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DEFINITION OF ENERGY AND FORCE ON THE BASIS OF THE UNIFIED THEORY OF ENERGY (UTE, UNITHE)

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ABSTRACT: No naturalistic model has been developed to date to describe what space is filled with. The Unified Theory of Energy aims at developing such a space model. A naturalistic definition of energy and force can be given on the basis of the new space theory (UTE, UNITHE) with a new space model by introducing directed fields. Recognizing directed fields signals a new technology. Work capacity of the energy difference resulting from the interaction between two directed fields is equal to force. Due to the interaction of directed fields, continuous thrust force and thus a new energy source can be generated. To achieve this, industrial magnets play a significant role. It is important to note that it is not the magnet that functions as energy source in accordance with science, but its internal directed energy field, which comes about as a result of magnetization and persisting even after magnetization due to special alloying methods. The operational mechanism of the interaction between directed fields regulates every system to reach an energy minimum and energy equilibrium, thus ensuring energy conservation.

Keywords: contact energy, dipolar energy quanta, magnetic field, directed space, inertia

1. INTRODUCTION

No naturalistic model has been developed to date to describe what space is filled with. The Unified Theory of Energy (UTE, UNITHE) [1], [3] aims at developing such a space model. Maxwell's ideas of space is quoted from Dr. Zombory László's book entitled: Electromagnetic Fields [4]. "Maxwell believed all his life that the electromagnetic field is filled with a medium that has easily definable mechanical qualities. Thus, the theory of "aether" was only disproved by Einstein's theory of relativity criticized significantly" [4] (page 28). The space model of my new theory of space (UTE) is based on the non-mass energy system (called non-pondus energy system from now on) and supports Maxwell's ideas while rejecting Einstein's ideas of vacuum concerning space. I completed Maxwell's equations on the basis of the new space model [2]. Using the new space model, I have given a mathematical description of the energy field filling space. I may even say, if Maxwell had been able to give a mathematical description of "aether", the theory of relativity would not have been devised at all. In my terms of energy, our space can be divided into two parts: pondus (mass related) and non-pondus (non-mass related) energy systems, which are based on dipolar energy quanta and whose aligned energy spectrum fields make up magnetic fields. [1], [2], [3]. Recognizing aligned energy fields will provide a new basis for science. The conceptual basis is provided with a definition of dipolar energy quantum, torus source energy as the basis of the non-pondus energy system, when also stating the characterizing magnitude of filled volume energy with limit values. In addition, definitions are provided for the following concepts, to mention but a few: pondus and non-pondus energy system, mass, inertia, electrical and magnetic field, gravity.

2. DEFINITION OF ENERGY AND FORCE WITH THE APPLICATION OF THE NEW SPACE MODEL

Definition of energy:

The energy E_V of a volume V of space at a given time t equals the directedness of the resultant force applying to that volume V of space.

$$\vec{E}_v = \iiint_V \vec{E}_{dek}(t, x, y, z) dV \quad [VAs, Nm].$$

According to this interpretation, energy has both magnitude and direction. Time t has been introduced by man in order to give a short and compact mathematical description of natural phenomena. Thus, although time dilation i.e., Lorentz-transformation as recognised by the present scientific methods, and experienced in practice through photons as information transmission elements can be mathematically defined accurately, it is not in harmony with the process to be described. In this sense, the introduced time t may show a linear change in a naturalistic description of a process. Furthermore, as a result of the above mentioned facts, the space-time curvature interpreted on the basis of the canonical theory of relativity and its conclusions, should be reconsidered. Consequently, the time t introduced by humans to describe processes in a naturalistic way, can only be linear and cannot dilate, that is, the process transmitted by photons and described mathematically correctly through time dilation cannot be interpreted as identical with the natural phenomenon. This is also justified by engineering science. \vec{E}_{deq} in the energy relationship can be the energy quantum or – at macro level – it can be the energy vector of elementary volume. This energy vector can be accurately calculated with the Finite Element Method and the counted finite element energy or directed energy is expressed as a vector quantity.

Definition of force:

Work capacity of the energy difference resulting from the interaction between two directed fields is equal to force F . With rotation movements this is momentum M or dipole momentum. Force can be defined with the following relationship

$$\vec{F} = \frac{\vec{E}_{v1} - \vec{E}_{v2}}{\Delta s} = \frac{\Delta \vec{E}_v}{\Delta s} \quad [N].$$

In an interaction between fields only half of the energy ΔE_v (in my previous publications named contact energy $E_c = \Delta E_v$) has the capacity to do work, while the other half will realign the field during work. Δs is the distance along which the directed difference energy of volume $\Delta \vec{E}_v$ realigns with free movement and ceases to exist that is, its value will change to zero.

The efficient work force reads as

$$\vec{F}_w = \frac{1}{2} \cdot \frac{\vec{E}_{v1} - \vec{E}_{v2}}{\Delta s} = \frac{1}{2} \cdot \frac{\Delta \vec{E}_v}{\Delta s} \quad [N].$$

If no realignment of space occurs (aura image or change in the spectrum of contact energy), then the efficient work force can be expressed as

$$\vec{F}_w = \frac{\Delta \vec{E}_v}{\Delta s} \quad [N].$$

3. PRACTICAL EXAMPLES TO SUPPORT THE NATURALISTIC NATURE OF ENERGY AND FORCE DEFINITIONS

Potential and kinetic energy:

If a mass m is raised from height h_1 to height h_2 , taking value E_1 (the vector sign is omitted as usual) with height $h_1 = 0$, the energy at height h_2 will be: $E_2 = E_1 + m \cdot g \cdot (h_2 - h_1)$, and thus, $E_{potential} = \Delta E = m \cdot g \cdot (h_2 - h_1) = m \cdot g \cdot h \quad [Nm]$. Then, the energy value does not change in the interaction between the directed field of the mass m and space as a directed energy spectrum (aura image or spectrum change $\Delta E_c = 0$). In a mathematical description this is indicated by the use of the $g = \text{constant}$ (which is not constant in nature, but in the case of h with a relatively low value, it can be considered nearly constant). Thus, the weight force performing work is $F_w = m \cdot g = \text{constant} \quad [N]$.

The internal functional system or internal aura of the mass m cannot transform as long as it is considered mass m irrespective of velocity ($m(v) = \text{constant}$). If mass m is dropped from height h_2 at a starting velocity $v_2 = 0$, then its kinetic energy at height h_1 applying $(v_1 - v_2) = v$ can be represented as

$$E_{kinetic} = \frac{1}{2} \cdot m \cdot v_1^2 - \frac{1}{2} \cdot m \cdot v_2^2 = \Delta E_k = \frac{1}{2} \cdot m \cdot v_1^2 = \frac{1}{2} \cdot \Delta E = \frac{1}{2} \cdot E_{potential} \quad [Nm, VAs].$$

The contact energy E_c [VAs] in the relationship of mass m and space is the energy resulting from the interaction between the two directed fields. For example, in a position denoted 1, E_c is the contact energy of a mass m moving at velocity v_1 (the external aura of mass $m(v_1)$) and the energy field spectrum (aura spectrum) moving at velocity v_1 .

Furthermore, on the basis of the above mentioned energy relationship, the individual energies $E_{\text{kinetic}} = \Delta E_c$ and $E_{\text{kinetic}} + \Delta E_c = E_{\text{potential}}$.

In the free movement of mass m it can be observed that one half of its potential energy ($E_{\text{potential}}$) produces kinetic energy (E_{kinetic}) of mass m , in other words, it provides the capacity to do work, and the other half realigns the contact field (ΔE_c). The energy of the contact field as contact energy $E_c = E_{c1} = \Delta E_c$ provides the capacity of mass m with a velocity v to do work.

Rotational energy and inertia:

Let us analyze what happens when mass m is at distance r from a rotation center and then at distance $r^* > r$ and rotational energy is resulted from an angular velocity ω as shown in Figure 1. The rotational energy in the first case can be described as

$$E_{\text{rotational}} = \frac{1}{2} \cdot \Theta \cdot \omega^2 = \frac{1}{2} \cdot (\Theta \cdot \omega) \cdot (\omega) = \frac{1}{2} \cdot m \cdot (v(r))^2 = \frac{1}{2} \cdot (m \cdot v(r)) \cdot (v(r)) \text{ [Nm]}.$$

According to the usual interpretation, inertia Θ , angular velocity ω , frequency f and time period T can be described as $\Theta = m \cdot r^2$ [kg · m²], $\omega = \frac{v}{r} = 2 \cdot \pi \cdot f = \frac{2 \cdot \pi}{T}$ [s⁻¹].

Let us see now, the energy of the rotational movement $E_{\text{rotational}}^*$ if mass m is positioned at distance r^* and ω is the same and then energy $E_{\text{rotational}}^{**}$ if mass m remains at distance r , but the value of ω is increased to ω^{**} . Then the energies can be written as

$$E_{\text{rotational}}^* = \frac{1}{2} \cdot \Theta^* \cdot \omega^2, \quad E_{\text{rotational}}^{**} = \frac{1}{2} \cdot \Theta \cdot \omega^{**2}.$$

The energy differences compared to the initial condition are

$$\Delta E_{\text{rotational}}^* = E_{\text{rotational}}^* - E_{\text{rotational}} = \frac{1}{2} \cdot \omega^2 \cdot m \cdot (r^{*2} - r^2) = \frac{1}{2} \cdot m \cdot (v^{*2} - v^2),$$

$$\Delta E_{\text{rotational}}^{**} = E_{\text{rotational}}^{**} - E_{\text{rotational}} = \frac{1}{2} \cdot \Theta \cdot (\omega^{**2} - \omega^2) = \frac{1}{2} \cdot m \cdot (v^{**2} - v^2).$$

$$\Delta E_{\text{rotational}}^* = \Delta E_{\text{rotational}}^{**}, \quad \text{if } v^{*2} = v^{**2} \text{ that is } v^* = v^{**}!$$

From the results obtained for energy differences, it can be stated that in its relationship with the energy field, the E_c contact energy of mass m moving at speed v or doing a rotational movement is naturally identical.

From all this, it also follows that space energy spectrum is proportional to v velocity, thus in rotational movements it is also proportional to f frequency of the space energy spectrum and its period time T . With this consideration, let us carry out further analysis of space and write down the Fourier spectrum of an energy field with energy E_{deq} comprised of dipole energy quanta and characterized with an infinite degree of freedom. Since energetically the energy field is characterized with zero spin, zero velocity and evenly distributed, we can attribute the same $E_i = 1$ energy value to each spectrum with identical probability, where $i = 0 \rightarrow \infty$. Thus, performance potential P_i of the individual spectra plotted against period time T and frequency f can be illustrated as it is shown in Figure 2. To sum up, the dipolar non-pondus energy system – characterized with an energetically infinite degree of freedom, zero spin and zero velocity and which fills space with identical probability and energy density and considers the energy spectrum of directed space – can be mathematically expressed in a unit volume with energy portions of discrete frequency ranging from zero to infinity and of unit energy content.

Thus, P_i [W] = $E_i \cdot f_i$ [Ws/s] = E_i / T_i [Ws/s] = $1 / T_i$ [Ws/s] $\Rightarrow P(T) = 1 / T$.

The energy of unit volume reads as: $\int_0^{\infty} P(T) \cdot dT = \int_0^{\infty} \frac{1}{T} \cdot dT = \left[\ln \frac{\infty}{0} \right] = \ln \infty = \infty [Ws]$, from which the result of the original definition is obtained! Where frequency is denoted by f [Hz], period time is T [s] and power is $P[W]$.

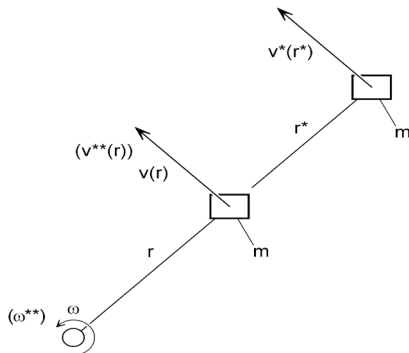


Figure 1. Illustration of rotating mass arrangement

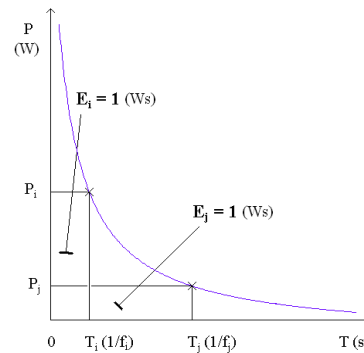


Figure 2. Performance-time and frequency spectrum of non-pondus energy system with unit energy content

As it can be seen from the diagram in Figure 2, the performance of space spectrum with zero and infinite frequency is zero and infinite respectively. For example, in an energy transformer, a 50 Hz spectrum of space is engaged with energy transmission. If we want to transmit the same potential at a higher kHz frequency, then the volume of the device will decrease since the two selected spectra of space perform energy transmission with a higher potential. The theory of energy spectrum is also justified by switchmode power supply units.

The interpretation of magnetic energy through directed spaces / fields:

According to Maxwell's equations, \vec{B} [Vs/m²] applies to $\text{div } \vec{B} = 0$, $\oint_A \vec{B} \cdot d\vec{A} = 0$ representing

directed space described by magnetic induction vector. From this scientists have concluded the magnetic is characterized by vortex and lack of divergence, i.e. it cannot function as an energy source. Whereas, the energy of magnetic field with a volume $V[m^3]$ is defined as

$$E_w = \frac{1}{2} \cdot \iiint_V \vec{B} \cdot \vec{H} \cdot dV \text{ [VAs]} \text{ and } \vec{B} = \mu \cdot \vec{H}. \text{ When } \vec{H} \text{ [A/m]} \text{ is introduced as induction factor to}$$

multiply \vec{B} [Vs/m²], which was generated through it, energy emerges. The energy of directed space is calculated as a scalar amount, but unlike in Maxwell's equations, it is considered as energy. This contradiction in science should be corrected as well. When expressed mathematically as directed energy, a magnetic field of volume V can be represented in a naturalistic relationship as

$$\vec{E}_w = \frac{1}{2} \cdot \iiint_V (\vec{B} \cdot \vec{H}) \cdot d\vec{H} \cdot dV \text{ [VAs]} \text{ and } \vec{B} = \mu \cdot (\vec{H} \cdot l). \text{ Where } d\vec{H} \text{ is the unit vector of } \vec{H} \text{ [A/m]} \text{ field}$$

strength and $l = \pm 1$ depending on the mode of induction. When an induced field inside the matter appears as source energy, then $l = -1$, otherwise $l = +1$. In this relationship both the magnitude and direction of a magnetically induced directed field are represented, which is a naturalistic description. This method is applied to magnetically induced fields through Finite Element Method (FEM). The induction of directed field inside the magnet is represented as $\vec{B} = \mu \cdot (-\vec{H})$, while that of the external field reads as $\vec{B} = \mu \cdot (\vec{H})$. Consequently, magnetic volume is correctly and naturalistically represented as source energy. That is why the computations are accurate. It is important to note that it is not the magnet that functions as energy source in accordance with science, but its internal directed energy field, which comes about as a result of magnetization and persisting even after magnetization due to special alloying methods, i.e. shifting material particles that move along a periodic orbit to another stable periodic orbit. Science cannot give a naturalistic and accurate description of this natural process on the basis of the present principles. (see the interpretation of $\vec{B} = \mu \cdot \vec{H}$) [5]. On the basis of the space model of the new space theory (UTE), a naturalistic interpretation can be given! Thus, the energy source of a magnet is the directed space, the field that is not recognized by contemporary science, which leads to the misconcepts that it does not even exist.

Analysis of directed spatial relation of three dipole magnets:

The arrangement of the three dipole cylinder magnets is shown in Figure 3. The dipole magnets marked 1 and 3 have been both magnetized in the same direction, i.e. axially, while the dipole magnet marked 2 has been magnetized diametrically. By studying the system shown in Figure 3, we can examine the spatial relationships of the magnets' directed fields.

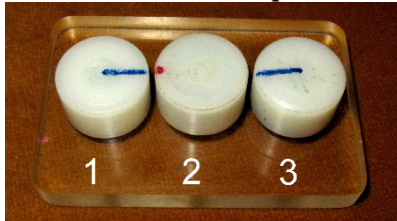


Figure 3. Arrangement of the three dipole magnets

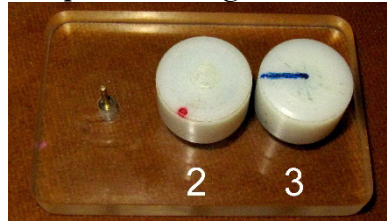


Figure 4. Two dipole magnets at rest

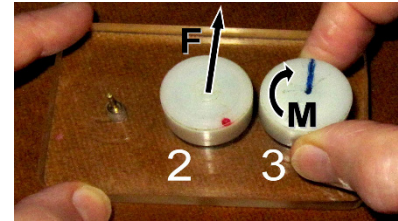


Figure 5. Two dipole magnets in a prestressed state

The blue line in magnets 1 and 3 shows the North pole N of the half-surfaces, while the dot on magnet 2 indicates the Southern pole S of the external surfaces. The relationship of the directed fields of dipole magnets 2 and 3 will be further analysed in detail. First, magnet 1 is removed. If dipole magnet 3 is turned out of its rest (see Figure 4) by 90 degrees (see Figure 5), a magnetic momentum is resulted and the couple of forces triggered want to turn dipole magnet 3 back into its rest. The maximum momentum is achieved with a rotation by 90 degrees as shown in Figure 5. Keeping dipole magnet 3 in this position, magnet 2 can be easily turned around, which cannot be explained by the rules taught in textbooks. Directed field relationship is not the same as a mechanical contact, where a momentum is expected to induce another momentum. In this case, however, the momentum results in a force on dipole magnet 2 (see the hand turning the magnet in

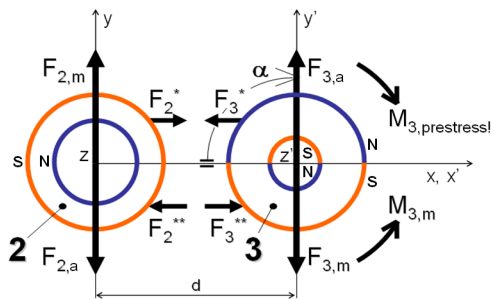


Figure 6. FEM model with forces F and momenta M

Figure 5, where momentum M triggers force F), which wants to move dipole magnet 2 behind dipole magnet 3 in accordance with the induction directions applied. What we see here, i.e. force is triggered by momentum, cannot be interpreted by the basic principles of mechanics nowadays. The mechanic chain closing on the directed field relationship behaves differently in this arrangement. Of course, the conservation of energy naturally applies here as well (on the basis of Figure 6. it can be expressed as $F_{2,m} \cdot d = M_{3,prestess}$) Figure 6 illustrates the acting forces and momenta in a FEM model set up for an angular

rotation where $\alpha=90^0$. The computation results of FEM for angular rotations where $\alpha = 0^0, 90^0, 180^0$ are shown in Table 1. Note that it cannot be explained through FEM that force $F_{2,m}$ acting on dipole magnet 2, which is taken by axis 2 as force $F_{2,a}$, is triggered by momentum $M_{3,prestess}$.

Table 1. Forces Fm and Momenta Mm acting on dipole magnets 2 and 3 in their own coordination system (FEM computation results)

α	[N] 2 [Nmm]						[N] 3 [Nmm]					
	F_x	F_y	F_z	M_x	M_y	M_z	$F_{x'}$	$F_{y'}$	$F_{z'}$	$M_{x'}$	$M_{y'}$	$M_{z'}$
0^0	11	0	0	0	0	0	-11	0	0	0	0	0
90^0	0	2.5	0	0	0	0	0	-2.5	0	0	0	53.4
180^0	-9.6	0	0	0	0	0	9.6	0	0	0	0	0

It can only be revealed from the computation results on the axis of dipole magnet 3. As usual, the S – N superficies above axes x, x' are pulled by forces F_2^* and F_3^* , whereas those below the axes are repelled by forces F_2^{**} and F_3^{**} . Couple forces F_2^* and F_2^{**} do not induce a momentum in dipole magnet 2. Furthermore, superficies directed South exactly integrates the effects of couple forces F_3^* and F_3^{**} , consequently, no x directed forces appear in directed spatial relations, however, momentum $M_{3,m}$ is induced by the couples of forces and force $F_{3,m}$ emerges as a force $F_{2,m}$ opposite in direction, which is counterbalanced by force $F_{3,a}$ on the axis of dipole magnet 3. The question

arises: what is the structure of the field like which performs transformation with such perfection as it can be experienced. The new space model provides an obvious explanation for this experience!

4. SUMMARY

A naturalistic definition of energy and force can be given on the basis of the new space theory with a new space model by introducing directed fields. Recognizing directed fields signals a new technology. Due to the interaction of directed fields, continuous thrust force and thus a new energy source can be generated. To achieve this, industrial magnets play a significant role. Actually, the technology of directed fields has been applied at a high level by mankind, but it is still not acknowledged by science to date. Even when producing different alloys, it is the internal directed field or internal aura that is researched. This is also the basis of semi-conductor technology and it is miniaturized by nanotechnology. The internal directed field systems in microprocessors might represent the highest technical achievement today. The operation of living systems also relies upon the controlled interaction of directed fields. The operational mechanism of the interaction between directed fields regulates every system to reach an energy minimum and energy equilibrium, thus ensuring energy conservation. A further conclusion is that the technology of directed spaces has reached a high level by now. As a result of this, it is also possible to intrude into highly protected systems from anywhere even from home. Practically, anybody can start a process to destroy our civilization. To prevent all this, (the research on lost civilizations indicates that it has happened several times in Earth's history) it would be very important to raise the morale of mankind to this extraordinarily high level. It may begin in science through a change in paradigm with new bases acknowledged where energy interactions are calculated as vectors, which is in harmony with the technology of directed spaces. Relying on my 34-year-research experience, I can state that future technology is represented by the theoretical and practical application of directed spaces. This will open up new ways for science to develop new energy sources, drives and satellites.

Acknowledgement

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REFERENCES

- [1.] Fekete, G.: The new unified theory of energy (unithe) supporting CERN measurements and its utilization in energy transformations, ACTA TECHNICA CORVINIENSIS – BULLETIN OF ENGINEERING 7: (3) pp. 165-175. (2014). <http://www.uni-miskolc.hu/~elkfegab/ACTA-2014-3-25.pdf>
- [2.] Fekete, G.: Interpretation of Maxwell's work based on Unified Theory of Energy (UNITHE), XXVIII. International Multidisciplinary Scientific Conference, University of Miskolc, (microCAD `2014), Vol. Electrical Engineering, CD-ROM. <http://www.uni-miskolc.hu/~elkfegab/uCAD%202014%20Fekete.pdf>
- [3.] Fekete, G.: The New Unified Theory of Energy (UNITHE) and Practically Useful Results. 12th International Conference on Energetics – Electrical Engineering, ENELKO 2011, Cluj, 6-9 October 2011, Proceedings, pp: 28-37. http://www.uni-miskolc.hu/~elkfegab/ENELKO_2011.pdf
- [4.] Zombory László, Elektromágneses Terek, Hungarian edition Műszaki Könyvkiadó Kft., 2006. http://www.electro.uni-miskolc.hu/elektromagnesses_uj.pdf, a feltöltés ellenőrizve 2015. 01. 23.
- [5.] Feynmannak a mágnes tekintetében tett BBC interjúja, <https://www.youtube.com/watch?v=wMFPeDwULM>, a feltöltés ellenőrizve 2015. 01. 23.
- [6.] Fekete, G.: Process for moving “inducted voltage”-less rolling part placed in magnetic field and equipment for realisation of process, University of Miskolc, Hungarian patent: HU 226 570 B1, 2009.
- [7.] Fekete, G.; Szalontai, L.: The Force System and the Energy of a Permanent Magnet Excited Field. XXV. International Scientific Conference, University of Miskolc, 2011, (microCAD `2011), Vol. Electrical Engineering, pp: 17-22.
- [8.] Fekete, G.: Energy Management on New Basis. XXV. International Scientific Conference, University of Miskolc, 2011, (microCAD `2011), Vol. Environmental and Energy Management, pp: 33-38.
- [9.] Fekete, G.: Rectifying of Contact Energy in New Systems. 16th International Conference on Electrical Drives and Power Electronics (EDPE 2007), High Tatras, Slovakia, 2007, Proceedings: Power Generation and Transmission, Full paper on CD-ROM.
- [10.] Fekete, G.: Generation of Contact Energy in a New, Periodic Operating System. International Conference of Computer Science and Energetics-Electrical Engineering, (SzámOkt-ENELKO 2007), Oradea, 2007, Proceedings, pp: 40-47.