "</u> <u>3 „IF THERE IS NO OTHER DEPUTY BELONGING TO THAT ETHNICAL MINORITY"</u>
Art.62.- (3) Numărul deputaților nu poate fi mai mare de 300. <u>La acest număr se . . I . . adaugă reprezentanții minorităților naționale (I).</u> <u>D A – HIERARCHICLA AND TIME PRIORITY DIMENSIONS SUGGESTS TO BE MODIFIED DUE TO (THE REFERENDUM OF 2009), BY REPLACING THE UNDERLINED WORDS (TO WHICH ARE ADDED) WITH:: "THIS NUMBER INCLUDING THE ,".</u>
Art.63.- (1 ¹) <u>Statutul juridic al deputaților și senatorilor se stabilește prin lege specială.</u> <u>DIMENSIONAL ANALYSIS COMMENT: THERE IS NOT THE MEMBERS OF THE PARLIAMENT TO ESTABLISH A LAW CONCERNING THEMSELVES.</u> THEIR STATUTE IS TO BE ESTABLISHED BY THE CONSTITUTION ITSELF (AS BEING AT THE SUPERIOR HIERARCHICAL LEVEL) OR BY THE OTHER POWERS IN THE STATE.
<u>Nemodificat</u> 64 (1) The organization and functioning of each Chamber shall be regulated by its own Standing Orders. Financial resources of the Chambers shall be provided for in the budgets approved by them, <u>DIMENSIONAL AND SECOND N.'s P. SUGGESTION: TO BE PRECISED : "NOT BEING LARGER THEN . . . % OF THE CONSOLIDATED STATE BUDGET"</u>
Art.64.- (3) Deputații și senatorii se pot organiza în grupuri parlamentare, potrivit regulamentului fiecărei Camere. <u>La începutul legislaturii se constituie grupurile parlamentare ale partidelor politice sau formațiunilor politice care au participat la alegeri. Pe</u>

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<u>parcursul legislaturii nu se pot constitui grupuri parlamentare noi.</u> <u>SECOND N.'s P. SUGGESTION : DELETE THE LAST PROVISION.</u> <u>THERE IS NOT POSSIBLE TO RESTRICT THE RIGHT OF DECISION (TO AN INITIAL SITUATION), BECAUSE THE MANDATE OF MP IS NOT AN IMPERATIVE ONE (PAR. 69 (1), 69 (2), 72 (1).</u>
Art.64.- (4') <u>Orice persoană de drept public, orice persoană juridică privată și orice persoană fizică are obligația de a se prezenta, direct sau prin reprezentant legal, după caz, în fața unei comisii parlamentare, în urma invitației scrise.."</u> . . I . . . , " <u>primite din partea acesteia, cu respectarea principiului separației puterilor în stat . . 2 . . " . . Activitatea comisiei parlamentare nu se poate substitui organelor judiciare.</u> <u>DIMENSIONAL AND SECOND N.'s P. SUGGESTION: TO ADD: (1) "EXPLICITLY MOTIVATED BY THAT COMMISSION";</u> <u>(2) "AND SUBJECT TO STRUCTURAL HIERARCHICAL LEVELS"</u> COMMENT: NP III REQUIRES A RIGHT CORRESPONDING TO THIS NEW DUTY . IT WOULD NOT BE TOO MUCH FOR THE PARLIAMENT TASKS?
Art.64.- (5) Birourile permanente și comisiile parlamentare se alcătuiesc potrivit configurației politice a fiecărei Camere <u>rezultate din alegeri. I :</u> <u>DIMENSIONAL AND SECOND N.'s P. SUGGESTION: TO BE REPLACED BY: 1 "CORRESPONDING TO THE CONFIGURATION AT THE INSTANT OF THE ACTION"</u> COMMENT: THE POLITICAL CONFIGURATION IS A DYNAMIC ONE. IT IS NECESSARY TO HAVE A REAL TIME REPRESENTATION IN THE PARLIAMENT'S BODIES. THE MP MANDATE COULD NOT BE AN IMPERATIVE ONE (ART 69 AND 72).
<u>Nemodificat</u> Art.65.- (1) Camera Deputaților și Senatul lucrează " . . 1 . . ." în ședințe separate. <u>DIMENSIONALa. AND SECOND N.'s P. SUGGESTION: TO ADD : "USUALLY"</u>
La alin.(2) al art.65, după lit.b), se introduc trei litere noi, lit.b ¹), b ²), b ³), cu următorul cuprins: <u>b¹) acordarea votului de încredere Guvernului;</u> <u>b²) dezbaterea moțiunii simple prevăzute la art.112 alin.(3);</u> <u>b³) dezbaterea și votarea moțiunilor de cenzură;</u> <u>f) aprobarea strategiei naționale de securitate a țării;</u> <u>g) examinarea rapoartelor Consiliului Național de Securitate;</u> <u>i) numirea " . . . I . . . " Avocatului Poporului, <u>președintelui 3 Curții de Conturi a României, președintelui Autorității de Supraveghere Financiară, președintelui . . 2 . . televiziunii și . . 2 . . radioului naționale;</u></u> <u>Gramma (NP II)r, D A AND SECOND N.'s P. SUGGESTION: 1. TO ADD: "AS PROPOSED BY THE PRESIDENT OF ROMANIA"</u> <u>2. ATTENTION TO THE OBSERVANCE OF ROMANIAN LANGUAGE GRAMMAR RULES!</u> <u>3. BETTER TO BE REPLACED BY "PRESIDENTS" AND THEREFORE, DELETE 2.</u>
Atribuții în domeniul afacerilor europene Art.67 ¹ .- (1) Camera Deputaților și Senatul verifică... . 1. ... <u>respectarea principiilor subsidiarității și proporționalității în cadrul Uniunii Europene în conformitate cu tratatele constitutive ale Uniunii Europene, în condițiile stabilite prin lege organică.</u> <u>DIMENSIONALa. AND SECOND N.'s P. SUGGESTION: TO ADD : (1) "IN ROMANIA"</u> <u>(2) Camera Deputaților și Senatul sunt implicate în formularea pozițiilor României în cadrul procesului decizional la nivelul Uniunii Europene.</u> <u>DIMENSIONALa. AND SECOND N.'s P. SUGGESTION: TO REPLACE WITH :</u> <u>"MAKE PROPOSALS"</u> <u>(3) În scopul îndeplinirii atribuțiilor prevăzute la alineatele (1) și (2), Camera Deputaților și Senatul adoptă hotărâri, cu votul majorității membrilor prezenți . . . I . . .</u> <u>DIMENSIONALa. AND SECOND N.'s P. SUGGESTION: TO BE DELETED: 1 "PREZENTI".</u>
68 (1) <u>Nemodificat</u>

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The sittings of both Chambers shall be public. SECOND N's P. AND ART. 68(2) : TO BE ADDED: "USUALLY"
69 (1) Nemodificat In the exercise of their mandate Deputies and Senators shall be in the service of the people.
69 (2) Nemodificat Any imperative mandate shall be null. . . 1. . . D A AND NPII SUGGESTION. TO ADD: 1. "MEMBERS OF PARLIAMENT BEAR FULL RESPONSIBILITY FOR THEIR ACTIVITY".
Art.70.- (2) Calitatea de deputat sau de senator încetează: a) la data întrunirii legale a Camerelor nou alese; b) în caz de demisie; c) în caz de pierdere a drepturilor electorale, d) în caz de incompatibilitate; e) la data demisiei din partidul politic sau formațiunea politică din partea căreia a fost ales sau la data înscrierii acestuia într-un alt partid politic sau o altă formațiune politică; NPI AND ART. 69 SUGGESTION : ART 70 (2) E IS TO BE DELETED, IT CONTRADICTING ART. 69:
71 (2) Nemodificat (2) The capacity as a Deputy or Senator is incompatible with the exercise of any public office in authority, with the exception of Government membership. D A. AND SECOND N.'s P. SUGGESTION: TO BE ADDED, A PROVISION SIMILAR TO Art.58.- (2) referring to the Advocate of the People and his/her deputy ies „The members of he Parliament shall not perform any other private office except for teaching positions in higher education”.
72 (1) Nemodificat No Deputy or Senator shall be held judicially accountable for the votes cast or the political opinions expressed while exercising their office. NP II AND D A SUGESTS TO ADD A PROVISION LIKE FOR THE RESPONSIBILITY OF JUDGES
Art.72.- (2) Deputații și senatorii pot fi urmăriți și trimiși în judecată penală pentru fapte care nu au legătură cu voturile sau cu opiniile politice exprimate în exercitarea mandatului. Deputații și senatorii nu pot fi perchezițonați, reținuți sau arestați fără încuviințarea Camerei din care fac parte, după ascultarea lor. D A HIERARCHIC LEVEL SUGGESTION: TO OBSERVE THE HIERARCHIC LEVEL WHEN A COURT BE COMPETENT IN JUDGING A MP
Nemodificat 73 (2) Constitutional laws shall be pertaining to the revision of the Constitution... 1. . . DIMENSIONALa. AND SECOND N.'s P. SUGGESTION: TO BE ADDED: 1 THEY MUST BE SUBMITTED TO THE REFERENDUM OF THE PEOPLE
73 (3) e) organizarea Guvernului și a Consiliului Național de Securitate; La alin.(3) al art.73, după lit.i) se introduc trei noi litere, lit.i ¹⁾ i ²⁾ și i ³⁾ , cu următorul cuprins: i ¹⁾ statutul profesiiilor juridice; i ²⁾ statutul Băncii Naționale a României; i ³⁾ organizarea și funcționarea Curții Constituționale; COMMENT: TO BE PAID ATTENTION TO THE RIGHT OF AUTONOMY OF THE MENTIONED INSTITUTIONS
Art.74.- (1) Inițiativa legislativă aparține, după caz, Guvernului, deputaților, senatorilor sau unui număr de cel puțin 75.000 de cetățeni cu drept de vot. Cetățenii care își manifestă dreptul la inițiativă legislativă trebuie să provină din . . 1. . . , cel puțin un sfert din județele țării, iar în fiecare din aceste județe, respectiv în municipiul București, trebuie să fie înregistrate cel puțin 5.000 de semnături în sprijinul acestei inițiative. COMMENT: THE ROLE OF REGIONS IS IGNORED. SUGGESTION. TO ADD: 1 "FROM ALL REGIONS"
Art.74.- (6) Proiectele legislative, indiferent de inițiator, parcurg aceeași procedură legislativă. NP II: O.K.!
Art.75.- (1) Se supun spre dezbateră și adoptare Camerei

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Deputaților, ca primă Cameră sesizată, proiectele de legi și propunerile legislative pentru ratificarea tratatelor sau a altor acorduri internaționale, a măsurilor legislative ce rezultă din aplicarea acestor tratate sau acorduri și a măsurilor legislative privind relațiile externe și afacerile europene, precum și proiectele legilor organice prevăzute la articolul 31 alineatul (5), articolul 40 alineatul (3), articolul 55 alineatul (2), articolul 58 alineatul (3), articolul 73 alineatul (3) literele e), i¹⁾ i²⁾ i³⁾, k), l), n), o), articolul 79 alineatul (2), articolul 102 alineatul (3), articolul 105 alineatul (2), articolul 117 alineatul (3), articolul 118 alineatele (2) și (3), articolul 120 alineatul (2), articolul 126 alineatele (4) și (5) și articolul 142 alineatul (5). Celelalte proiecte de legi sau propuneri legislative se supun dezbaterii și adoptării, ca primă Cameră sesizată, Senatului.
Art.75.- (2) Prima Cameră sesizată se pronunță în termen de 30 de zile. Pentru coduri și proiectele de legi de complexitate deosebită, termenul este de 45 de zile. În cazul depășirii acestor termene se consideră că proiectele de legi sau propunerile legislative au fost adoptate.
Art.75.- (2¹) Senatul numește sau alege, după caz, în condițiile stabilite prin lege sau prin regulamentul propriu de organizare și funcționare: a) președintele și vicepreședinții Consiliului Legislativ; b) consilierii Curții de Conturi; c) președintele Consiliului Economic și Social; d) președintele Autorității Electorale Permanente; e) reprezentanții oricărei alte autorități sau instituții publice aflate sub control parlamentar sau, care potrivit legii, prezintă Senatului rapoarte sau alte dări de seamă privind propria activitate. (2²) Parlamentul numește sau alege, după caz, în condițiile stabilite prin lege sau prin regulamentul propriu de organizare și funcționare: a) Avocatul Poporului; b) directorul Serviciului Român de Informații și directorul Serviciului de Informații Externe. D A NP I AND II: (2²) TO BE DELETED. IT CONTRADICTS OTHER PROVISIONS OF THE CONSTITUTION. THIS COMPETENCE DO BELONG TO OTHER HIERARCHICAL LEVELS OR BODIES. THOSE FUNCTIONS COULD NOT BE UNDER THE POLITICAL PARTIES CONTROL.
Alin.(4) al art.75 se abrogă.
Alin.(5) al art.75 se abrogă.
După alin.(3) al art.75 se introduce un alineat nou, alin.(4), cu următorul cuprins: (4) În cazul inițiativelor legislative ce intră în dezbateră ședințelor comune ale Camerei Deputaților și Senatului, precum și în cazul aprobării strategiei naționale de securitate, Parlamentul se pronunță în termen de maxim 6 luni de la sesizare. COMMENT: TO BE REDUCED THE PERIOD (CORRESPONDING TO THE EXISTENCE OF ONLY ONE CHAMBER, FOR SPEEDING THE PROCEDURE)
Art.76.- (1) Legile organice, legile prin care este restrâns exercițiul unor drepturi sau al unor libertăți, în condițiile art.53, precum și . . . “. 1. “. hotărârile privind regulamentele Camerelor se adoptă cu votul majorității membrilor fiecărei Camere. DIMENSIONALANALYSIS , FIRST AND SECOND N.'s P. SUGGESTION: (2) TO BE ADDES: "LAWS INTRODUCING NEW DUTIES" COMMENT: THERE IS NOT MENTIONED THE PROCEDURE OF PASSING THE CONSTITUTIONAL LAWS! TO BE INTRODUCED HERE.
Art.76.- (2¹) Intervențiile legislative asupra legilor organice nu se pot realiza prin acte normative de nivel inferior.
Art.78.- (2) Accesul la varianta electronică a Monitorului Oficial este gratuit și nu poate fi îngrădit.
Art.80.- (1) Președintele României este șeful statului, reprezintă statul român și este garantul independenței naționale, al unității și al integrității teritoriale a țării . . 1. . . O. K.! THIS IS AN IMPORTANT SOCIO-PHYSICS PROVISION. THE "PRESIDENT" CORRESPONDS TO THE "CENTER OF MASS" IN THE PROPOSED PHYSICAL MODEL OF

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EQUILIBRIUM. <i>D A AND NP I SUGGESTION. TO BE ADDED: 1 "AND OF THE BALANCE OF POWERS"</i>
Art.83.- (1) Mandatul Președintelui României este de 4 ani și se exercită de la data depunerii jurământului. <i>D A, NP I AND NP II SUGGESTION: TO BE MAINTAINED THE PRESENT PROVISION (5 YEARS) WHICH ENSURES A DIMENSIONAL TIME PERIOD DIFFERENCE WITH RESPECT TO THE LEGISLATIVE, EXECUTIVE AND JUDICIAL POWERS</i>
Art.85.- (2) În caz de remaniere guvernamentală sau de vacanță a postului, Președintele revocă și numește, la propunerea primului-ministru, după <u>audierea candidatului în comisiile de specialitate ale Parlamentului</u> , pe unii membri ai Guvernului.
La articolul 85, după alineatul (3) se introduce un alineat nou, alin.(3 ¹), cu următorul cuprins: <i>Art.85.- (3¹) <u>Președintele României nu poate refuza propunerea primului-ministru de revocare și numire a unor membri ai Guvernului.</u></i> <i>DIMENSIONAL ANALYSIS, FIRST AND SECOND N.'s P. SUGGESTION: (3¹) TO BE DELETED. IT DOES NOT CORRESPOND TO THE HIERARCHICAL DIMENSIONS OF THOSE IMPLIED.</i>
Art.89.- (1) După consultarea președinților celor două Camere și a <u>președinților partidelor, formațiunilor sau alianțelor politice parlamentare</u> . 1. Președintele României <u>dizolvă</u> Parlamentul, dacă acesta nu a acordat votul de încredere pentru investitura Guvernului, în termen de 30 de zile de la prima solicitare și numai după respingerea cel puțin a unei solicitări de investitură. <i>DIMENSIONAL ANALYSIS, FIRST AND SECOND N.'s P. SUGGESTION: 1 THE UNDELINED TEXT IN 89 (1) IS TO BE DELETED.</i> <i>THE PARTIES IN THE PARLIAMENT ARE REPRESENTED BY THE LEADERS OF THE PARLIAMENTARY'S GROUPS, BUT NOT BY THE PRESIDENTS OF THE REPRESENTED PARTIES!</i>
<i>Art.89.- (1¹) <u>Președintele dizolvă Parlamentul dacă o hotărâre în acest sens este adoptată cu votul a două treimi dintre membrii fiecărei Camere.</u></i> <i>D A, NP II AND NP III. SUGGESTION: (1¹) TO BE DELETED. THERE T IS NOT POSSIBLE THE MP TO DECIDE ABOUT THEMSELVES!</i>
Art.90.- (1) <u>Președintele României sau cel puțin 250.000 de cetățeni cu drept de vot pot cere poporului să-și exprime voința, prin referendum, cu privire la probleme de interes național, cu excepția celor referitoare la revizuirea Constituției. Inițierea referendumului se aprobă de Parlament, prin hotărâre, cu votul majorității membrilor săi.</u> <i>D A, FIRST AND SECOND N.'s P. SUGGESTION: TO BE DELETED THE UNDELINED TEXT</i> <i>IT IS NOT POSSIBLE TO DECIDE ABOUT A SUPERIOR HIERARCHIC LEVEL DECISION</i> (2) Cetățenii care inițiază organizarea referendumului trebuie să provină din , 1 . , cel puțin jumătate din județele țării, iar în fiecare din aceste județe sau în municipiul București trebuie să fie înregistrate cel puțin 10.000 de semnături în sprijinul acestei inițiative. <i>D A AND NP II SUGGESTION SUGGESTION. TO ADD: 1 "FROM ALL REGIONS"</i> (1) Referendumul este valabil dacă la acesta participă cel puțin 30 % din numărul persoanelor înscrise în listele electorale. <i>D A AND NP II SUGGESTION COMMENT: TO BE OBSERVED THE DECISION OF THE CONSTITUTIONAL COURT (30 % OR 50 %) DEPENDING OF THE DATE OF THE REFERENDUM</i>
Nemodificat Art.91.- (1 ¹) <u>Președintele reprezintă România la reuniunile Uniunii Europene având ca temă relațiile externe ale Uniunii Europene, politica de securitate comună, modificarea sau completarea tratatelor constitutive ale Uniunii Europene.</u> <i>D A, NP I AND NP II SUGGESTION: TO BE DELETED. IT CONTRADICTS THE PREVIOUS PARAGRAPH 92 (1), BY RESTRICTING ITS CONTENT TO CONSTITUTIVE TREATIES, ONLY</i>

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Art.92.- Atribuții în domeniul securității naționale
Art.92.- (1) Președintele României este comandantul forțelor armate și îndeplinește funcția de președinte al <i>Consiliului Național de Securitate</i> .
<i>Art.92.- (5) <u>Președintele propune Parlamentului candidații pentru funcția de director al Serviciului Român de Informații și director al Serviciului de Informații Externe.</u></i> <i>D A, NP I AND NP II SUGGESTION:</i> <i>92 (5) TO BE DELETED. IT CONTRADICTS THE ART 94 (c) AND THE POLITICAL INDEPENDENCE OF THE TWO SERVICES IMPLIED PREVIOUS PARAGRAPH BY RESTRICTING ITS CONTENT.</i> <i>THE PRESIDENT IS INDEPENDENT OF THE POLITICAL PARTIES, BUT NOT THE PARLIAMENT</i> (6) <u>Președintele numește șeful Statului Major General, la propunerea ministrului Apărării, cu avizul primului-ministru.</u> (7) <u>În maxim 6 luni de la depunerea jurământului, președintele înaintează Parlamentului Strategia Națională de Securitate.</u> (8) <u>Președintele prezintă anual Parlamentului, reunit în ședință comună, un mesaj privind starea securității naționale.</u>
Art.95.- (4) <u>Dacă referendumul de demitere din funcție este valid, dar propunerea de demitere nu întrunește o majoritate de 50% plus unu din voturile valabil exprimate, Parlamentul va fi dizolvat, urmând ca în termen de 45 de zile calendaristice să se organizeze alegeri parlamentare anticipate.</u> <i>NP II AND NP III : O. K.</i>
Art.102.- (1) Guvernul, potrivit programului său de guvernare <u>aprobat</u> de Parlament, asigură realizarea politicii interne și externe a țării și exercită conducerea generală a administrației publice. <i>Art.102.- (4) <u>Guvernul asigură reprezentarea României la reuniunile Uniunii Europene, 1 . .cu excepția celor prevăzute la art.91 alin.(2).</u></i> <i>D A, NP I AND NP II SUGGESTION: REPLACE THE UNDELINED TEXT WITH: 1"DURING THE NEGOCIATION OF INTERNATIONAL TREATIES"</i> (5) <u>În cazurile prevăzute la art.91 alin.(2), reprezentarea se poate face doar în baza unui mandat dat de Președintele României.</u> <i>D A , NP I AND NP II SUGGESTION: REPLACE 102 (5) WITH "IN OTHER SITUATIONS, THERE IS COMPULSORY A SPECIFIC MANDATE ISSUED BY THE PRESIDENT OF ROMANIA"</i>
100 (1) <i>D A SUGGESTION: TO BE PRECISED THE MAXIMUM DELAY IN PRINTING THE SIGNED DOCUMENTS IN THE OFFICIAL GAZETTE.</i>
Art.103.- (1) Președintele îl desemnează drept <u>candidat pentru funcția de prim-ministru pe reprezentantul propus de partidul politic, respectiv de alianța politică care a participat la alegeri, care a obținut cel mai mare număr de mandate parlamentare, potrivit rezultatului oficial al alegerilor. În cazul în care există mai multe formațiuni politice care au participat la alegeri și care au obținut același număr de mandate, Președintele îl desemnează drept candidat pentru funcția de prim-ministru pe reprezentantul propus de partidul politic, respectiv alianța politică care a participat la alegeri, care a obținut cel mai mare număr de voturi, potrivit rezultatului oficial al alegerilor.</u> <i>ART 80 (2), EQUILIBRIUM MODEL, NP II AND D A SUGGESTION: DELETE THIS NEW PROVISION BECAUSE IT REPLACES THE ROLE OF MEDIATOR OF THE PRESIDENT WITH AN AD HOC SOLUTION WHICH MAY NOT BE THE BEST ONE FOR THE STATE AND DO EXCLUDE NEW POST-ELCTORAL ALLIANCES</i>
Art.103.- (4) <u>În cazul în care candidatul pentru funcția de prim-ministru își depune mandatul, nu se prezintă în fața Parlamentului pentru acordarea votului de încredere în termenul prevăzut sau nu obține votul de încredere, Președintele îl desemnează drept candidat pentru funcția de prim-ministru pe reprezentantul propus de partidul politic, respectiv alianța politică care a participat la alegeri, care a obținut al doilea cel mai mare număr de mandate parlamentare, potrivit rezultatului oficial al alegerilor.</u> <i>ART 80 (2), EQUILIBRIUM MODEL, NP II AND D A SUGGESTION: DELETE THIS NEW PROVISION BECAUSE IT REPLACES THE ROLE OF MEDIATOR OF THE PRESIDENT WITH AN AD HOC SOLUTION WHICH MAY NOT BE THE BEST ONE FOR THE STATE AND EXCLUDE</i>

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NEW POST-ELECTORAL ALLIANCES
Art.103.- (5) În cazul în care cel de-al doilea candidat la funcția de prim-ministru își depune mandatul, nu se prezintă în fața Parlamentului pentru acordarea votului de încredere în termenul prevăzut sau nu obține votul de încredere, Președintele îl desemnează drept candidat pentru funcția de prim-ministru pe reprezentantul propus de o coaliție de formațiuni politice parlamentare, care însumează majoritatea absolută a mandatelor parlamentare, potrivit rezultatului oficial al alegerilor. ART 80 (2), EQUILIBRIUM MODEL, NP II AND D A SUGGESTION: DELETE THIS NEW PROVISION BECAUSE IT REPLACES THE ROLE OF MEDIATOR OF THE PRESIDENT WITH AN AD HOC SOLUTION WHICH MAY NOT BE EASILY FIIND AND MAY NOT BE THE BEST ONE FOR THE STATE
Art.103.- (6) În cazul în care cel de-al treilea candidat la funcția de prim-ministru își depune mandatul, nu se prezintă în fața Parlamentului pentru acordarea votului de încredere în termenul prevăzut sau nu obține votul de încredere, Președintele va <u>disolva Parlamentul</u> . SEE PREVIOUS THREE ITEMS.
Art.107.- Atribuții în domeniul securității naționale Art.107.- Primul-ministru este vicepreședinte al Consiliului Național de Securitate.
Art.109.- (2) Parlamentul, în ședință comună a celor două Camere, are dreptul exclusiv de a cere urmărirea penală a primului-ministru și a membrilor Guvernului, pentru faptele săvârșite în exercițiul funcției lor. În cazul aprobării cererii de urmărirea penală a membrilor Guvernului, primul-ministru va înainta Președinților celor două Camere ale Parlamentului, o cerere motivată de suspendare din funcție a acestora. Suspendarea din funcție, se va decide în ședința comună a celor două Camere. Trimiterea în judecată a unui membru al Guvernului atrage suspendarea lui de drept din funcție. Competența de judecată aparține Înaltei Curți de Casație și Justiție. EQUILIBRIUM MODEL, D A, NP I AND NP II SUGGESTIONS: 1 THE JUDICIARY POWER AND THE PRESIDENT MUST HAVE EQUAL RIGHTS WITH THE PARLIAMENT. TO BE DELETED "EXCLUSIVE" AND ADDED IN THE TEXT THE OTHER POWERS HIERARCHICALY EQUAL TO THE PARLIAMENT 2. TO BE DIFERENCIATED THE PROCEDURES FOR THE DIFFERENT HIERARCHIC LEVELS – PRIME MINISTER AND RESPECTIVELY MINISTER.
Art.112.- (3) Ministrul a cărui revocare a fost solicitată prin intermediul unei moțiuni simple, adoptate de către cele două Camere ale Parlamentului, <u>este revocat din funcție la propunerea primului-ministru</u> . NP II AND D A SUGGESTION: 112 (3) BE DELETED, A SIMPLE MOTION BEING AN INTEROGATION OF THE PARLIAMENT NOT A DECISION (LIKE IS A THE "MOTION OF CENSURE")
Art.113.- (1) Camera Deputaților și Senatul, în ședință comună, pot retrage încrederea acordată Guvernului prin adoptarea unei moțiuni de cenzură, cu votul majorității deputaților și senatorilor. <u>Prin moțiunea de cenzură semnatarii propun o persoană drept candidat pentru funcția de prim-ministru, iar aceasta va fi însărcinată de către Președinte cu formarea noului Guvern în cazul în care moțiunea de cenzură este adoptată</u> . ART 80 (2), EQUILIBRIUM MODEL, NP II AND D A SUGGESTION: THE ADDED TEXT IS NOT NECESSARY. THE PROCEDURE IS PROVIDED BY ART. 103
Art.114.- (1) Guvernul își poate angaja, o singură dată într-o sesiune parlamentară, răspunderea în fața Camerei Deputaților și a Senatului, în ședință comună, asupra unui program, a unei declarații de politică generală sau a unui proiect de lege. DIMENSIONALANALYSIS, FIRST AND SECOND d N. 's P. : O. K.
Art.115.- (6) Ordonanțele de urgență nu pot fi adoptate în domeniul legilor constituționale ori privind regimul infracțiunilor, pedepselor și al executării acestora, nu pot afecta regimul instituțiilor

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fundamentale ale statului, drepturile, libertățile și îndatoririle prevăzute de Constituție, drepturile electorale și nu pot viza măsuri de trecere silită a unor bunuri în proprietate publică. DIMENSIONAL ANALYSIS, FIRST AND SECOND N.'s P. : O. K.
Art.117.- (2) Organele de specialitate ale administrației publice centrale – autonome, aflate sub control parlamentar, în subordinea ministerelor sau în subordinea Parlamentului, pot fi înființate numai prin lege. D A, NP I AND NP II SUGGESTION: TO BE PRECISED THE COMPETENCES, WHEN CONSIDERING THE LEVEL OF THE SUBORDINATED INSTITUTIONS AND BODIES.
ARTICLE 118 (1) Under the law and the . . . 1. . . international treaties Romania is a party to, the Army shall contribute to the collective defence in military alliance systems, and participate in peace keeping or peace restoring missions. D A, NP I AND NP II AND ART. 1 SUGGESTION. TO BE ADDED: "NATO, UE AND OTHER. . . .".
Art.119.- Consiliul Național de Securitate Art.119.- (1) Consiliul Național de Securitate organizează și coordonează unitar activitățile care privesc securitatea națională, participarea la menținerea securității internaționale și la apărarea colectivă în sistemele de alianță militară, precum și la acțiuni de menținere sau de restabilire a păcii. (2) Consiliul Național de Securitate emite hotărâri care sunt obligatorii pentru autoritățile administrației publice și instituțiile publice. (3) Consiliul Național de Securitate prezintă anual sau oricând este solicitat rapoarte de activitate Parlamentului.
Denumirea secțiunii a 2-a se modifică și va avea următorul cuprins: <u>SECȚIUNEA 2 Administrația publică centrală în teritoriu</u> 1. NOTHING ABOUT REGIONS? ? 2. PAY ATTENTION :
După art.119 se introduce un articol nou, art.119 ¹ , cu următorul cuprins: <u>Art.119¹.- Prefectul și subprefectul</u> COMMENT: THIS NEW ARTICLE 119 (1) MUST BECOME 123). ALL THE PARAGRAPHS (1) TO (5) HAVE TO BE MOVED IN Art. 123 PAY ATTENTION: ART. 119 IN THE DRAFT LAW IS CONNECTED WITH NATIONAL SECURITY COUNCIL!
Art.119 ¹ .- (1) Guvernul numește, în unitățile administrativ-teritoriale, . . . 1. . . prefecți și subprefecți, în condițiile legii. D A, NP I AND NP II SUGGESTION: 1 TO BE PRECISED THE LEVEL : COUNTY OR REGION LEVELS. TO BE CHANGED THE NUMBERS OF THE PARAGRAPHS. (2) Prefectul și subprefectul sunt reprezentanții Guvernului pe plan local și conduc serviciile publice deconcentrate ale ministerelor și ale celorlalte organe ale administrației publice centrale din unitățile administrativ-teritoriale. (3) Atribuțiile prefectului și ale subprefectului se stabilesc prin lege. (4) Între prefecți și subprefecți, pe de o parte, consiliile locale, primari, consiliile județene și președinții acestora, precum și consiliile regionale și președinții acestora, pe de altă parte, nu există raporturi de subordonare. (5) Prefectul poate ataca, în fața instanței de contencios administrativ, un act al consiliului regional, județean sau local, al președintelui consiliului județean, al președintelui consiliului regional sau al primarului, în cazul în care consideră actul ilegal. Actul atacat poate fi suspendat numai de instanța competentă, potrivit legii.
<u>SECȚIUNEA 2</u> <u>Administrația publică locală</u>
Art.120.- (1) Administrația publică din unitățile administrativ-teritoriale se întemeiază pe principiile descentralizării, autonomiei locale și deconcentrării serviciilor publice. <u>Descenzalizarea serviciilor publice se realizează, cu respectarea principiului subsidiarității, prin asigurarea integrală a resurselor financiare necesare pentru exercitarea, în bune condiții, a competențelor transferate. . . 1. . .</u> D A, NP I AND NP II SUGGESTION :1 TO BE PRECISED THE ORIGINS OF THE FINANCIAL RESOURCES Nemodificat

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<p>Art. 122.- Autorități județene și regionale D A, NP I AND NP II SUGGESTION: TO BE SEPARATELY APPROCHED THE REGIONS AS NEW STRUCTURES AND THE COUNTIES AS OLD AND PRESERVED STRUCTURES</p> <p>(1) Consiliul județean și președintele acestuia reprezintă autoritatea administrației publice pentru coordonarea activității consiliilor comunale și orașenești, în vederea realizării serviciilor publice de interes județean.</p> <p>(2) Consiliul regional și președintele acestuia reprezintă autoritatea administrației publice pentru coordonarea activității consiliilor județene, în vederea realizării serviciilor publice de interes regional.</p> <p>(3) Consiliul județean și consiliul regional sunt alese și funcționează în condițiile legii.</p> <p>(4) Președintele consiliului județean și președintele consiliului regional sunt aleși și îndeplinesc atribuții în condițiile legii.</p> <p>SUGGESTION: HERE HAS TO BE INTRODUCED THE PROPOSED NEW art.119¹, TO REPLACE THE PARAGRAPHS OF THE PRESENT ART. 123: Art.119¹.- Prefectul și subprefectul ALL THE PARAGRAPHS (1) TO (5) HAVE TO BECOME PARAGRAPHS OF ART 123</p> <p>Art.123¹.- (1) Guvernul numește, în unitățile administrativ-teritoriale, . . . I. . . prefecți și subprefecți, în condițiile legii. D A, NP I AND NP II SUGGESTION: 1 TO BE PRECISED THE LEVEL : COUNTY OR REGION LEVELS. TO BE CHANGED THE NUMBER OF THE PARAGRAPH.</p> <p>(2) Prefectul și subprefectul sunt reprezentanții Guvernului pe plan local și conduc serviciile publice deconcentrate ale ministerelor și ale celorlalte organe ale administrației publice centrale din unitățile administrativ-teritoriale.</p> <p>(3) Atribuțiile prefectului și ale subprefectului se stabilesc prin lege.</p> <p>(4) Între prefecți și subprefecți, pe de o parte, consiliile locale, primari, consiliile județene și președinții acestora, precum și consiliile regionale și președinții acestora, pe de altă parte, nu există raporturi de subordonare.</p> <p>(5) Prefectul poate ataca, în fața instanței de contencios administrativ, un act al consiliului regional, județean sau local, al președintelui consiliului județean, al președintelui consiliului regional sau al primarului, în cazul în care consideră actul ilegal. Actul atacat poate fi suspendat numai de instanța competentă, potrivit legii.</p>
<p>ARTICLE 128</p> <p>(1) The legal procedure shall be conducted in Romanian. D A, NP II AND NP III SUGGESTION: IF AN OTHER LANGUAGE IS DEMANDED, THE APPLICANT MUST SIGN A BINDING WRITTEN DECLARATION THAT HE OR SHE DO NOT SPEAK ROMANIAN.</p> <p>Art.133.- (2) Consiliul Superior al Magistraturii este alcătuit din 21 membri, din care: b) 4 reprezentanți ai societății civile, specialiști în domeniul dreptului, care se bucură de înaltă reputație profesională și morală, aleși de Senat; aceștia participă numai la lucrările în plen; </p>
<p>Art.133.- (3) Președintele Consiliului Superior al Magistraturii este ales pentru un mandat de un an, ce nu poate fi reînnoit, dintre judecătorii prevăzuți la alineatul (2) litera a).</p> <p>Art.133.- (4) Durata mandatului membrilor Consiliului Superior al Magistraturii este de 4 ani. D A, NP I AND NP II SUGGESTION: TO BE MAINTAINED THE PRESENT PROVISION OF 6 YEARS, WHICH ENSURES A DIMENSIONAL TIME PERIOD DIFFERENCE BETWEEN THE LEGISLATIVE, EXECUTIVE AND JUDICIAL POWERS</p> <p>Art.133.- (4¹) Magistrații aleși membri ai Consiliului Superior al Magistraturii sunt revocați din funcție de adunările generale de la nivelul. . . I. . . instanțelor sau parchetelor pe care le reprezintă, potrivit legii special de organizare și funcționare. DIMENSIONAL ANALYSIS (DISSMISAL IS POSSIBLE UNDER STIFFER CONDITIONS, ONLY), FIRST AND SECOND N.'s P. SUGGESTION: TO BE ADDED (1) "SUPERIOR TO..."</p>
<p>ART 134 (1) Secțiile Consiliului Superior al Magistraturii propun Președintelui României numirea în funcție a judecătorilor respectiv a</p>

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<p>procurorilor, cu excepția celor stagiați, în condițiile legii. Secția de judecători a Consiliului Superior al Magistraturii gestionează în mod exclusiv cariera profesională a judecătorilor, iar Secția de procurori a Consiliului Superior al Magistraturii gestionează în mod exclusiv cariera profesională a procurorilor. Hotărârile secțiilor se atacă direct la Înalta Curte de Casație și Justiție. Nemodificat</p> <p>135 (2) Statul garantează și promovează creșterea competitivității economiei românești prin: a) libertatea activităților economice, protecția concurenței loiale, protecția consumatorilor, . . I. . crearea cadrului favorabil pentru valorificarea tuturor factorilor de producție; D A, NP II AND NP III SUGGESTION. TO BE ADDED: 1 PROTECTION OF THE PRODUCERS . . d) exploatarea resurselor de producție în condiții de maximă eficiență economică. . . I. . . și cu acordarea accesului nediscriminatoriu tuturor celor interesați ; POSTULATE OF CONSERVATION, DIMENSIONAL ANALYSIS, FIRST AND SECOND N.'s P.: TO BE ADDED: 1 "SUBJECT TO THE SAVING OF NON AND LOW REGENERATIVE NATURAL RESOURCES . THE MAXIMAL PERCENTS OF ESPLOITATION MUST BE: 0.5 % YEARLY FOR NONREGENERATIVE RESOURCES AND HALF OF THE RHYTMUS FOR NEWLY FOUND RESOURCES" AND PROVISIONS FOR SLOWLY REGENERATIVE RESOURCES. e) dezvoltarea economică în condițiile ocrotirii mediului înconjurător și menținerii echilibrului ecologic. . . I. . . ; D A, NP I AND NP II SUGGESTION: TO BE ADDED: "IN THE LONG RUN, TOO"</p> <p>g) aplicarea politicilor de dezvoltare regională în concordanță cu obiectivele Uniunii Europene. D A, CONTROL OF ERRORS, NP II. SUGGESTION :TO BE ADDED THE PROVISION</p> <p>132 (5) H „THE STATE ESTABLISH LIMITS TO RELATIE VALUE ALTERATIONS BY THE DIRECT NEGOCIATIONS OF CONTRACTS AFTER THE AUCTION PROCESS IS FINISHED „THE PARTIES MAY ESTABLISH A MAXIMUM RELATIVE INCREASE OF THE AGREED VALUE BY HALF OF THE DIFFERENCE TO THE NEXT VALUE OFFERED IN THE AUCTION”</p>
<p>Articolul 137¹ Moneda națională și banca centrală (1) Banca Națională a României este banca centrală a statului român, autoritate publică autonomă, ale cărei prerogative, administrare și funcționare se reglementează prin lege, în conformitate cu normele de drept internațional care decurg din tratatele la care România este parte. (2) În exercitarea prerogativelor sale, Banca Națională a României nu poate solicita sau primi instrucțiuni de la nici o autoritate sau instituție a statului. DIMENSIONALANALYSIS, FIRST AND SECOND N.'s P. COMMENT : THERE IS INTRODUCED A NEW FUNDAMENTAL POWER (AND DIMENSION): THE NATIONAL BANK (THE FINANCIAL POWER)! SUGGESTION: THIS NEW FEATURE, THE AUTONOMY OF THE NATIONAL BANK HAS TO MENTIONED IN THE BEGINNING OF THE CONSTITUTION, TOO. (3) Banca centrală are dreptul să emită însemne monetare pe teritoriul României. (4) În conformitate cu tratatele constitutive și actele legislative ale Uniunii Europene, prin lege organică se pot reglementa: a) transferul de prerogative ale Băncii Naționale a României la Banca Centrală Europeană; b) recunoașterea circulației și înlocuirea monedei naționale cu moneda euro.</p>
<p>Art.138.- (1) Bugetul public național cuprinde bugetul de stat, bugetul asigurărilor sociale de stat și bugetele locale ale comunelor, ale orașelor, ale județelor și ale regiunilor. I DIMENSIONAL ANALYSIS, DATA PROCESSING POSTULATES, FIRST AND II SECOND N.'s P SUGGESTIONS: TO BE DEFINED AND INCLUDED A BUDGET CONTAINING PROVISIONS REGARDING THE ABSORPTION OF THE EUROPEAN FUNDS ALLOTTED TO ROMANIA.</p>

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<p>2. TO BE INCLUDED A SUPERIOR LIMIT TO THE STATE BUDGET DEFICIT OF 0.5% OF THE STATE YEARLY INCOME (F.E.) Art.138.- (2) Guvernul elaborează anual <i>sau multianual</i> proiectul bugetului de stat și pe cel al asigurărilor sociale de stat, <i>pe care le transmite instituțiilor Uniunii Europene, după informarea prealabilă a Parlamentului asupra conținutului acestora.</i> . . .(3) . . . DIMENSIONALANALYSIS, FIRST AND SECOND N.'s P.: TO BE ADDED: ART. 138 (3) THE BUDGETS OF LOCAL ADMINISTRATIVE BODIES ARE FORWARDED TO THE SUPERIOR BODIES, AFTER INFORMING THE LOCAL COUNCILS.</p>
<p>Art.140.- (4) Consilierii de conturi sunt numiți de <i>Senat</i> pentru un mandat de 9 ani, care nu poate fi prelungit sau înnoit. Membrii Curții de Conturi sunt independenți în exercitarea mandatului lor și inamovibili pe toată durata acestuia. Ei sunt supuși incompatibilităților prevăzute de lege pentru judecători. (5) Curtea de Conturi se înnoiește cu o treime din consilierii de conturi numiți de <i>Senat</i>, din 3 în 3 ani, în condițiile prevăzute de legea organică a Curții. (6) Revocarea membrilor Curții de Conturi se face de către <i>Senat</i>, în cazurile și condițiile prevăzute de lege. DIMENSIONALANALYSIS, FIRST AND SECOND N.'s P.: ART 140 (4) (5) AND (6) CONTRADICTS THE PROVISIONS OF THE REFERENDUM OF 2009. TO BE REPLACED "SENATE" WITH "PARLIAMENT".</p>
<p>146 b) se pronunță asupra constituționalității tratatelor sau altor acorduri internaționale, <i>din oficiu sau</i> la sesizarea . . .1. . . unuia dintre președinții celor două Camere, a unui număr de cel puțin 50 de deputați sau de cel puțin 25 de senatori; DIMENSIONALANALYSIS, FIRST AND SECOND N.'s P.: TO BE ADDED: . . ."OF THE SPEAKER OF THE PARLIAMENT " Lit.l) al art.146 se abrogă. D A: O. K</p>
<p>TITLUL VI Apartenența României la Uniunea Europeană și la Organizația Tratatului Atlanticului de Nord</p>
<p>Art.148.- (1) <i>Ratificarea tratatelor prin care sunt modificate sau completate tratatele constitutive ale Uniunii Europene, precum și tratatele prin care este modificat sau completat Tratatul Atlanticului de Nord, se face printr-o lege adoptată în ședință comună a Camerei Deputaților și Senatului, cu votul a două treimi din numărul deputaților și senatorilor.</i> Art.148.- (2) <i>România asigură respectarea, în cadrul ordinii juridice naționale, a dreptului Uniunii Europene, conform obligațiilor asumate prin actul de aderare și prin celelalte tratate semnate în cadrul Uniunii.</i> DIMENSIONAL ANALYSIS, NEWTON's POSTULATES AND ART.1 : NEW CONTENT OF ART. 148 (1) AND (2) : O.K. SUGGESTION: TO BE MENTIONED THE BODIES COMPETENT TO DEAL WITH SUBSIDIARITY BETWEEN THE EUROPEAN UNION AND THE ROMANIAN LEVELS.</p>
<p>Art.149 se abrogă. DIMENSIONALANALYSIS, NEWTON's POSTULATES AND ART.1 : O.K.</p>
<p>Art.153.- Intrarea în vigoare Prezenta Constituție intră în vigoare la data aprobării ei prin referendum. DIMENSIONAL ANALYSIS, FIRST AND SECOND N.'s P.: O. K.</p>
<p>(2) Consiliul Legislativ, în termen de 3 luni de la data intrării în vigoare a legii <i>de revizuire a Constituției</i>, va examina conformitatea legislației cu prezenta Constituție și va face Parlamentului sau, după caz, Guvernului, propuneri corespunzătoare DIMENSIONAL ANALYSIS, FIRST AND SECOND N.'s P.: O. K.</p>
<p>Alin.(4) - (6) ale art.155 se abrogă. DIMENSIONAL ANALYSIS, FIRST AND SECOND N.'s P.: O. K.</p>

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FROM THE “SIX DEGREES OF SEPARATION” TO THE WEIGHTED “SMALL-WORLD” NETWORKS

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Abstract. *Some of the most significant points in the study of the “small world” (SW) effect are briefly reviewed in the first section of the paper, starting from the Milgram’s sociological experiment, the paradigm of the “six degrees of separation”, and the Watts and Strogatz’ model. Based on interviews and questionnaires we found that the pupils network, in a school with about 1,000 pupils is a SW network with a mean degree of separation between 2 and 3. The problem is important taking into account that the spread of news, jokes, fashions, rumour, as well as epidemics, all take place by contact between individuals, far faster over a social network in which the average degree of separation is small than it can over one in which the average degree is e.g. 25. The third section is theoretical. The statistical ensemble of networks with fixed number of vertices was constructed and analyzed. A probability has been assigned to each two-individual connection by random attachment mechanism, and the corresponding partition function was built. The basic thermodynamic quantities, namely entropy, free energy, average energy per link and thermal susceptibility have been defined using the partition function. The variation of the thermodynamic quantities have been investigated during a thinking process of network deconstruction, which consist of removing the vertices one by one, in decreasing and, respectively, increasing order of the overlapping coefficients. Some evidences for critical points have been found, the corresponding phase transitions being generated by removing several special vertices from the system.*

Keywords: *small-world network, minimal path length, clustering coefficient, phase transition*

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1. INTRODUCTION

1.1 Six degrees of separation

The United Nations’ Department of Economic and Social Affairs estimates that the population of the world exceeded seven billion people in October, 2011. Perhaps the world of human society has become even larger nowadays. Nonetheless, when the people meet in an unexpected way, they often claim: “How small the world is!”. We demonstrate below that in a certain sense they are right. Despite the enormous number of people on the planet, the structure of social networks – the map of who knows whom – allows us to be all very closely connected to one another.

One of the first quantitative studies of the structure of social networks was performed by Stanley Milgram, then at Harvard University [1]. He performed a simple experiment as follows. He took a number of letters addressed to a stockbroker acquaintance of his in Boston, Massachusetts, and distributed them to a random selection of people in Nebraska. (Evidently, he considered Nebraska to be enough far from Boston, both in geographic and social terms). His instructions were that the letters were to be sent to their addresses by passing them from person to person, and that, in addition, they could be passed only to someone whom the passer knew on a first-name basis. Since it was not likely that the initial recipients of the letters were on a first-name basis with a Boston stockbroker, their best strategy was to pass their letter to someone whom they felt was

nearer to the stockbroker in some social sense: perhaps someone they knew in the financial industry, or a friend in Massachusetts. A reasonable number of Milgram’s letters did reach their destination, and Milgram found that it had only taken an average of six steps for a letter to get from Nebraska to Boston. He concluded that six was therefore the average number of acquaintances separating the pairs of people involved, and conjectured that a similar separation might characterize the relationship of any two people in the entire world. This situation was described by the syntagm “six degrees of separation” [2], a phrase which has since passed into popular language of sociology and was intensively exploited in the talk-show industry [3-5].

Given the multiple sources of error in the Milgram’s experiment, one may suppose that the number six of the degrees is probably not a very accurate one. However, the general result, that *two randomly chosen human beings can be connected by only a short chain of intermediate acquaintances* has been subsequently verified, and is now widely accepted. In the jargon of the field this result is referred to as the *small-world effect*.

Passing over the fashionable account of the phenomenon, we point out that the problem is crucially important for communications. Most human interactions take place directly between individuals. The spread of news, rumours, jokes, and fashions all take place by contact between individuals. As well, various diseases (from simple flues to the HIV virus) can spread far faster in a small world network than in a network where the average degree of separation is, say, ten thousand. That is why, during the last decade, the structure of the social networks and the small-world effect were extensively studied in literature.

1.2 The terminology used in the study of networks

The networks (or *graphs*) are composed of *vertices* (or *nodes*) connected by *edges* (or *links*). The edges may be directed or undirected. Correspondingly, we get a *directed* or a *undirected* network. To define the distances in the network, we consider the lengths of all edges equal to one. Here we do not consider networks with unit loops (edges started and terminated at the same vertex) and multiple edges, *i.e.*, we assume that only one edge may connect two vertices.

The structure of a network is described by its *adjacency matrix*, \hat{A} , whose elements consist of zeros and ones, for the *unweighted* graphs and numbers between 0 and 1 for the *weighted* networks. In the case of *unweighted* networks, an element of the adjacency matrix with undirected edges, a_{ij} , is 1 if vertices i and j are connected, and is 0 otherwise. Therefore, the adjacency matrix of a network with undirected edges is symmetrical. For a network with directed edges, an element of the adjacency matrix, a_{ij} , equals 1 if there is an edge from the vertex i to the vertex j , and equals 0 otherwise.

The *degree* of a vertex, k , is the total number of its connections. *In-degree*, k_i , is the number of incoming edges of a vertex. *Out-degree*, k_o is the number of its outgoing edges.

Hence, $k = k_i + k_o$. Degree is actually the number of nearest neighbors of a vertex, z_1 . The network structure is given by the probability distributions: $P(k)$ = the degree distribution; $P_i(k_i) \equiv P(k_i)$ = in-degree distribution; $P_o(k_o) \equiv P(k_o)$ = out-degree distribution; $P(k_i, k_o)$ = the joint in- and out-degree distribution.

There are valid the following properties:

$$P(k) = \sum_{k_i} P(k_i, k - k_i) = \sum_{k_o} P(k - k_o, k_o)$$

$$P(k_i) = \sum_{k_o} P(k_i, k_o) \quad (1)$$

$$P(k_o) = \sum_{k_i} P(k_i, k_o)$$

If a network has no connections with the exterior, then the average in- and out-degree are equal:

$$\langle k_i \rangle = \sum_{k_i, k_o} k_i P(k_i, k_o) = \langle k_o \rangle = \sum_{k_i, k_o} k_o P(k_i, k_o) \quad (2)$$

Although the degree of a vertex is a local quantity, a degree distribution often determines some important *global* characteristics of random networks. Moreover, if statistical correlations between vertices are absent, $P(k_i; k_o)$ totally determines the structure of the network. One may define a “geodesic” distance between two vertices, i and j , of a graph with unit length edges. It is the *shortest-path length*, ℓ_{ij} , from the vertex i to the vertex j . If vertices are directed, ℓ_{ij} is not necessary equal to ℓ_{ji} . It is possible to introduce the distribution of the shortest-path lengths between pairs of vertices of a network and the average shortest-path length $\langle \ell \rangle \equiv \ell$ of a network. The average here is over all pairs of vertices between which a path exists and over all realizations of a network.

The quantity ℓ determines the average distance between two nodes measured on the shortest path joining the two nodes. For a d -dimensional network containing N vertices, one may demonstrate that $\ell \sim N^{1/d}$. In a fully connected network $\ell = 1$.

The average minimal path length, ℓ , may be roughly estimated for a network with random connections: if the average number of nearest neighbors of a vertex is z_1 , then about $(z_1)^\ell$ nodes are placed at a distance ℓ from the vertex or closer. Hence, $N \sim (z_1)^\ell$ and one gets: $\ell \sim \ln N / \ln z_1$. We can see that the average minimal path length may have small values even for very large networks. This smallness expresses mathematically the small-world effect described in the previous section.

In order to describe the connections in the environment closest to a vertex, the so-called *clustering coefficient* is introduced. For a network with undirected edges, the number of all possible connections of the nearest neighbors of a vertex i (having $z_1^{(i)}$ nearest neighbors) equals to: $z_1^{(i)}[z_1^{(i)} - 1]/2$.

If only $y^{(i)}$ of them are present, the clustering coefficient of this vertex is:

$$C^{(i)} \equiv \frac{y^{(i)}}{z_1^{(i)}[z_1^{(i)} - 1]/2}$$

In other words, $C^{(i)}$ is the fraction of existing connections between nearest neighbors of the vertex. The physical meaning of the clustering coefficient is the probability that two nearest neighbors of a vertex are nearest neighbors also of one another. Averaging $C^{(i)}$ over all vertices of a network yields the clustering coefficient of the network, C . Remember that the notion of clustering was firstly introduced in sociology [6].

In a graph having all pairs of vertices connected (*fully connected network*), $C = 1$. In a graph having the vertices connected only to their first order neighbours (*tree-like network*), $C = 0$. In a classical random graph having N vertices, M edges, and an average number of first order neighbours z_1 for each vertex, the following properties may be easily derived:

$$M = z_1 N / 2;$$

$$C = \frac{M}{N(N-1)/2} = \frac{z_1}{N-1}, \quad 0 \leq C \leq 1. \quad (3)$$

1.3 The classical random networks

The simplest and most studied network with undirected edges was introduced by P. Erdős and A. Rényi [7]. In their model the total number of vertices, N , is fixed and the probability that two arbitrary vertices are connected equals p .

This network contains, on average, $pN(N-1)/2$ edges. The degree distribution is binomial:

$$P(k) = C_k^{N-1} p^k (1-p)^{N-1-k} \quad (4)$$

so that the average degree is $\langle k \rangle = p(N-1)$. For large values of N , eq. (4) has the form of the Poisson distribution:

$$P(k) = \frac{\langle k \rangle^k}{k!} \exp(-\langle k \rangle) \quad (5)$$

One can see that $P(k)$ decreases rapidly at large degrees k . In literature, this kind of graph is usually called *classical random network* [8].

However, there is a significant problem with the random graph as a model of social networks [9]. Let us consider a network of acquaintances. The problem is that people’s circles of acquaintances tend to overlap to a great extent. Your friend’s friends are likely also to be your friends, or to put it another way, two of your friends are likely also to be friends with one another. This means that in a real social network it is not true to say that a person P has z^2 second neighbors, since many of those friends of friends are also themselves friends of person P . This property is the *clustering* of network described in the previous section by eq. (3).

A random graph does not show clustering. In a random graph the probability that two of person P ’s friends will be friends of one another is no greater than the probability that two randomly chosen people will be. On the other hand, clustering has been shown to exist in the social networks [10]. This is why the clustering coefficient C , was defined as the average fraction of pairs of neighbors of a node which are also neighbors of each other.

1.4 The Watts-Strogatz model

In § 1.2 we have shown that the random networks display the so-called “*small-world effect*” that consists in the fact that the averaged minimal path length is small even in the case of the large networks. Moreover, Watts and Strogatz [11] pointed out another important property of the natural and social networks: in spite of the fact that the shortest path length is small – more exactly, of the order of $\log N$ – the clustering coefficient may display large values, much larger than the values corresponding to the random networks. The networks that are described by both above properties are called, in literature, “*small-world networks*”. This kind of networks belongs to a transition class from ordered to disordered structures.

Obviously, this class of systems has interesting properties: they were constructed starting from *ordered* networks by various methods. The most common methods are the rewiring of links and the addition of random links between vertices. In this section we refer to the networks generated in these ways.

The original network of Watts and Strogatz is constructed in the following way:

- A regular one dimensional lattice with periodical boundary conditions is present. Each of L vertices has $z \geq 4$ nearest neighbors ($z = 2$ was not appropriate for Watts and Strogatz since, in this case, the clustering coefficient of the original regular lattice is zero).

- One takes all the edges of the lattice in turn and with probability p rewires to randomly chosen vertices. In such a way, a number of far connections appears. Obviously, when p is small, the situation has to be close to the original regular lattice. For large enough p , the network is similar to the classical random graph.

Watts and Strogatz studied the crossover between these two limits. The main interest was in the average minimal path length, ℓ , and the clustering coefficient (recall that each edge has unit length). The simple but exciting result was the following. Even for the small probability of rewiring, when the local properties of the network are still nearly the same as for the original regular lattice and the clustering coefficient does not differ essentially from its initial value, the average minimal path length is already of the order of the one for classical random graphs (see figure 1)

This result can be understood in an intuitive manner. In fact, the average minimal path length is very sensitive to the shortcuts. One can see that it is enough to make a few random rewirings to decrease ℓ by several times. On the other hand, several rewired edges cannot crucially change the local properties of the entire network. This means that the global properties of the network change strongly already at $pzL \sim 1$, when there is one shortcut in the network, i.e., at $p \sim 1/(Lz)$, when the local characteristics are still close to the regular lattice.

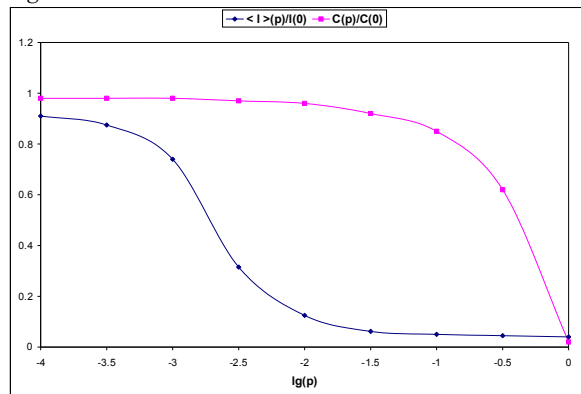
A large number of works focus on the distribution of diseases on such networks [12].

In Figure 2, the fraction of "infected" nodes in the network n_i/L is shown vs. time passed after some vertex was infected. At each time step, all the nearest neighbours of each infected vertex fall ill. At short times, $n_i/L \sim t^d$ but then, at longer times, it increases exponentially until the saturation at the level $n_i/L = 1$.

The Watts-Strogatz model and its variations seem exactly solvable analytically. Nevertheless, the only known exact result for the Watts-Strogatz model is its degree distribution. It was found to be a rapidly decreasing function of a Poisson kind [13].

Coefficient C in the Watts-Strogatz model versus the fraction p of the rewired links

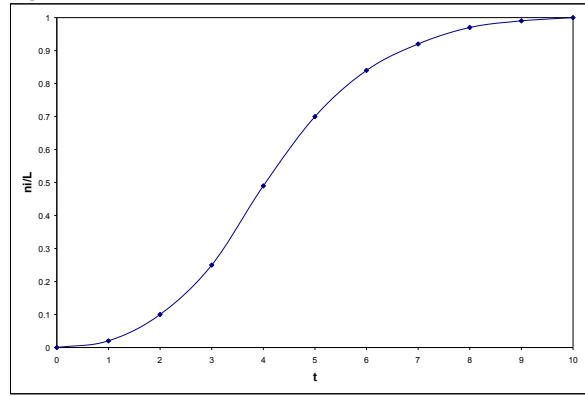
Figure no 1



The numerical simulation was performed using NetLogo soft. One can notice that C is practically constant in the range where ℓ decreases sharply.

Spreading of diseases in a "small-world" network

Figure no 2



The average fraction of infected nodes n_i/L is plotted vs. The elapsed time from the instant when the first vertex fell "ill". The numerical simulation was performed using NetLogo soft.

1.5 Small-world solvable models

The properties of the small-world networks may be studied on a simplified model that allows an analytic treatment. One starts from a 1-dimensional network composed of L nodes placed on a ring and chained by N links, each of them having the length equal to unit. In this case, the coordination number $z = 2$ and the clustering coefficient $C = 0$. We add a central vertex which connects to the initial nodes with a probability p by links having the length $1/2$. More generally, we can add a number of extra vertices in the middle which are connected to a large number of sites on the main lattice, chosen at random (Figure 3). In fact, this model is similar to the Watts–Strogatz model in that the addition of the extra sites effectively introduces shortcuts between randomly chosen positions on the lattice, so it should not be surprising to find that this model does display the small-world effect.

Such nodes which have unusually high coordination numbers or which are linked to a widely distributed set of neighbours are frequently met in the real life. It seems that the "six degrees of separation" effect is due to a few people who are particularly well connected. We show below that even in the case where only one extra site is added, the model displays the small-world effect if that site is sufficiently highly connected ([8, 9]).

For the initial network $\ell(p=0) = L/4$, and for completely connected network $\ell(p=1) = 1$.

In Appendix we derive the distribution $P(\ell)$ of the minimal path lengths. At the limit $L \rightarrow \infty$ and $p \rightarrow 0$, introducing the quantities $\rho \equiv pL$ (the average number of new added links) și $z \equiv \ell / L$, the distribution is of the form:

$$Q(z, \rho) \equiv LP(\ell, p) = 2[1 + 2\rho z + 2\rho^2 z(1 - 2z)]\exp(-2\rho z) \quad (6)$$

The distribution described by Eq. (7) is plotted in figure 5. In the same limit, the average minimal path length depends on the average number of new added connections as:

$$\frac{\langle \ell \rangle}{L} \equiv \langle z \rangle = \frac{1}{2\rho^2} [2\rho - 3 + (\rho + 3)\exp(-\rho)] \quad (7)$$

This function is plotted in figure 6. One can easily see that

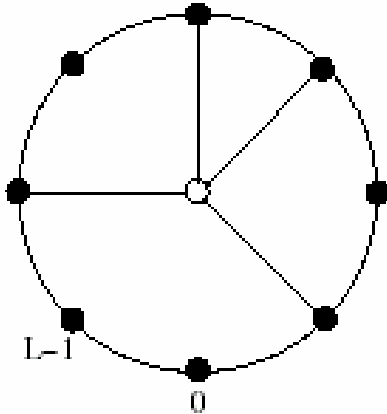
$$\langle z \rangle_{(\rho=0)} = 1/4,$$

while

$$\langle z \rangle_{(\rho \gg 1)} \rightarrow 1/\rho, \text{ i.e. } \ell \rightarrow 1/p.$$

A “small world” analytically solvable

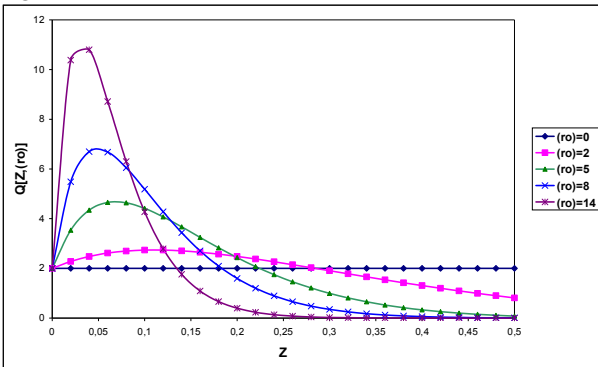
Figure no 3



The L vertices are situated on a ring and are connected by links having the length equal to unit. With probability p , some of these nodes are connected to the central vertex by links having the length equal to $1/2$. This structure can model a real situation. The L families of a mountain village have few links among them except for the nearest neighbours. Nonetheless, some additional links may appear during the meetings of people at church [8].

The distribution $Q(z, \rho) = LP(l, p)$ of the normalized minimal path lengths $z \equiv \ell/L$ in a “small world” network (eq. (7))

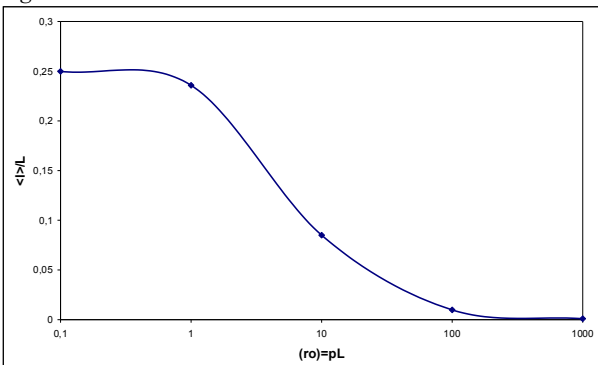
Figure no 4



Here L is the number of nodes of the network, while $\rho = pL$. We considered $L = 50$. The represented plots correspond to $\rho = 0, 2, 5, 8, 11, 14$.

The normalized minimal path length ℓ/L for a “small world” network, versus the number $\rho = pL$ of the new added links, in semi-logarithmic plot (eq. (8))

Figure no 5



2. EMPIRICAL RESULTS

We studied an acquaintance network composed of 40 pupils randomly chosen from various levels of study. We avoided to choose pupils from the same class and did not consider the links with teachers, focusing on the interaction among pupils.

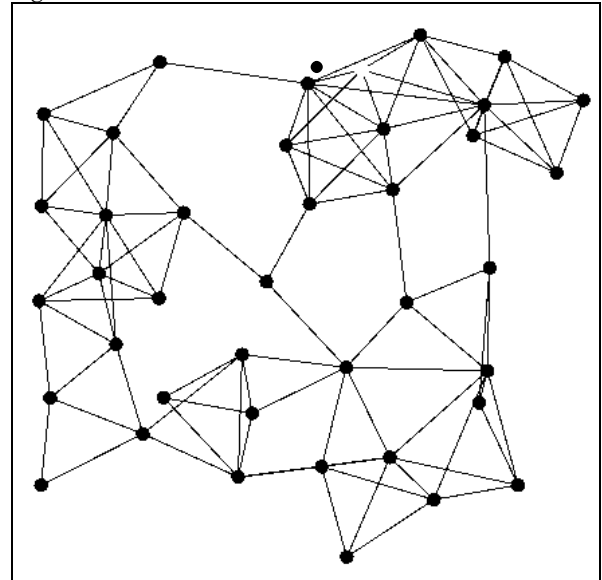
2.1 Remaking Milgram’s experiment

A number of 10 tickets were given to 10 of the youngest pupils (11-13 y. o.) and 10 tickets were given to 10 of the oldest pupils (16-18 y. o.). The instruction was to hand on to addressee (whose name was written on the ticket) by person-to-person contacts. Each intermediate pupil added his own name/identification number to the ticket and gave it forward.

All the tickets reached to their addressees. The average number of steps was found about 2.7. Redoing their trajectories we found the structure of the network drawn in figure 6. The empirical clustering coefficient was found $C = 0.21$.

The structure of the pupils’ network as it was obtained remaking the Milgram’s experiment

Figure no 6



Further we used the NetLogo soft to generate a small-world network having the same characteristic values (ℓ and C). The corresponding small-world network was generated taking a probability of rewiring $p = 0.33$ (figures 7a and 7b).

Some results are synthesized in Table 1

Table 1: The number of nodes N , average degree of separation ℓ , and clustering coefficient C , for three real-world networks. The last column is the value which C would take in a random graph with the same size and coordination number.

Network	N	ℓ	C	C_{random}
pupils	40	2.7	0.21	0.05

Rewiring the links one-by-one we found that in the domain in which C decreases slowly from 0.29 to 0.21, ℓ decreases sharply from 5.38 to the final value 2.73.

2.2 The weighted small-world network

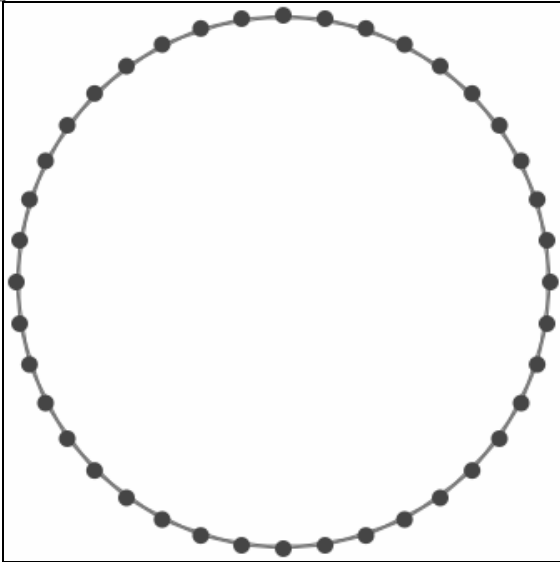
In the second part of the experiment we asked to each pupil implied in experiment to describe his/her friendship with the person whom he/she gave the ticket, by one of the variants:

- i) Close friendship (3 points);
- ii) Friendship (2 points)
- iii) Casual acquaintance (1 point).

The total number of points was 276. In the empirical network, at the corresponding link we attached one of the the weights: $3/276$, $2/276$ or $1/276$. In order to complete the network, we assign to the unrealised links the weight $w = 0$. In this way, a weighted network is obtained and its adjacency matrix is completely determined.

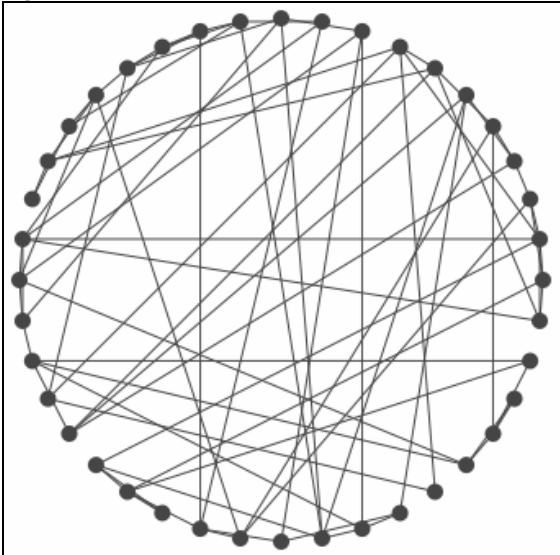
The initial regular network used for generating the small-world network by Watts-Strogatz method. The setting values: $C = 0.5$; $\ell = 5.38$; $p = 0.5$

Figure no 7a



The small-world network that simulates the pupils' network, generated by rewiring all the links. The characteristic values: $C = 0.2$; $\ell = 2.73$; $p = 0.33$

Figure no 7b



Now we consider the pupils as vertices of this fully connected weighted network, having attached to the edges their weights:

$$w_{ij} = \hat{A}_{ij} \quad (8)$$

fulfilling the relations:

- i) $0 \leq w_{ij} \leq 1$; and
- ii) $w_{ij} = w_{ji}$.

Another measure of the two vertices connection strength is the *overlapping coefficient* [10] defined for an unweighted network as:

$$O_{ij} = \frac{K_{ij}(k_i + k_j)}{2(N-1)(N-2)}, \quad i \neq j, \quad (9)$$

where N is the number of vertices, k_i and k_j are the degrees of the two considered nodes, and K_{ij} is the number of common neighbours. For an unweighted network, O_{ij} does not account the edge directly linking i and j but rather to what extent the two nodes "overlap" by means of their common neighbors.

For a weighted network, Eq. (9) may be generalized as:

$$O_{ij} = \frac{1}{2(N-1)(N-2)} \sum_{l=1, l \neq i, j}^N (w_{il} + w_{jl}) \left(\sum_{p=1, p \neq i}^N w_{ip} + \sum_{q=1, q \neq j}^N w_{jq} \right) \quad i \neq j. \quad (10)$$

One can easily see that $0 < O_{ij} < 1$, and $O_{ij} = 1$ only for all $w_{ij} = 1$, *i.e.* fully connected non-weighted network. However, for a weighted network, O_{ij} can never be zero.

Summing all O_{ij} 's for one vertex, one gets an alternative measure of the *vertex strength*:

$$O_i = \sum_{j=1}^N O_{ij} \quad (11)$$

Table 2 The overlapping index of vertices in the weighted network of pupils. The vertices (pupils) are assigned an identification number from v01 to v40.

v01	12.56	v15	8.71	v29	8.07
v02	12.23	v16	8.65	v30	8.05
v03	11.97	v17	8.65	v31	7.94
v04	11.79	v18	8.60	v32	7.84
v05	10.56	v19	8.55	v33	7.73
v06	9.55	v20	8.52	v34	7.73
v07	9.47	v21	8.52	v35	7.59
v08	9.42	v22	8.47	v36	7.42
v09	9.34	v23	8.34	v37	7.11
v10	9.23	v24	8.23	v38	6.79
v11	9.15	v25	8.13	v39	6.79
v12	9.10	v26	8.10	v40	6.29
v13	8.94	v27	8.10		
v14	8.76	v28	8.07		

The results for the considered weighted network are shown in Table 2, in decreasing order of O_i .

3. PHASE TRANSITIONS IN THE WEIGHTED SMALL-WORLD NETWORK

3.1 Statistical mechanics of the weighted networks

In the same way as in Ref. [14] we can elaborate a sort of statistical mechanics of the weighted network. Firstly, we can try to find the probability of having the weight w_{ij} assigned to the edge $i - j$ on the hypothesis that in the isomorphic multi-graph the links are attached *randomly* between the edges. If we have N vertices, the corresponding number of possible connections becomes:

$$\binom{N}{2} = N(N-1)/2$$

and the probability of having w_{ij} simple edges between the vertices (i) and (j) is read:

$$p_{ij} = C \frac{1}{\binom{N}{2}^{w_{ij}}} = C \left(\frac{N(N-1)}{2} \right)^{-w_{ij}}.$$

Introducing the notation: $\Lambda = N(N-1)/2$, after the normalization:

$$\sum_{\substack{i,j \\ i>j}} p_{ij} = 1$$

the above probability becomes:

$$p_{ij} = \frac{\Lambda^{-w_{ij}}}{\sum_{\substack{i,j \\ i>j}} \Lambda^{-w_{ij}}} \quad (12)$$

Finally, one can turn back to the initial network with $0 \leq w_{ij} \leq 1$; defining:

$$\beta = \ln \Lambda = \ln \frac{N(N-1)}{2}, \quad (13)$$

Eq. (12) gets the more familiar ‘‘canonical’’ form:

$$p_{ij} = \frac{\exp(-\beta w_{ij})}{\sum_{\substack{i,j \\ i>j}} \exp(-\beta w_{ij})}. \quad (14)$$

Note that the parameter β in Eq. (13) is not related to any temperature. Nonetheless, β can be seen as an *internal* parameter of the statistical ensemble of N -vertex networks, in the same way in which the temperature is for the canonical ensemble. Unlike the thermodynamic meaning, the changing of β does involve neither warming nor cooling process, but it simply means the shifting from a statistical ensemble to another one.

On the above assumptions, some basic thermodynamic quantities can be defined in correspondence to the classical statistical mechanics, as follows:

- The partition function:

$$Z = \sum_{\substack{i,j \\ i>j}} \exp(-\beta w_{ij}) \quad (15)$$

- The entropy:

$$\begin{aligned} S &= - \sum_{\substack{i,j \\ i>j}} p_{ij} \ln p_{ij} = \\ &= - \sum_{\substack{i,j \\ i>j}} \frac{\exp(-\beta w_{ij})}{\sum_{\substack{i,j \\ i>j}} \exp(-\beta w_{ij})} \ln \frac{\exp(-\beta w_{ij})}{\sum_{\substack{i,j \\ i>j}} \exp(-\beta w_{ij})} \end{aligned} \quad (16)$$

- The free energy:

$$F = \frac{1}{\beta} \ln Z = \frac{1}{\beta} \ln \sum_{\substack{i,j \\ i>j}} \exp(-\beta w_{ij}) \quad (17)$$

- The average energy / link:

$$\langle w \rangle = \sum_{\substack{i,j \\ i>j}} p_{ij} w_{ij} = \sum_{\substack{i,j \\ i>j}} \frac{w_{ij} \exp(-\beta w_{ij})}{\sum_{\substack{i,j \\ i>j}} \exp(-\beta w_{ij})} \quad (18)$$

- The ‘‘thermal’’ susceptibility:

$$\begin{aligned} \Lambda \chi_T &= \frac{d \langle w \rangle}{d(1/\beta)} = -\beta^2 \frac{d \langle w \rangle}{d\beta} = \quad (19) \\ &= \beta^2 [\langle w^2 \rangle - \langle w \rangle^2] \end{aligned}$$

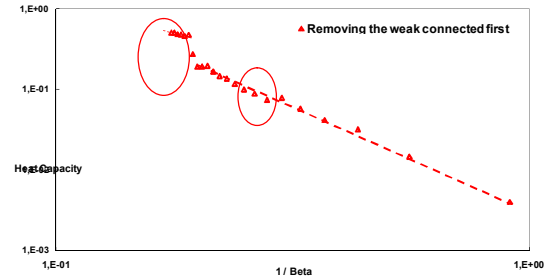
3.2 Deconstructing the weighted network

In order to get some more information about the structure of weighted network we examine it during a thinking process of decomposition, which consists in removing the vertices one by one, in decreasing and, respectively, increasing order of the overlapping coefficients from Table 2. Keeping somehow the ‘‘thermodynamic’’ analogy, the quantities defined by Eqs. 13-16 are studied as functions of β , which is a measure of the number of remainder vertices, and $(1/\beta)$, which is a measure of the number of removed vertices.

Some results are plotted in figures 8-9.

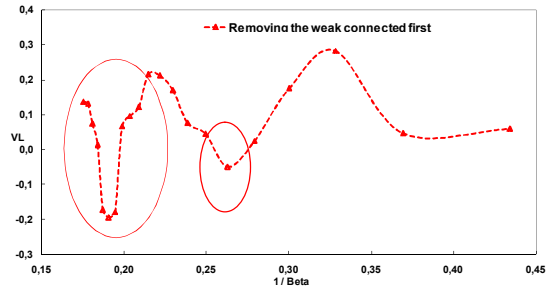
The thermal susceptibility variation in the network deconstruction process, in log-log plot. The weak connected nodes were removed first

Figure no 8a



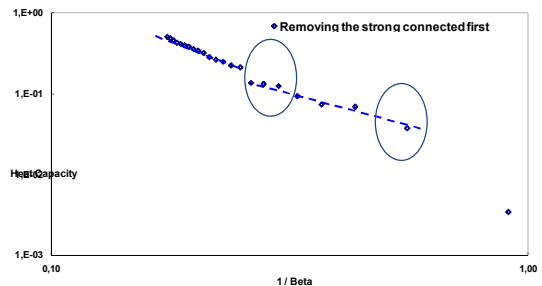
The fourth central cumulant V_L variation in the vicinity of the critical points marked out in figure 8a

Figure no 8b



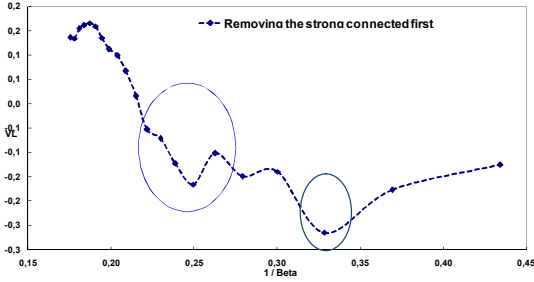
The thermal susceptibility variation in the network deconstruction process, in log-log plot. The strong connected nodes were removed first

Figure no 9a



The fourth central cumulant V_L variation in the vicinity of the critical points marked out in figure 9a

Figure no 9b



During the deconstruction process, the thermal susceptibility (the heat capacity) displays, by far, the most interesting behaviour. This quantity has two significant discontinuity points. We test these points by calculating the fourth central cumulant:

$$V_L = 1 - \frac{\langle w_{ij}^4 \rangle}{3 \langle w_{ij}^2 \rangle^2} \quad (20)$$

one finds that V_L has local minima at the values corresponding to the largest fluctuations of $\Lambda\chi_T$. This behavior indicates the presence of two critical points [15].

In literature, a first order phase transition was considered so far the transition from the regular lattice to the small-world network [16]. As well, phase transitions appear during the processes of epidemics spreading and percolation [17]. The behavior of the thermodynamic quantities defined above accredits a new kind of phase transitions that appear during the simulated process of the network deconstruction.

4. CONCLUSION

We reviewed briefly several of the most significant steps on the way from the Stanley Milgram's "six degrees of separation" to the modern approaches of the small-world networks.

As long as the most human interactions take place directly between individuals, we may expect that a large number of social networks to display the small-world effect. That is why, in the recent literature, the spread of rumours, information and diseases are mostly studied on small-world networks.

In the second section we studied the small-world effect on the particular network of pupils in the school. We found that, in spite of some unavoidable sources of error, any two randomly chosen pupils can be connected by only a short chain of intermediate acquaintances. Particularly, the investigated network may be easily simulated by Watts-Strogatz method of links rewiring.

One alternative to the Watts-Strogatz method is to explain the small-world effect by existence of few nodes in the network which have unusually high coordination numbers or which are linked to a widely distributed set of neighbours. An alternative model of this kind was firstly elaborated by S. N. Dorogovtsev and J.F.F. Mendes and was proved to be analitically solvable.

We proved this assumption in the last section. In order to approach better the real-life situation we attached some weights to the links, getting in this way a weighted small-world network. During the thinking process of network deconstruction, some thermodynamic quantities carry forth critical behaviour indicating phase transitions occurrence. The meaning behind this finding is the existence of several nodes whose removal leads to qualitative changes in the network structure. On this way we may conclude that, to a large extent, the small-world effect is due to a few people who are

particularly well connected. Their role in the small-world network running and evolution remains a task to study in the future.

APPENDIX

The analytic solution for the "small world" model in § 1.5

Let us consider the network in figure 4 with directed edges. The case of undirected edges is also analytically solvable, in a similar way, but the mathematical work is more complicated. Nonetheless, the results do not differ qualitatively in the two cases.

In order to get the distribution $P(\ell)$ of minimal paths, an intermediate step is to infer a recurrence relation for $P(\ell, k)$ i.e. the probability that the minimal path length between two nodes be ℓ when the "Euclidian" distance between nodes (measured on the ring) is k . Obviously, the property $\sum_{l=1}^k P(l, k) = 1$ is fulfilled. We calculate the quantities $P(l \leq k, k)$ for several small values of ℓ and k , and, starting from them we infer a general solution.

To find $P(\ell, k)$ for the model in figure 3 we have to take into account all the possible combinations of the edges connecting the center with the vertices $i = 1, 2, \dots, k$. To each of these edges corresponds a probability p (and a complementar probability $1-p$ the link be not realised). The lengths of edges between two adjacent nodes is 1, while the links joining these nodes to center is $1/2$. For small values of ℓ and k we easily get:

$$\begin{aligned} P(1, 1) &= 1; \\ P(1, 2) &= p^2, \\ P(2, 2) &= 1 - p^2; \\ P(1, 3) &= p^2, \\ P(2, 3) &= 2p^2(1-p), \\ P(3, 3) &= 1 - p^2 \cdot 1 - 2p^2(1-p); \\ P(1, 4) &= p^2, \\ P(2, 4) &= 2p^2(1-p)^1, \\ P(3, 4) &= 3p^2(1-p)^2 \\ P(3, 3) &= 1 - p^2[1 \cdot (1-p)^0 + 2(1-p)^1 + 3(1-p)^2]; \end{aligned} \quad (A1)$$

.....

$$\begin{aligned} P(\ell < k, k) &= \ell p^2 (1-p)^{\ell-1}, \\ P(\ell = k, k) &= 1 - p^2 \sum_{i=0}^{k-1} i (1-p)^{i-1} \end{aligned} \quad (A2)$$

The minimal paths distribution is:

$$P(\ell) = \frac{1}{L-1} \sum_{k=\ell}^{L-1} P(\ell, k) = \frac{1}{L-1} \sum_{k=\ell}^{L-1} P(\ell, k). \quad (A3)$$

Substituting (A2) in (A3) one gets:

$$P(\ell) = \frac{1}{L-1} [1 + (\ell-1)p + \ell(L-1-\ell)p^2] (1-p)^{\ell-1} \quad (A4)$$

The average minimal path length is:

$$\langle \ell \rangle = \sum_{\ell=1}^{L-1} \ell P(\ell) \quad (A5)$$

For simplicity, we drop further the brackets, keeping the notation ℓ for the average minimal path length:

$$\ell = \frac{1}{L-1} \left[\frac{2-p}{p} L - \frac{3}{p^2} + \frac{2}{p} + \frac{(1-p)^n}{p} \left(n - 2 + \frac{3}{p} \right) \right] \quad (A6)$$

In order to get a description of the transitory regime between the regular lattice and the random network, we consider the limits $L \rightarrow \infty$ and $p \rightarrow 0$ under restriction that the quantities $\rho \equiv pL$ and $z = \ell/L$ are fixed. In these conditions, from eq. (A4) we get the continuous distribution $Q_{dir}(z, \rho)$:

$$Q_{dir}(z, \rho) \equiv LP(l, p) = 1 + \rho z + \rho^2 z(1-z)\exp(-\rho z) \quad (A7)$$

where $0 \leq z \leq 1$.

Further, from eq. (A6) (or (A7)) we get the normalized average minimal path length:

$$\frac{\ell}{L} \equiv \langle z \rangle = \frac{1}{\rho^2} [2\rho - 3 + (\rho + 3)\exp(-\rho)] \quad (A8)$$

Eqs. (A7) și (A8) are valid for the networks with directed edges. The relation (7) from §1.5, that is also valid for networks with undirected edges, can be derived from the eqs. (A7) and (A8) by means of the variable changes: $z \rightarrow 2z$ and $Q(z, \rho) = 2 Q_{dir}(2z, \rho)$.

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PROCEDURE TO DETECT MEAN REVERSION IN (STOCK) PRICES

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Abstract: A method helping in detecting and extracting the mean reversion trend of stock prices is described hereby, starting from the arithmetic Ornstein-Uhlenbeck mean-reversion model.

Keywords: mean reversion, stocks, trend, strategic allocation

1. INTRODUCTION

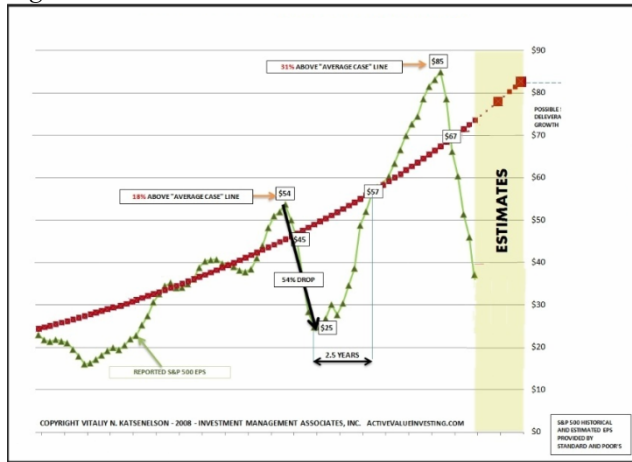
There have been a large number of studies (see among others *Poterba and Summers* [1], or *Spiersdijk, Bikker and van den Hoek* [2]) trying to infer if stock prices exhibit generally mean reversion or not. The present paper is not trying to answer such a question, but rather to provide a practical, automatisable approach in order to identify the stocks which have a stable trend, on which one can bet.

From practical point of view, it is important to get the general trend of stock prices, especially when deciding the strategic, long time, asset allocation. However, it is not obvious which stocks exhibit mean reversion and how to calculate it, while the noise might play an important role.

As one can see from *Figure 1*, the mean-reversion property is not a striking one, and most of the stocks have such jumps that this algorithm does not guarantee always finding the mean to which the stock reverts.

Example of stock (index) exhibiting mean-reversion

Figure no 1



As in most of the analysis, one should consider only data points where no significant financial events showing up, such that the overall financial system is not perturbed. In addition, the historical time window should be at least of the order of the time period on which the mean reversion is inferred for.

The second section of this paper describes the mathematical formalism used in deciding on the parameters signaling a mean-reverting trend. The relationships that they should satisfy is inferred and described in this part.

The third section goes through three possible methods to validate the stability of the inferred values of the parameters, with some visual examples on how distributions ideally should look like.

2. PARAMETERS ESTIMATION

One starts from the arithmetic Ornstein-Uhlenbeck mean reversion model as developed by Schwartz [3], with m being the mean to which the reversion is done and h being the speed of the reversion:

$$dx = h(m-x)dt + s dz \quad (1)$$

Equation(1), describing the variation of the logarithm of the stock price P , $dx = \frac{dP}{P} = d(\ln P)$ is a continuous time version of the first-order autoregressive process, AR(1) in discrete time (see *Dixit and Pindyk* [4]), as dx represents the limiting case (Dt tends to zero) of the AR(1) process:

$$x_t - x_{t-1} = m(1 - e^{-hDt}) + (e^{-hDt} - 1)x_{t-1} + e_t \quad (2)$$

Hereby e_t is the noise, normally distributed with mean zero and standard deviation s_e , and:

$$s_e^2 = \frac{[1 - \exp(-2h)]}{2h} s^2 \quad (3)$$

Considering the Taylor expansion of Equation(2), for the limit case $Dt \rightarrow 0$, Equation(4) is obtained:

$$\begin{aligned} x_t - x_{t-1} &\sim m(1 - (1 - h dt)) + ((1 - h dt) - 1)x_{t-1} + e_t = \\ &= mh dt - hx_{t-1} dt + e_t \\ &= h(m - x_{t-1})dt + e_t \quad (4) \end{aligned}$$

In order to estimate the parameters of mean-reversion, one runs the regression:

$$x_t - x_{t-1} = a + b x_{t-1} + e_t \quad (5)$$

The two parameters, m and h , can be calibrated as follows:

$$\begin{aligned} m &= -a/b; \quad (6) \\ h &= -\ln(1 + b); \quad (7) \end{aligned}$$

From Equation(3) and Equation(7)

$$s = s_e * \sqrt{\frac{2 * \ln(1 + b)}{(1 + b)^2 - 1}} \quad (8)$$

where s_e is the standard deviation from the regression, calculated from the residuals distribution e_t .

The unit in the above equation is percentage by time unit, and of course the time unit is the same time-series unit (if using monthly time-series, it is % per month, etc.). If one uses monthly data and wants to obtain annual values for the parameters, one has multiply the value of h , obtained

in the equation above, by 12 while multiplying the value of s obtained *Equation(8)* by the square-root of 12.

The S&P 500 index is an excellent toy-data model, especially given its clear mean reverting trend for the analysed period. In real life, especially for shorter time periods, the trend is mostly not visually observable.

Starting from *Equation(4)*, one obtains the next formula for the fitted data, by considering $dt=1$:

$$x_t = m(1-(1-h)^{t-1}) + (1-h)^{t-1} * x_1 \quad (9)$$

3. MODEL VALIDATION

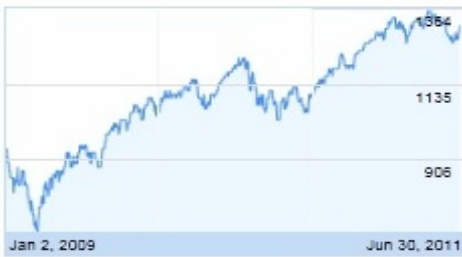
As one can always find a solution for the set of calibration parameters, one should decide when such values make sense, and how well they describe the actual behaviour.

In an exemplifying analysis, one has used the S&P 500 daily closing prices, from 01.01.2009 to 30.06.2011 (one and a half years). The actual prices S_t , presented in the historical chart from *Figure2*, have been translated to the logarithmic scale, $x_t = \ln(S_t)$.

Historical chart of S&P 500, for the considered period

Figure no 2

Historical Chart of S&P 500



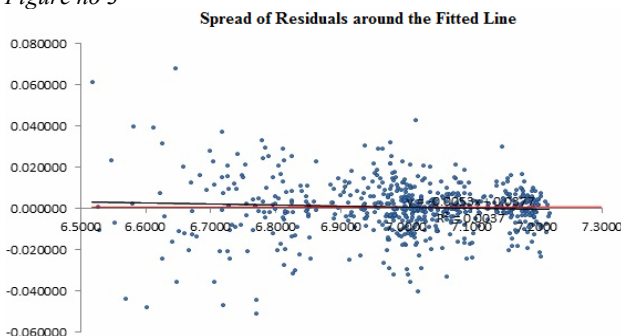
Below there are three possible complementary methods one can validate the final results with: goodness of fit/distribution of residuals, cross-validation and the Jackknife method/bootstrapping.

3.1. Goodness of fit/Distribution of the residuals

An ideal regression should look like in *Figure3*, where the blue data points are distributed on both sides of the red fitted line. *Figure 3: Almost ideal distribution of data for linear regression.*

Spread distribution of data points around the fitted line

Figure no 3



On the other side, the residuals should be distributed more or less normally, as *Equation(2)* assumes.

Histogram of residuals, bell shaped, with a standard deviation $s_e=0.012923$, a kurtosis of 3.28 and a skewness of -0.58

Figure no 4

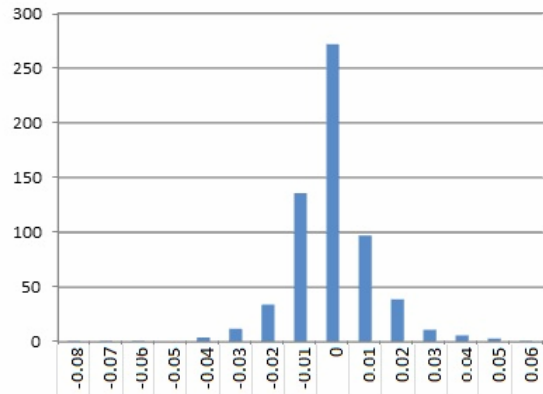


Figure4, containing the histogram representation of the distribution showed in *Figure3*, and its fitted parameters indicate a distribution closed to a perfect Gaussian one (which would be characterized by an expected kurtosis value of 3 and an expected skewness of 0.00).

The fitted regression parameters were as it follows:

$$a = 1.710 * 10^{-5}$$

$$b = 1.065 * 10^{-4}$$

They lead to a standard error s giving good confidence in the results:

$$m = -0.1605$$

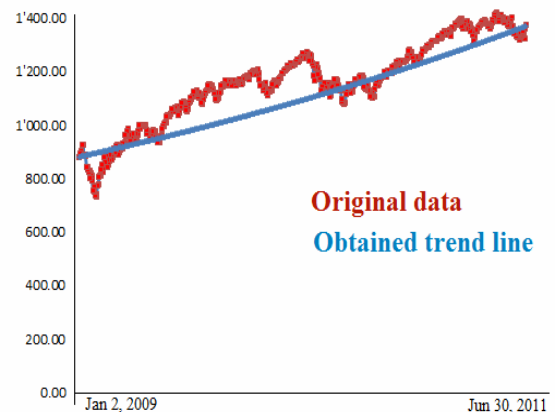
$$h = -1.065 * 10^{-4}$$

$$s = 0.012922$$

Making use of *Equation(9)*, one obtains the results from *Figure5*:

The fitted data, in blue, do show the increasing mean-reverting trends line of the original data, in red

Figure no 5



3.2. Cross-validation

The cross-validation excludes one observation at a time, when estimating regression coefficients, and then uses these coefficients to predict the excluded data point.

This procedure is repeated for all data points.

At the very end, the estimated values can be compared with the ones obtained making use of the full distribution. There are no methods for testing statistical significance with cross-validation.

When cross-validation is going to be used as a mean-reverting feature selection, to predict the future values, it is good to remember that it might be possible to over-fit the crossed validated statistic and end up with a model that performs under expectations. As the effects of optimised cross-validation statistic can be a too optimistic performance estimate (see for example *Ambroise and McLachland* [5])

However, averaging the quality of the predictions across the validation sets yields an overall measure of prediction accuracy.

3.3. Data-Resampling: Jackknife & Bootstrap

As in the previous *Subsection 2.2*, within the Jackknife method one excludes one observation at a time, when estimating regression coefficients. In the case when the observation i is excluded, one gets *Equation(9)*:

$$x_t - x_{t-1} = a_i + b_i x_{t-1} \quad (9)$$

From this new set of replicates of the original statistic, an estimate for the bias and an estimate for the standard error of a and b parameters can be calculated. The Jackknife method is an useful approach when the dispersion of the distribution is wide or when extreme values are present in the data set. For an overview of this method one could use *Yu* [6].

Alternatively, especially when the data set is of about twenty points, one can make use of the bootstrapping method. The standard bootstrapping method, applied to, say twenty events, uniformly generates a random number between 1 and 20, as many times as the enriched sample has to count (three hundred events is among the most used numbers). By arbitrarily ordering the twenty events, from 1 to 20, every time the number 3 shows up, the third event is added to the enriched sample. When the number of events is

much lower, say about five events, bootstrapping is still possible, but making use of low-sample specific, dedicated techniques. Detailed algorithms for bootstrapping regression models can be found, for example, in *Davison and Hinkley* [7].

4. CONCLUSIONS

The method presented here gives an additional, practical tool to the portfolio risk managers in order to decide which financial instruments their portfolios should contain.

The method is intuitive, simple, and its results are easy to interpret, as well as being sufficiently uncomplicated to allow automation of the whole procedure, including the validation tests.

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MULTIDISCIPLINARY APPROACH TO AD HOC DE FACTO STANDARDIZATION: STANDARDS AND ORGANIZATIONAL DESIGN

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Abstract: *This article presents multidisciplinary approach to problems of “ad hoc de facto” standardization, utilizing synergy of intersection between organizational design and standardization. Ad hoc de facto standardization is standardization without support of standards developing organizations (SDO). The main task “in standardization process is to bridge the gap between the impulses of science and technology with the degree of acceptance at the user side” (Blind, 2004). However, standardization are often perceived by management as rigid, bureaucratic and opposed to innovative practices, although there are contrary examples. Related to that, development of consortia based standards is started to be covered by literature. As companies are urged to cooperate, and avoid problems of protracted formal standardization processes, “de facto” standardization becomes increasingly significant and is utilized in many different areas and industries. Companies find easier way to resolve matching problems with this approach, and in order for it to be functional, multidisciplinary approach, where standardizations is combined with various other management and technical disciplines is crucial. Practical example given in this article is development of non-public standard related to job classification in 21 communal and public-utility companies operating in Serbia based on the staff structure analysis, performance analysis, analysis of basic earnings and theoretical background.*

Keywords: *Ad hoc de facto standardization, Job classification, Public service companies, Restructuring.*

1. INTRODUCTION

Standardization is not main specialization of most managers, and in wide range of industries general dislike toward standards exists among managers of various hierarchical level, experience, scope and industry. In addition to having main expertise in discipline other than standardization, managers experience problems with “over routined” documented quality management systems often related to ISO 9001 and organizational work standardization. Negative attitude towards standards are predominantly based on not understanding how much freedom is allowed to organizations in searching its own successful way to accomplish ISO 9001 requirements and forced implementation of ISO 9001. Related research confirms that benefits suppose efforts well beyond the minimum requirements of the standards (Gotzamani, 2005) and encompass other approaches, initiatives and tools (Mijatović and Stokić, 2010). On the other side, innovation and standardization are often considered as mutually exclusive for corporate management, because the remaining space for innovative work is reduced along with the progress of work standardization – many cases confirm that they are complementary to each other (Kondo, 2000). However, uni-discipline and one-dimensional approach to standards as its own means and ends, along with resistance of managers in most cases cannot yield such positive results.

One discipline or knowledge can analyse characterize, classify, and finally specialize, but sciences or academic disciplines can generate multi-, trans-, inter-, and even

cross-disciplinary approaches, investigations, researches, valuing and practicing their co-integration or their intersection’s area or common fields. Together

The ideas of consensus, unity and simultaneity are the major factors in all these theoretical attitudes and scientific practices and the results or findings based on them can be exceptionally efficient and effective. The multi-, trans-, inter-, and cross-disciplinary approaches can lead to an important change (e.g. an increase or a decrease in the number of sciences or academic disciplines) but the most important result of all remains the coherence and the holistic. The holistic approach in sciences and academic disciplines is less and less of the one-sided type (an uni-disciplinary way of thinking), and, no doubt, the need is increasingly felt for continuous approaches of the multi-, trans-, inter-, and cross - disciplinary type, namely the need for modern research based on team work and through projects, along with the obvious obsolescence of unidirectional or exclusive observation, and the ultimate goal is also one of adequacy within today’s globalized social and economic context. But above all, cross-disciplinary knowledge represents the best scientific translation, that which explains aspects of one specific science or academic discipline in terms of another. (Săvoiu and Iorga, 2011). Indubitable that some characteristic approaches exist and persist, creating a so called specific national traditions within disciplines (Ohlsson, 1999).

2. ENVIRONMENTAL INFLUENCE ON IMPORTANCE OF NEW FORMS AND MULTI -DISCIPLINARY APPROACH TO STANDARDIZATION

Current business environment is heavily influenced by prolonged economic crisis and on the other hand rapid advancement of technologies, especially ICT and its influence on organizational dimensions and forms. Swift development of the globalized and increasingly complex concept of knowledge economy not only demands new standards, but is also challenging the form of standardization (Blind, 2004). Common approach to definitions of standardization and standards has strictly defined terms and very narrow focus. According to ISO/IEC (1991) standardization is the activity of establishing, with regard to actual and potential problems provisions for common and repeated use, aimed at the achievement of the optimum degree of order in a given context. According to ISO/IEC (2004) and CEN (<http://www.cen.eu/boss/Pages/glossary.aspx#s>) standard is: “document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context”. However, not all standards are consensus-based or approved by a recognized body and standards may have a

format other than document, e.g. software as in the case of Windows (Hesser, Feilzer & De Vries, 2007, pp. 8).

Different viewpoint, as well as different definitions of standardization and standard was introduced by professor Henk de Vries in 1997, and it largely contributed to establishing theory of standardization. Standardization is thus defined as the “activity of establishing and recording a limited set of solutions to actual or potential **matching** problems, directed at benefits for the party or parties involved, balancing their needs and intending and expecting that these solutions will be repeatedly or continuously used, during a certain period, by a substantial number of the parties for whom they are meant” (de Vries 1999). The same source defines standard as “an approved specification of a limited set of solutions to actual or potential **matching** problems, prepared for the benefits of the party or parties involved, balancing their needs, and intended and expected to be used repeatedly or continuously, during a certain period, by a substantial number of the parties for whom they are meant” (de Vries 1999). In these definitions, the **matching** problem is a problem “of interrelated entities that do not harmonize with one another and solving it means determining one of more features of these entities in a way that they harmonize with one another, or of determining one or more features of an entity because of its relation(s) with one or more other entities” (de Vries, 1999). Such viewpoint opens wider possibilities for combination of different disciplines in solving standardization issues.

Practicing and implementing standardization is faced with numerous obstacles in most organizations, and “the job of standardization is a hard job” (Kondo, 2000). It is often difficult to comprehend different features, concepts, complexity and technological, economic and social implications of standards and standardization, especially in common business environment. The majority of studies on standards and standardization are based on experience and practice of developing countries. Little explanation has been provided regarding standardization for late-comer countries, “It is quite clear that the international standardization regime has remained an enclave for advanced countries and that the voices and interests of latecomer countries cannot be fully heard in this sphere, due to insufficient capabilities for standardization processes” (Choung, Ji and Tahir, 2011). Majority of organizations from developing countries belong to the group of passive standard adopters with no capabilities (basically technological) or experience to really contribute in developing formal international standard. Company or consortia based standards formed base for development of numerous international standards. However, national standardization organizations in developing countries mostly neglect development of new standards, or such practice is exceptional activity. According to Choung, Ji and Tahir (2011), there have been few papers on international standardization by developing or latecomer countries, and the suggestions therein did not extend beyond “adopt standards first and improve capabilities”.

Related to such practical, standards are a significant factor in who wins and who loses in the global marketplace and it's hard to win if you don't know the game (Bhatia, 2011). Practically, all standards developing organizations SDOs, (e.g. ISO, IEC, CEN, CENELEC, ITU, IEEE, W3C and others) have some action or calls for or in favor of education about standardization. The European Council conclusions on standardization and innovation (2008) encourages the Member States to improve the position of standardization in

education programmes and academic curricula, in order to familiarize students with the strategic benefits and challenges of standardization, drawing on the expertise of standardization bodies” (http://www.cen.eu/cen/Services/Education/Education_aboutstandards/Pages/default.aspx). United Nations Economic Commission for Europe recommended introduction by educational establishments of the subject of standardization into the curricula of educational establishments and particularly of universities for students majoring in technical and scientific subjects, as well as in legal, economic and management studies. Large European countries like United Kingdom, France and Germany explicitly address standardization education in strategy papers, whereas many smaller European countries tend to have no this strategy at all – while there is no any comprehensive national or European approach (Czaya, Egyedi & Hesser, 2010).

As a potential solution for standardization related problems, standardization community by and large expects general awareness and appreciation of standards' benefits to automatically result from possible recognition of standardization as a regular subject in higher professional and university curricula, (Simons, 1999). Furthermore Simons (1999) noted that – some sense of reality has to prevail in selecting forms of education in this field – “master of standardization are not needed” it is better to enlarge the group of people that are aware of the usefulness of standardization and acquaint possible future decision-makers with the subject. Community of standardization practice welcomes all opinions in favor of education about standardization, however a lot of questions is still left open. Implementing standardization education is not easy and despite its recent growth, it is an exception rather than a rule that the topic of standardization is included in education and some barriers have to be overcome (de Vries, 2011). Thus we cannot be sure that single measure will accomplish such diverse and complicated goals.

It is important to understand what learning outcomes are wanted. If what is wanted - providing formal information to students, familiarizing students or acquiring awareness – in educational theory, that learning outcomes might be identify as factual knowledge. Furthermore, it might be seemed that what is wanted are only future standards adopters, but it should be clear that future standards developers are of same or higher importance. Bloom's Taxonomy (Bloom, 1994) states that skills in the cognitive domain revolve around knowledge, comprehension and critical thinking of a particular topic. According to Bloom's Taxonomy we can identify different types of learning outcomes, namely acquisition of factual knowledge, application of the acquired knowledge, and Analysis, Synthesis and Evaluation (ASE) of knowledge. If the acquisition of factual knowledge is desired, then the learning content (teaching material) is the most influential (Mijatović, Jovanović and Jednak, 2012). In that case, lack of extensive theory background might reject university teachers in serious attempt to include standardization into their curricula. On the other side, if higher levels of learning outcomes are to be achieved more sophisticated teaching and learning techniques have to be used. Such approach, e.g. usage of technology enhanced learning tools, incites further changes into organization which uses it (Čudanov, Săvoiu & Jaško 2012). Some researches confirmed that active teaching methods (either active teaching in the classroom or technology enhanced active teaching and learning) considerably contribute to

higher students achievements in quality management and standardization courses in transitional countries (Mijatović & Jednak, 2011; Mijatović, Čudanov, Jednak & Kadijevich, 2012, Damnjanović, Jednak & Mijatović, 2013)

The research of de Vries (2011) shows that the implementation of standardization in the national education system requires policy at the national level, a long term investment in support, and cooperation between industry, standardization bodies, academia, other institutions involved in education, and government. Standardization bodies have not always been chiefly supportive towards standardization as a subject matter in higher education – with possible reason that better position of standardization in higher education might lower demand for vocational education (Czaya, Egyedi, Hesser, 2010). Can theory of standardization sustain without practice? Can cooperation between companies and academia change current positions of education about standards? All proposed question require a multidisciplinary approach in order to be solved.

3. DE FACTO STANDARDISATION AS A MEANS FOR OBTAINING CORPORATE GOALS

As widely accepted since Hank de Vries work in 1997, standardization can be used in area of internal or company-based standardization, cooperation-based or consortia-based standardization or national, regional or international standardization. The growing importance of the so-called “de facto” standardization can be seen in many areas because companies cannot operate in isolation, matching problems have to be solved and the process of formal standardization is time consuming. De facto standardization is standardization carried out by non-governmental parties other than formal standardization organization (de Vries, 1999). Many standards are developed by industrial consortia or in cooperation with other parties involved. The reasons for using consortia based standards instead of usage formal standards (developed by organizations for standardization) might be (modified in accordance to Hesser, Feilzer & De Vries, 2007, pp 18):

- *Swiftness*. Proposing new standard development to national or international organization for standardization is possible option but time and effort consuming. For example, there is yet no formal standard measuring level of adoption

of ICT in the organization, although some measurement tools were proposed (Čudanov, Jaško & Jevtić 2009; Čudanov, Săvoiu & Jaško 2012). Consortia of companies with same and matching problems will have more interest in developing standards faster than SDOs.

- *Joined force for solving common or matching problems*. Many organizations out of consortia have not interest in solving particular problems. In many cases FSOs are not interested in development particular standards.

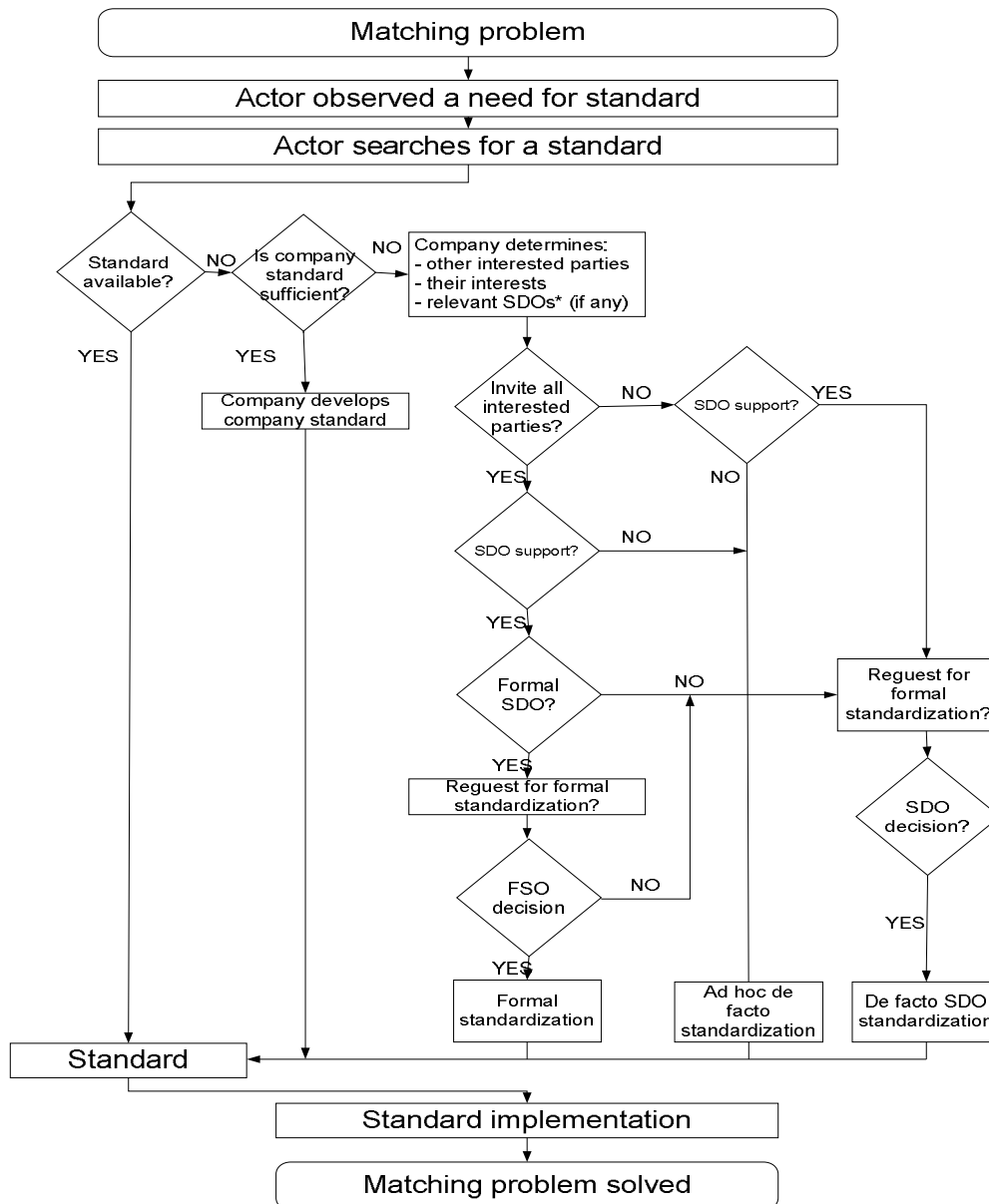
- *Intellectual property rights*. Formal standardization organizations (FSOs) allow the inclusion of patents in standards only when patent holder declares willing to negotiate licenses on reasonable terms. Companies that possess essential patents may prefer a consortium that allows high licenses fees.

- *Discretion*. In area of ICT, companies, that possess specific knowledge or developed technologies, may be interested in consortia-based standards to protect their specific intellectual assets, knowledge or technologies and in establishing cooperation with others companies of interest. In other fields companies may recognize interest in solving matching problems, but may not be willing to allow interference in solving that problem with others out of consortia.

Knowing that companies have many options in area of standardization one question has to be answered: How companies get standards they need? If a company needs standard and a satisfactory standard does not exist, the new one has to be developed (figure 1). The company must decide whether to co-operate with other companies and interested parties or not. The next important issue is usage of the standard development infrastructure of SDOs (Standardization development organizations). SDOs include formal standardization organizations (e.g. international, European or regional FSO); sectoral, professional or specialized standardization organization (SSO) and governmental or national standardization organization (GSO, NSO). Developing needed standards can be done without support of SDOs – that kind of standardization is called “ad hoc de facto standardization”. More about this and other ways of standardization (formal or de facto SDO standardization) can be found in the work of de Vries (1999, 2010) and Hesser, Feilzer & De Vries (2007).

How company gets a standard it needs (de Vries, 1999, pp 16)

Figure no 1



*SDO – Standards developing organizations include formal standardization organizations (FSO), sectoral or specialized standardization organization (SSO), governmental or national standardization organization (GSO, NSO)

4. MULTIDISCIPLINARY APPROACH TO ORGANIZATIONAL DESIGN AND STANDARDIZATION IN PRACTICAL “AD HOC DE FACTO” STANDARDS DEVELOPMENT

The practical example of “ad hoc de facto” standard development presented in this paper results from consultant engagement of the project team from the University of Belgrade, Faculty of Organizational Sciences. A matching problem related to the lack of standardized systematization of job positions in the 21 public and public-utility companies in Serbia (employing over 18000 employees) was observed. All those companies belonged to different industries and have had different classification of jobs. It was very hard and time-consuming task to compare them. Further, lack of standardization caused that employees performing similar jobs in different companies have different job titles, and specific positions are often treated as

different jobs, although in essence are not. It was therefore necessary to introduce a new solution (model) that would have the smallest set of typical jobs and to associate these jobs with jobs existing in observed companies. In the course of the project systematization of typical basic jobs was proposed in order to diminish a different number of jobs in observed companies by several tens of times. In order to solve the “matching problem” analysis of staff, performance and salaries had to be performed. The results of the analysis described current status within each company, but also to compare companies among themselves.

The first analysis that was performed was aimed at employees – so a staff analysis. Employee structure has been analyzed from the standpoint of its compliance with the efficient business performance (Krivokapić & Čudanov, 2010). The analysis included both qualitative and quantitative traits of the organizational structure. As secondary data source individual employee reports given by companies were used. These partial analyses consist of the analysis of the organizational structure and division of work in the company, the analysis of span of management control, analysis of organization units by the criteria of core/non-core activities, the analysis of the current job classification,

proposed systematization of jobs, the analysis of employee qualification, age structure, service and overall fluctuations. The analysis was made on the basis of the entire staff that was obtained from the personnel records of employees.

The staff structure analysis was based on:

- **Analysis of core/non-core activities on organizational unit level:** This analysis identifies core units, which directly contribute to carrying out basic activities of enterprises, and non-core units, which provide indirect contribution. Depending on the company size, the depth of this analysis was 2-5 organizational unit levels.

- **Analysis of core/non-core/support activities on employee level:** just as organizational units, each employee has his job description analyzed compared to main goals, aims and targets of the enterprise, and if needed further interviews were performed. Afterwards each employee is classified in group that directly contributes to the basic business activities (core), group that contributes indirectly to the basic activities of the company (non-core) and as further gradation third group, whose job is to provide support and assistance to other employees while performing their tasks (support staff).

- **Existing job classification analysis:** This analysis shows the total number of jobs in the existing classification, as well as the total number of standardized jobs in the company. For each organization, existing classification was analyzed, and a large number of jobs that were valued differently were observed. The main reason for that was different ability or commitment of particular employees who work on the same position. When employees leave the organization, the evaluation of that position still retained the number of points basically connected to the retired employee's past performance. A smaller number of standardized jobs with objective valuation is suggested. Individual performance would then be valued by variable part of salaries and related mechanisms.

- **Work division analysis:** Division of work helps to observe which model of organizational structure is characteristic of specific company, which are its organizational units, and what is the number of employees in each of them.

- **Typical jobs systematization:** In accordance with the conclusions of the analysis of the current job classification, a set of standardized jobs was proposed, through the enrichment of basic activities, with respect to technological limitations. The common services were conducted at the level of coordination of all public and public utility companies which were included in the project. For such defined positions, various categories that would depend on the level of education of an executor or any other parameter such as experience or previous results could be defined.

- **Employee qualifications analysis:** Employee formal qualifications were simplified to formal education. Education of employees is analyzed according to the current Serbian education system classification of the seven degrees of qualification.

- **Employee age analysis:** In each organizational unit, age structure of employees is analyzed by indicators of the average, minimum and maximum age. After that, two classifications of personnel were made. The first classification divides the workers into groups by age single culture – pragmatism, existentialism, or conservatism. The age group up to 30 years (specific manifestation depends of the organizational culture) has the core value of pragmatism,

seeks success and ambitions that motivate them, and is ready to work hard with the use of new technologies. The group aged 30-45 has tentatively culture existentialism, where the main motivators are quality of life, nonconformity, seeking autonomy, and loyalty of employees is directed primarily towards themselves and their own family. The age group over 45 years is characterized by conservatism, which, depending on the environment, can be manifested differently, but in our environment is often expressed through the rejection of change, desire for job security and resentment with new values that are accepted in the enterprise (*Hofstede, 1990*). The classification analyzes workers by decades of age, where the first covers the period up to 30 years, next to 40 and so to the last, which includes workers aged 60 and older. This analysis includes indicators of average age, then determines the difference in years between the youngest and oldest employee in the company, the average age by the organizational units that were previously defined, and the prevailing culture of the company.

- **Employee overall experience analysis:** The analysis of total work experience of employees was completed by the companies. Experience was analyzed by average, minimum and maximum values for all organizational units at the highest level, and in a later analysis four groups were formed: a group of up to 30 years of service, a group of 31-35 years of service, a group of 36-38 years of service and a group of over 38 years of service.

- **Fluctuation analysis:** Fluctuation analysis showed the total number of workers who had come and the total number of workers who had left the company in the observed period.

- **Managerial span of control analysis:** The span of control shows the number of workers who are directly subordinate to a supervisor. This is highly linked with the cost of management and efficiency of task execution control in organization. This analysis shows the overall manager's headcount in the organization, average control span by each manager, as well as top and bottom value of control span for each organizational department in each organization

The next step was performance analysis. Performance of the company includes its ability to achieve a certain result, under the given conditions of operation (*Jaško, Čudanov, Jevtić & Krivokapić, 2013*). First, we have analyzed performance by the value-creation-chain (*Porter, 1998*) which includes a clear distinction between the direct value creation activities and support activities. All employees are divided into 2 groups – support activities and primary activities – and then can be divided to the subgroups integrating a partial set of activities by functions (*Dulanović & Jaško, 2009*). The elected structure allows the standardization of infrastructure activities and performance comparison of these activities in a variety of public sector enterprises, but also the adoption of joint recommendations for all companies, which can be viewed as a group on basis of similitude of their activities (*Săvoiu, Manea, Iorga – Simăn, Enescu, Čudanov, Jaško & Jaško 2011*). A similar analysis was performed for each of mass standardized jobs, output of typical jobs systematization, and used to ensure human resource sustainability, and to determine right number of employees, according to required amount of work in previous period (*Čudanov, Jaško & Săvoiu, 2012*). According to that model, sharing the overall organization's task is based on the different contributions of specific activities to competitive ability of the organization (Porter,

2001). Porter's value chain was combined with Mintzberg's model, which divides organization into the 5 elements, namely the strategic apex, middle line, operating core, techno structure and support staff (Mintzberg, 1983). Modified Porter's value chain and Mintzberg's model (Čudanov, Savoju & Krivokapić, 2010), were basis for further classification of standardized jobs. which proved useful in further comparison between enterprises, because now each pair of enterprises could be compared by number of employees and workforce traits in each part of the chain of value creation, or in each Mintzberg's structural part. That served as an "ad hoc de facto" standard of job classification, presented in (Jaško, Krivokapić & Čudanov, 2010), where most differences of the model existed in the operative part of each enterprise.

5. CONCLUSION

This paper illustrates the multidisciplinary approach to organizational design and standardization, through examples of "ad hoc de facto" standardization. A non-public standard related to solving problem of job classification in 21 communal and public-utility was implemented and has been proven as functional in practice for three years since. In synergy with organizational design analysis methods, one of the main tasks of standardization process "to bridge the gap between the impulses of science and technology with the degree of acceptance at the user side" (Blind, 2004) has been accomplished. The increasing significance of the so-called "de facto" standardization is not limited to communal and public utility enterprises, which served as an example. This multidisciplinary approach can be useful due to the fact that organizations in many fields cannot operate in isolation. Whenever matching problems have to be resolved and processes of formal standardization processes are time-consuming, "ad hoc de facto" standardization can use synergy with other disciplines. The problem is that despite awareness of matching problems, a large number of companies are not familiar with the benefits, or even the idea of "ad hoc de facto" standardization (Mijatović, 2008, 2011). The number of "de facto" standards – developed by parties other than formal standards developing organizations – is, however, still steadily increasing.

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