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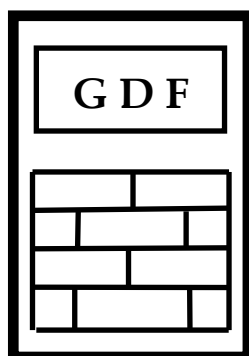
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Content

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Quo vadis population growth on planet Earth: more details

"Uncontrolled growth of population originates
from progressively uncontrolled our minds"

The inherent dramatic transition in Earth's human population in next future years was the subject of my recent talks at several private and public occasions [1]. Figure 1 shows the population increase over the last two thousand years according to eight statistic sources. The basic reason in analyzing such lambda shape "phase transition" was my experience with a large variety of systems occurring processes of transformation triggered by stepwise perturbation of driving potentials where a threshold value of them must be crossed. These experiences have substantiated the so called **topoenergetic principles** as more extensive and efficient working principles than classical non-equilibrium thermodynamics [2-5]. This threshold value has an important physical significance in system evolution and defines in fact its phase/structural transition. Transformation process involves specific structural kinetic units (in general not involving all the system). In the case of humankind these kinetic units are human individuals. Further research can establish specific groups of individuals for different regions as kinetic units.

The second reason consists in the fact that all human activities are based on producing heat which leads to global warming. This means that average global temperature increases with time. Only fact of exponentially growth of population has a contribution to global warming by the heat released by human bodies. This could be a good explanation also for dinosaur's extinction.

In the present note I try to explain in more details structural and energy aspects of the soon transition in Earth's mankind revealing common aspects with the melting process of a pure metals taking into account many similarities of the two lambda shape phase transitions and the associated energy circuits where processes occur.

Thermally driven processes of transformation are associated with release (EXO-thermal) or absorption (ENDO-thermal) of heat, so they are highly efficient studied by calorimetric techniques. Differential Thermal Analysis (DTA) is one of the simplest and versatile calorimetric techniques.

Figure 2 shows the cross section in a typical DTA disposition and Figure 3 the associated bond diagram of the energy circuit expressed in topological terms [3-5]. Topological formalism for non-equilibrium or transforming systems was initially proposed by Oster and Auslander [6]. They have considered the energy circuit associated to transforming system as composed by elementary components similar as in electric circuit: capacitive (C), resistive/dissipative (R), potential source (here temperature, T), etc. . Unfortunately, they considered both spatial and temporal dependences of an elementary circuit, so complicated equations resulted and abandoned shortly this formalism. In fact, spatial dependence is implicitly included in the components of energy circuit, so the formalism can be successfully developed for transforming processes driven by any kind of potentials [2-5]. Topological or topoenergy working principles are thoroughly explained and applied for a large variety of transforming processes, measuring systems and by using UNIVERSAL kinetic equation. For instance, thermally driven processes can be described both by a new ARRHENIUS equation established in topological terms [4] and the UNIVERSAL one [7].

The transition point of population growth in Figure 1 is calculated by non-linear regression of the UNIVERSAL equation adapted for this specific transforming system.

One of the basic principles in topological formalism is that any transforming system has a composite structure, namely it consists by at least two mutually interacting components, but exchanging energy in different frame of time references. Figure 4 shows the composite structure of specimen, CS from inert (CSin) and transforming (CStr) components connected by purely dissipative coupling [4].

Table 1 gives the main characteristics of the two measuring systems and Figure 5 shows the DTA thermograms for melting processes of pure lead (Pb) and indium (In). These metals are used to calibrate both the energy and temperature scales in DTA devices. It is obvious the lambda shape of all compared phase transitions, so several important kinetic parameters can be estimated as they are defined in Figure 5. Table 2 gives values of these parameters for the two melting processes as measured by DTA. It is important to compare the slopes of baselines as expressed in common relative units of %PV/%TI not depending on specific kinetic units.

Table 1. Comparison between melting of pure metal revealed by DTA
and evolution of Earth population.

Main features	DTA of melting point of a pure metal	Growth of Earth population
Source of constant power	(Electric) heater	Sun
Energy circuit	CR = Cell with inert component CS = specimen of pure metal	CR = uninhabited planet or satellite CS = population on planet Earth
Kinetic units	Clusters of atoms	Human individuals
Energy involved	Heat capacity = absorbed heat by kinetic units	All human activities produce heat = global warming Average environment temperature tends to the human body temperature Energy absorbed for natural biologic development (ENDO) < energy released by human rational activities (EXO)
Polarity of the process	ENDO	EXO
Driven potential, U	Temperature=k*time	time ~ average global temperature

Several structural aspects of the two compared kinds of phase transitions must be pointed up:

(i)   BL-1 of metal melting corresponds to a constant number of kinetic units absorbing kinetic energy proportional both with temperature and their mass (atomic weight), while for population growth the number increases exponentially from the starting instant, so the slope must be considered zero;

(ii)   human individuals are developing progressively activities based on heat release in contrast with other living organisms of Earth biosphere. These activities are in direct relationship with human mental activity and this fact was evidenced by opposite polarity of their bio-fields [8]. It appears that discovery of fire is the pattern of the after evolution of mankind.

(iii)   UNIVERSAL representation for all lambda shape phase transitions [9,10] can be successfully applied on the results obtained by adiabatic calorimetry. Ontogenic parameters (N, M, Uo) (Figure 1) have important structural significances [2,7]. For instance, transition point, Uo, results to be proportional with mass of the kinetic unit.

(iv)   It expects that after transition in human population at 2035 ± 3, the value will drop near to zero similar to the Noah's Flood where only 8 survivors passed on the same transition. However, Earth's mankind is not a closed/isolated system, and as in the case of Noah, some individuals can be saved by Divine Messengers. The existence of different species of aliens and their help to the mankind is honestly proved [11], but they can not save all mankind because it is impossible to change human mentality in continuous degradation.

References

[1] G. Dragan, Evidence of human mental field, The 38th ARA Congress, 23-27 July 2014, Pasadena, Los Angeles, USA, GDF Databanks Bull., 18(4), 2014; Evidenta campului mental uman, Simpozionul International „Universul Stiintelor", 7 Septembrie 2014, Iasi, Romania; Mental field, health state and social stability, International Congress of World Psychiatric Association, 24-27 June 2015, Bucharest, Romania.

[2] G. Dragan, Solubility behavior introducing topoenergetic working principles, GDF Databanks Bull., 1(1), 1997.

[3] G. Dragan, Topological aspects of differential thermal analysis, J.Thermal. Anal., 9, 405-414 (1976).

[4] G. Dragan, Amorphous-crystalline coupling in polyethylene.VII. Study of the crystallization kinetics in the approximation with purely thermal dissipative coupling, Rev.Roumaine Chim., 23(4), 629-635 (1978).

[5] G. Dragan, Relationship between compatibility, internal stresses and stability in polymer composites. II. Nature and stability of the thermal driven processes, Acta Polymerica, 31(5), 293-298 (1980).

[6] G. F. Oster, D. M. Auslander, Topological representation of thermodynamic systems. I. Basic concepts, J. Franklin Inst., 29, 1-12 (1971).

[7] G. Dragan, Structural and relativistic aspects in transforming systems. I. Arrhenius and Universal representations of thermally driven processes, GDF Databanks Bull., 15(2), 2011.

[8] G. Dragan, Evidence of human mental field by ac-electric conductivity in electrolyte solutions. 1. Bio-energy. GDF Databanks Bull., 19(6), 2015.

[9] H. E. Stanley, Introduction to phase transitions and critical phenomena, Clarendon Press, 1971.

[10] Research Center for Structural Thermodynamics, Chemistry Department, Osaka University, Japan

[11] P. T. Hellyer, Light at the end of the tunnel. A survival plan for the human species, AuthorHouse™, Indiana, USA, 2010.
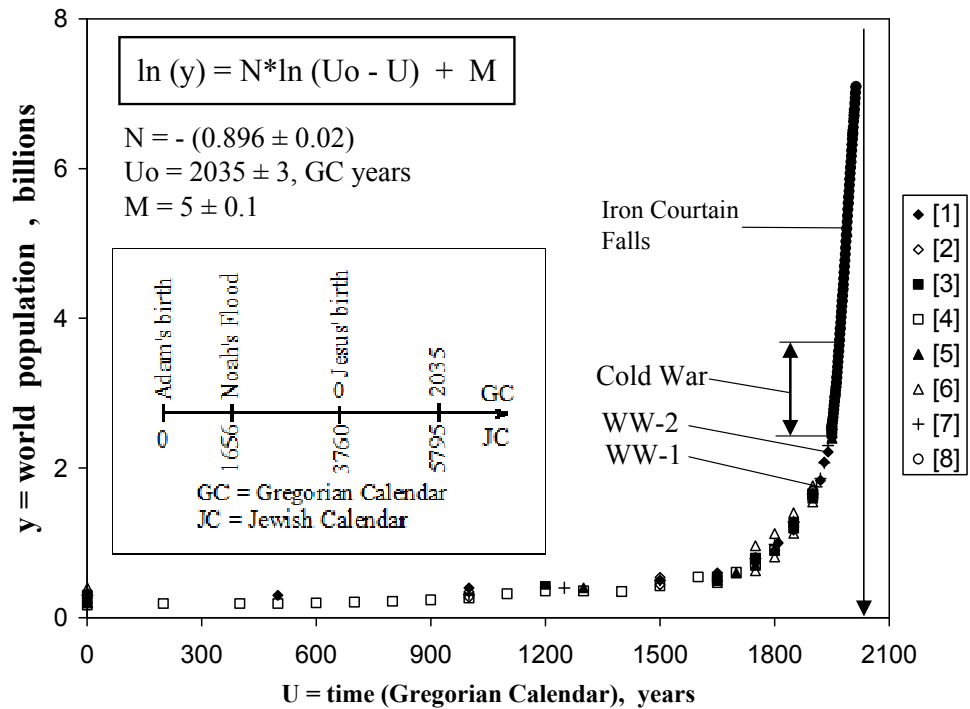
$$\ln (y) = N*\ln (U_o - U) + M$$

$N = - (0.896 \pm 0.02)$
$U_o = 2035 \pm 3$, GC years
$M = 5 \pm 0.1$

Iron Courtain Falls

Cold War
WW-2
WW-1

◆ [1]
◇ [2]
■ [3]
□ [4]
▲ [5]
△ [6]
+ [7]
○ [8]

Adam's birth
Noah's Flood
Jesus' birth
0
1656
3760
5795
2035
GC
JC

GC = Gregorian Calendar
JC = Jewish Calendar

y = world population , billions

U = time (Gregorian Calendar), years

Figure 1. Population growth on Earth (see citation details in [1]).

T = k*time

CR

CS

source of constant power

TR

TS

dT = TS - TR
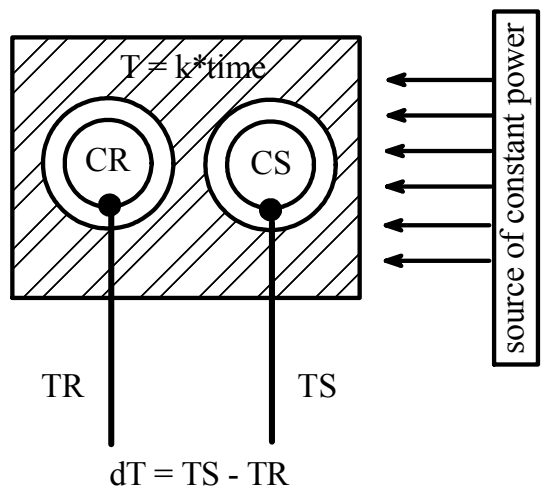
Figure 2. Cross section in a basic disposition of Differential Thermal Analyzer (DTA) [3-5].

CR

R

R

CS

TR

T

TS

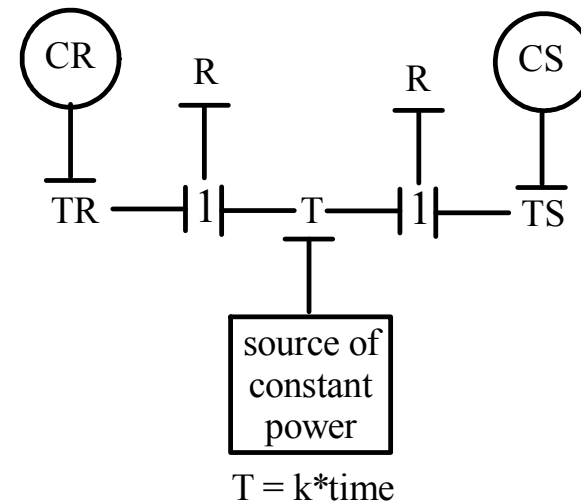source of constant power

$T = k*time$

Figure 3. Bond diagram of DTA energy circuit [3-5].
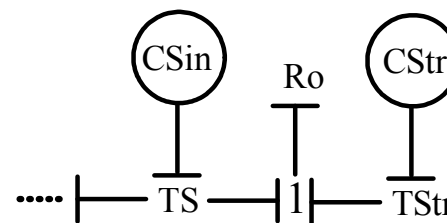

CSin

Ro

CStr

TS

TStr

Figure 4. Composite structure of transforming specimen (CS) in pure dissipative approximation [4].
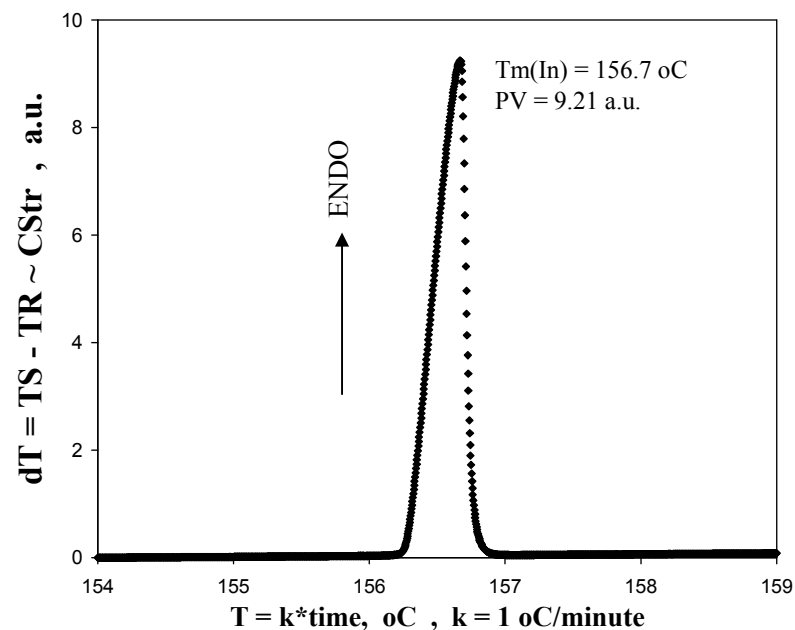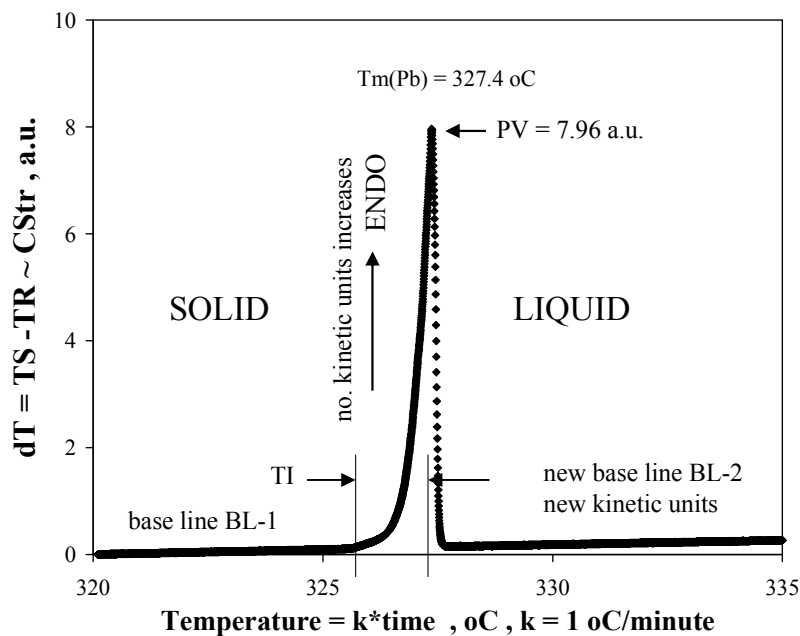
Figure 5. Lambda shape of melting process of pure Pb and In specific to 1st order phase transitions as revealed by DTA.

Table 2. Several characteristic parameters defining kinetics of phase transitions evidenced by calorimetry.

Phase transition	Transition Point, Tm (b) ^{0}C	Peak Value (PV)	Transition Interval (TI)	Slope (BL-1) %PV/%TI	Slope (BL-2) %PV/%TI
Pb melting 207.2 (a)	327.4	PV = 7.96 a.u. 1 a.u. = 12.56 % PV	327.42 – 325.68 = 1.74 ^{0}C 1 ^{0}C = 57.47 % TI	4.02E-3 correl = 0.999	3.59E-3 correl = 0.999
In melting 114.8 (a)	156.7	PV = 9.21 a.u. 1 a.u. = 10.81 %PV	157 – 156.2 = 0.8 ^{0}C 1 ^{0}C = 125 %TI	1.46E-3 correl = 0.999	

(a) atomic weight; (b) It depends on heating rate.

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Previous issues of GDF DATABANKS BULLETIN

Year	VOL	NO	Content (titles)	$*)
1997	1	1	Editorial: Databanks – the compulsory language. LOGKOW – a Databank of evaluated octanol-water partition coefficients (James Sangster). Solubility behavior introducing topoenergetic working principles. Comments on 1-octanol-water partition of several n-alkane related series.	F
1997	1	2	Guide of good practice in metrology (Romanian)	AFI
1998	2	1	Editorial: socio-psychological implications in creation and utilization of a databank (Ioan-Bradu Iamandescu); Behavior in vapor-liquid equilibria (VLE): I. Structural aspects; Behavior in vapor-liquid equilibria: II. Several structures in databanks; Symposium on VDC-4 held on 30 October 1997 at Lubrifin-SA, Brasov (Romania).	F
1998	2	2	Practical course of metrology (Romanian)	AFI
1998	2	3	DIFFUTOR-01: Thermally driven diffusion in pure metals	AFI
1998	2	4	VAPORSAT-01: Databanks of thermally driven VLE. The first 100 simple molecules	AFI
1999	3	1	Editorial: New trends in material science: nanostructures (Dan Donescu) DIFFUTOR: Databanks of diffusion kinetics. VAPORSAT: Databanks of vapor-liquid separation kinetics.	F
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2000	4	1	Editorial: Laboratory accreditation and inter-laboratory comparisons (Virgil Badescu) Doctoral Theses – important data banks. GDF intends to open new series of experiments on thermo-physical properties. Some comments on uncertainty: global budget and DFT analysis. Events: The 9th International Metrology Congress, Bordeaux, France, 18-21 October 1999.	F
2000	4	2	Measurement and Calibration.	AFI
2001	5	1	Editorial: Metrology ensures moral and technological progress. Topoenergetic aspects of amorphous-crystalline coupling. I. Composite behavior of water and aqueous solutions (paper presented at nanotubes and Nanostructures 2001, LNF, Frascati, Rome Italy, 17-27 October 2001). Events: Nanotubes and nanostructures 2000.School and workshop, 24 September – 4 October 2000, Cagliari, Italy.	F
2001	5	2	Editorial: Viscosity – a symptomatic problem of actual metrology. Visco-Dens Calorimeter: general features on density and viscosity measurements. New vision on the calibration of thermometers: ISOCALT® MOSATOR: Topoenergetic databanks on molten salts properties driven by temperature and composition.	F
2002	6	1	MOSATOR-01: Topoenergetic databanks for one component molten salts; thermally driven viscosity and electrical conductance.	AFI
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2004	8	1	Metrological verification and calibration of thermometers using thermostats type ISOCALT® 21/70/2. Metrological verification and calibration of thermometers using thermostats type ISOCALT® 2.2R.	F
2004	8	2	Aspects of correct measurements of temperature. I. measurement of a fixed	F

			point according to ITS-90. Physics and Homoeopathy: some physical requirements for homoeopathic practice.(Plenary lecture at the 19th SRH National Congress, 21-22 September 2004, Bucharest, Romania)	
2005	9	1	AWARD for ISOCALT® at the International Fair TIB-2004, October 2004, Bucharest. ISOCALT® 3/70/21 was awarded in a selection of 20 products by a commission of experts from the Polytechnic University of Bucharest. Upon some aspects of temperature measurements. (12th International Metrology Congress, 20-23 June 2005, Lyon, France)	F
2005	9	2	A new technique for temperature measurement and calibration. National Society of Measurements (NSM). Important warning for T-calibrator users: MSA has chose metrology well calibrators from Fluke (Hart Scientific).	F
2005	9	3	Universal representation of Cancer Diseases. 1. First sight on NSW-2003 report. Universal representation of Cancer Diseases. 2. UK cancer registrations on 1999-2002. Vital Potential can estimate our predisposition for cancer diseases.	F
2006	10	1	NTC – thermistors -1	AFI
2007	11	1	HuPoTest - 40 years of continuous research Basic rules for preventing and vanishing cancer diseases Climate change = change of mentality Hot nuclear fusion – a project of actual mentality	F
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2009	13	1	Proposal for interlaboratory comparisons. Calibration of NTC-thermistors (The 14th International Metrology Congress, Paris, France, 22-25 June 2009).	F
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2012	16	4	Mental field and state of health. Câmpul mental şi starea de sănătate.	F
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2013	17	10	1. Procedure for defining standard liquids for viscosity based on topoenergetic principles. 2. Topological aspects of flow and deformation in polymer composites, The VIII-th International Congress on Rheology, 1-5 September 1980, Naples, Italy, pp. 375-376. 3. Universal representation of flow behavior based on topoenergetic principles, The IX-th International Congress on Rheology, 8-13 October 1984, Accapulco, Gro. Mexico, pp.369-376. 4. Comments on "Universal representation of flow behavior based on topoenergetic principles", The IX-th International Congress on Rheology, 8-13 October 1984, Accapulco, Gro. Mexico, pp. 369-376. 5. Open letter to BRML and INM.	F
2014	18	1	Adiabatic calorimeter as high accuracy T-calibrator	F
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2015	19	4	High Resolution Mixing Calorimetry (HRMC) redivivus. 2. Structure developing of aqueous solutions by mixing experiments.	F
2015	19	5	High Resolution Mixing Calorimetry (HRMC) redivivus. 3. Calibration	F
2015	19	6	Evidence of human mental field by ac-electric conductivity in electrolyte solutions. 1. Bio-energy.	F
2015	19	7	High resolution mixing calorimetry redivivus.IV. Specific heat of crystalline phase of water. WPA2015: International Congress of World Psychiatric Association,Primary care mental health: innovation and transdisciplinarity, Bucharest, 24-27 June 2015, ROMANIA	F

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