A paper from the XVIII International Scientific Symposium "REORGANIZATION OF NATURAL SCIENCES AND ENERGETICS"-2009 (V.N. Shikhirin, Chairman of Organizing Committee), **specially reworked for the 6-the International Scientific-Practical Conference "Tore Technologies", Irkutsk State University, 29 October, 2009.**

THE STRUCTURIZATION ENERGY AND INFORMATION AS A TECHNOLOGY OF NATTER EXISTENCE IN NATURE

Valeriy Shikhirin
ELASTONEERING INC,
Independent Scientist and Inventor

"This paper was written "at one go", therefore it may contain minor non-critical errors, easily correctable and described with respective comments in future deliverables of the author".

"I must furnish those, who would protect or save life, with an energy source, which produces energy so cheaply that nuclear fission will not only be uneconomical, but ridiculous.
This is the task I have set myself in what little life I have left."
Viktor Schauberger

"There are no indivisible things and quantities, and no approximations in Nature. Only Arithmetic and Geometry "work" in it".
Vyacheslav Kasatkin

This paper actually continues the subject set forth in [1], providing more details on functionality of the VTortex as the superior and independent form of fluid medium existence in Nature.
In terms of space dimensionality, the seven-dimensional (7D) VTortex ranks the top in the priority order.
The dimensionality of space is determined by the number of "colors" being the bases of a tight pack of polyhedrons any object or figure consists of.
The number of the "colors" should such that identical colors do not have common boundaries.
It should be known (remembered) that along with the object surface structuring function, "colors" make the bases of toral, spherical, the Mobius Band, the Klein Bottle and other polyhedrons (Shikhirin Cells[1,2,3,4,5,6,7]) that make the body of an object.

Moreover, the author believes that in every tight polyhedron pack any torus, sphere, the Mobius Band, the Klein Bottle, etc., consists of, all its faces base are of the same color as its base, have common boundaries and there are never two identical colors.

Totally, there are 7 independent figures that have a one-dimensional, two-dimensional, … seven-dimensional space, and they are represented by Shikhirin Cells[1,2,3,4,5,6,7] [2,3] (Fig.1).
The whole picture looks as follows:

- "7-color map" is a map "put on" a torus that represents a 7 dimensional (7D) natural space. This is a VTortex of mega-, macro-, micro- and nano-worlds such as a galaxy, a tornado, an atom, etc.;
- "6-color map" is a map "put on" the Mobius Band, the Klein Bottle or a projection plane representing 6-dimensional (6D) natural spaces. These are systems little known so far but existing in Nature;
- "5-color map" is a map "put on" a torus that represents a 5-dimensional (5D) natural space. These are also systems little known at present but existing in Nature;

- "4-color map" is a map "put on" a sphere that represents Fuller's 4-dimensional (4D) natural space (a sphere, see [4] for details). This space houses the forms of fluid medium existence; it is where we all live. This is the space of the Universe;
- "3-color map" is a map "put on" a plane that represents 3-dimensional (3D) natural space. This is a surface;
- " 2-color map" is a map "put on" a line representing a 2-dimensional (2D) space. This is a line;
- "1-color map" is a map "put on" a point representing 1-dimensional (1D) space. This is a point.

All the above figures interact through a common working fluid medium, the Aether (see [4] for details), through a so-called "nested dolls" effect.

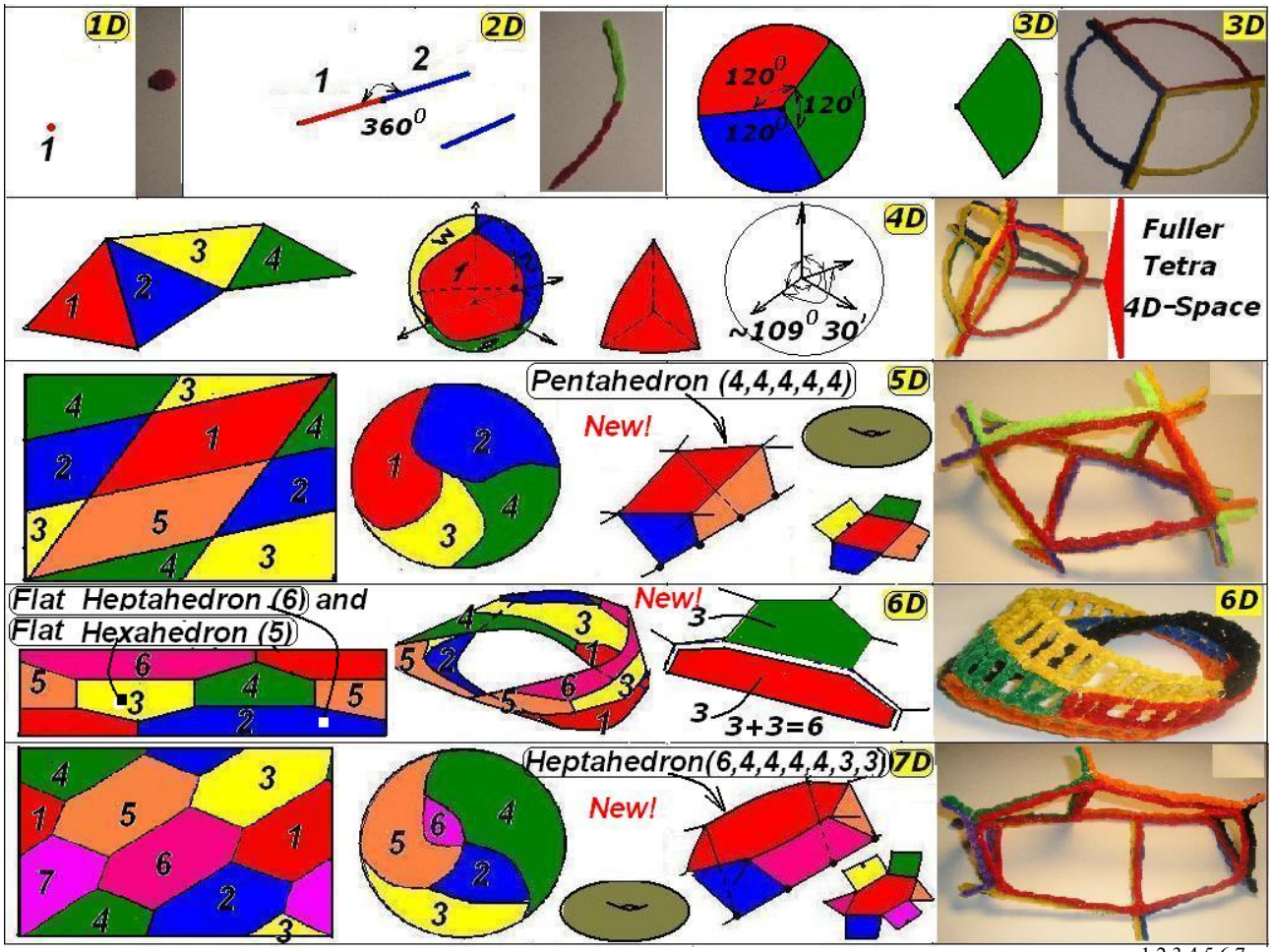


Fig. 1. Forms of working fluid medium existence in Nature represented by Shikhirin Cells[1,2,3,4,5,6,7].

All figures (Shikhirin Cells[1,2,3,4,5,6,7]) can exist inside one another (Fig. 2). For instance, The intersection of 4 dodecahedrons (4D) is a tetrahedron (4D) in which VTortex galaxies (7D) are grouped that have stellar systems (3D) located at junctions of 3 honeycomb cells/colors (4D).

A planet or a star (4D), e.g. Earth, may include an atmosphere (7D), tornadoes (7D), vegetable and animal worlds (7D, 6D, 5D, 4D, 3D, 2D and 1D) up to the nano-world (an atom, 7D) and less.

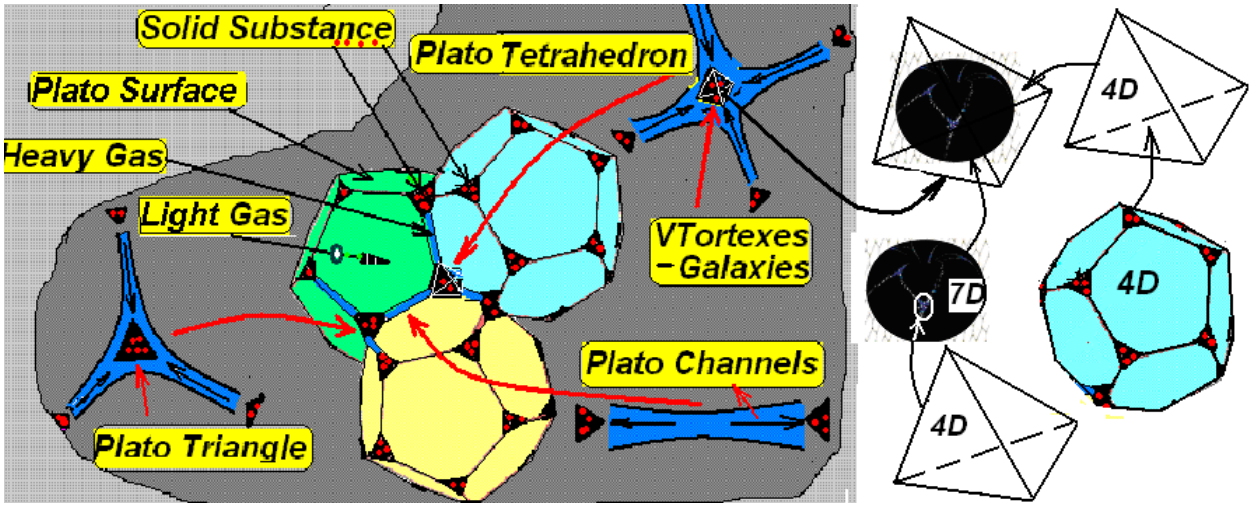


Fig. 2. An example showing figures of different dimensionality co-existing in Nature.

Structurization information

The Structurization Information, $\boldsymbol{I}_S$, is the universal basis for all information.

Like the Structurization Energy, the Structurization Information, I_S, has five independent levels transformed into each other (Fig. 3), namely: I_{foam4}, $I_{bundle4}$, $I_{foam/VTortex}$, $I_{Coutte\text{-}Shikhirin\ flow}$ and $I_{VTortex}$ ($I_{bundle7}$ and I_{foam7}) [3,4].

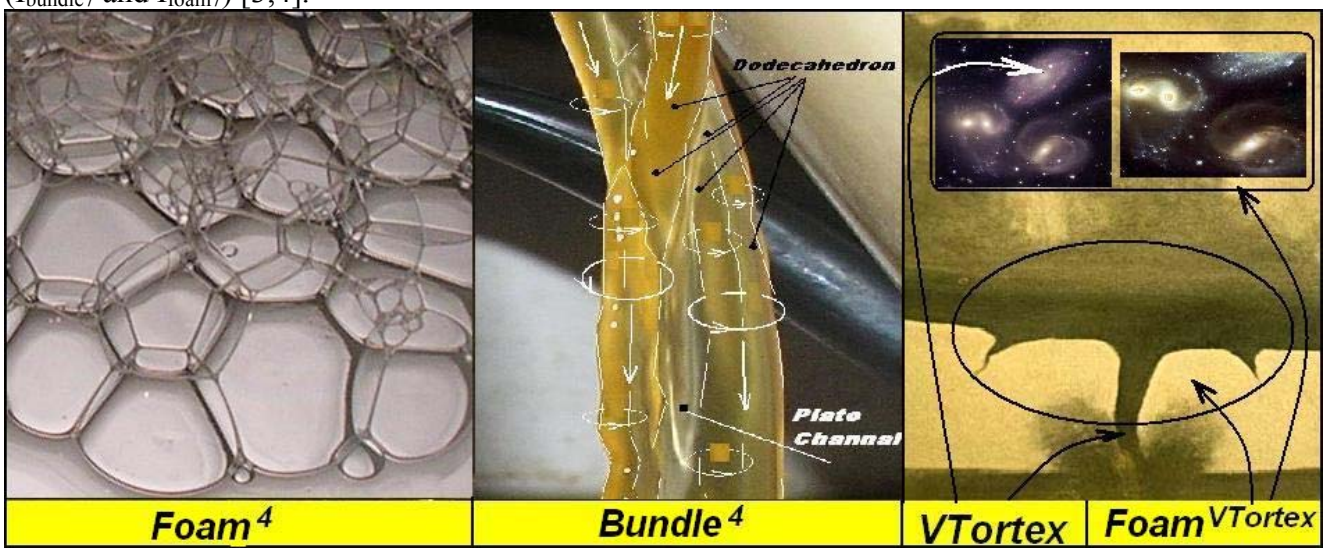


Fig. 3. Types of working fluid medium in Nature.

$I_{Coutte\text{-}Shikhirin\ flow}$ and $I_{VTortex}$ ($I_{bundle7}$ and I_{foam7}) are not shown. Digits 4 and 7 designate the space dimensionality, i.e. 4D and 7D, respectively. Clear areas in polyhedral foam specially "backlit" (highlighted) by the author for picture shooting are mainly pentagons, i.e. faces of dodecahedrons.

In [2, 5, 6] the author shows that all energy exchange processes that involve the Structurization Energy are automatically followed by their "mathematical environment" being their integral part constantly self-adapted and instantly "appearing" and "disappearing" like a phase transfer.

Given below are some conclusions from these and new investigations:

- The area ratio between a closed torus and a sphere inscribed therein is the first and the foremost natural ratio, namely "***Pi-Goldenest Ratio",*** which is the source of $\boldsymbol{Pi_{Sphere}}$ and $\boldsymbol{Pi_{Torus}}$, and consequently, **of the *φ Golden Ratio*** (Fig. 4).

According to its natural hierarchy the ***Phi Golden Ratio*** is a special case or a derivative of a set of concurrently interacting $\boldsymbol{Pi_{Sphere}}$ and $\boldsymbol{Pi_{Torus}}$ in a sphere inscribed into a torus.

- The "direct" ***Phi Golden Ratio*** is absent in a torus, a sphere, the Mobius band, projection plane and their elements – Shikhirin cells[4,6,7] – that constitute their volumes.
- The "direct" ***Phi Golden Ratio*** or/and its elements are present only in "non-circular" (without ***Pi***) linear, areal and bulk bodies, e.g. Plato or/and Archimedes bodies, their variations or their packages inscribed into a sphere or circumscribed by it; in other words, it "is responsible" only for "faceted" linear, flat and bulk bodies.

Linear dimensions of polyhedron elements expressed through angular parameters, i.e. through ***Pi,*** **cannot be considered a "direct *Pi* effect".**

- ***Pi*** и ***Phi*** are mutually exclusive "constants" that cannot co-exist. By a hierarchic level ***Pi*** is higher than ***Phi.***
- In "foam[4]", consisting of a tight pack of dodecahedrons or their variations having the "golden ratio", the Pi_{Sphere} is present explicitly only in spheres accompanying polyhedrons. Linear dimensions of polyhedron elements expressed through angular parameters, i.e. through ***Pi***, cannot be considered a "direct ***Pi*** effect".
- In foam[7], consisting of a tight pack of Shikhirin cells[7] where the "golden ratio" in its direct sense is absent, the Pi_{Torus} is explicitly present only in tori that accompany polyhedrons[7], while Pi_{Sphere} and Pi_{Torus} are directly present in Shikhirin cells[7].
- Pi_{Sphere} and Pi_{Torus} that are present in common formulas simultaneously with ***Phi***, e.g. in calculations of flat "golden", "sacred" and other triangle elements, are not a result of their direct joining. That is, their parameters are only expressed through them, being absent in real parameters of natural "golden" objects.
- A sphere inscribed into a torus produces a set of "flat" triangles having a certain physical purpose, i.e. generation of "numbers" $\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$, $\sqrt{7}$, $\sqrt{10}$ and their combinations; ***1, 2, 3, 4*** ; regular and irregular fractions; the ***Phi*** golden ratio and its derivatives; seven "colors" as well as a tight pack of Shikhirin cells[7] representing a torus, etc. (Fig. 4).
- The torus formation is automatically followed by formation of a family of torus double knots (Torus Double Knots Family) (Table 1) involved in structuring of the surface of self-supported VTortexes as "genetic" codes of elements of mega-, macro-, micro- and nano-worlds such as a galaxy, a tornado, a small comet, a ball lightning, an atom, etc.
- A "functioning" VTortex torus, besides Pi_{Sphere} and Pi_{Torus}, has also "knot Pi's", or "Pi_{Knot}" (a knot bundle[7])
- Every thread of a "flow bundle[4]" as well as of a "vortex bundle[7]" has its own ***Pi***, etc.
- A surface is structured with at least seven hexahedral (honeycomb cells) "colors". The general picture of structurization, namely the picture of torus double knots structuring the surfaces of self-supported VTortexes as "genetic" codes of elements of mega-, macro-, micro- and nano-worlds such as a galaxy, a tornado, a small comet, a ball lightning, an atom, etc., is shown in Table 1 below and in *http://youtube.com/user/elastoneering, part 4.*
- "Colors"- honeycomb cells - make the bases of at least seven Shikhirin[7] Cells involved into VTortex body structuring. The Shikhirin Cells[7] Family quantitatively matches the Torus Double Knots Family, see *http://youtube.com/user/elastoneering, part 6.*
- **A Shikhirin Cell[7] is the 35-th natural heptahedron (6, 4, 4, 4, 4, 3, 3) in the system of topologically distinct artificial heptahedrons** [7, http://en.wikipedia.org/wiki/Heptahedron]**.**

At the same time the Shikhirin[7] Cell is a toric heptahedron in which the hexahedral honeycomb cell base is equal to one seventh of the torus surface while the other toric faces have a special surface (Fig. 5). *http://youtube.com/user/elastoneering, part 6.*

- The VTortex **is the source of**:
    - formation of a family of logarithmic spirals **as torus knot lines** (Table 1). **Only *logarithmic spirals*** with different parameters (Fig. 6) can be flat projections of a closed torus (top view) knotted by torus double knots, particularly by the (2.3) torus knot. *http://youtube.com/user/elastoneering, part 7.*
    - the toric, spherical and knot Pi (Fig. 3), see [5, 6] for details;

- the Global Natural Toroidal Phyllotaxis Process. The Phyllotaxis Process is developed in consistency with the cylindrical preform of the torus, (*http://youtube.com/user/elastoneering, part 8*,
- Phi (1,618...), 1/Phi (0,618...), «numbers» 1, 2, 3, 4, ..., √2,√3, √5, √7,√10, …, Fibonacci numbers, etc. **only in flat cross-sections, with the VTortex knotted by the torus (2.3) knot only** (Fig. 7). Fibonacci numbers are produced with respect to the structure of the torus cylindrical perform, (*http://youtube.com/user/elastoneering, part 8*;

- The so called "Golden Spiral" is also related to the logarithmic spiral but it does not take part in natural processes since it is artificially inscribed into the system of "golden" triangles (Fig. 7). The top view of the (2.3) knot line has one full 360^{o} turn whereas the full turn of the Golden Spiral is more than 360^{0}, approximately 375^{0}. The Golden Spiral "works" only on 3D plane.

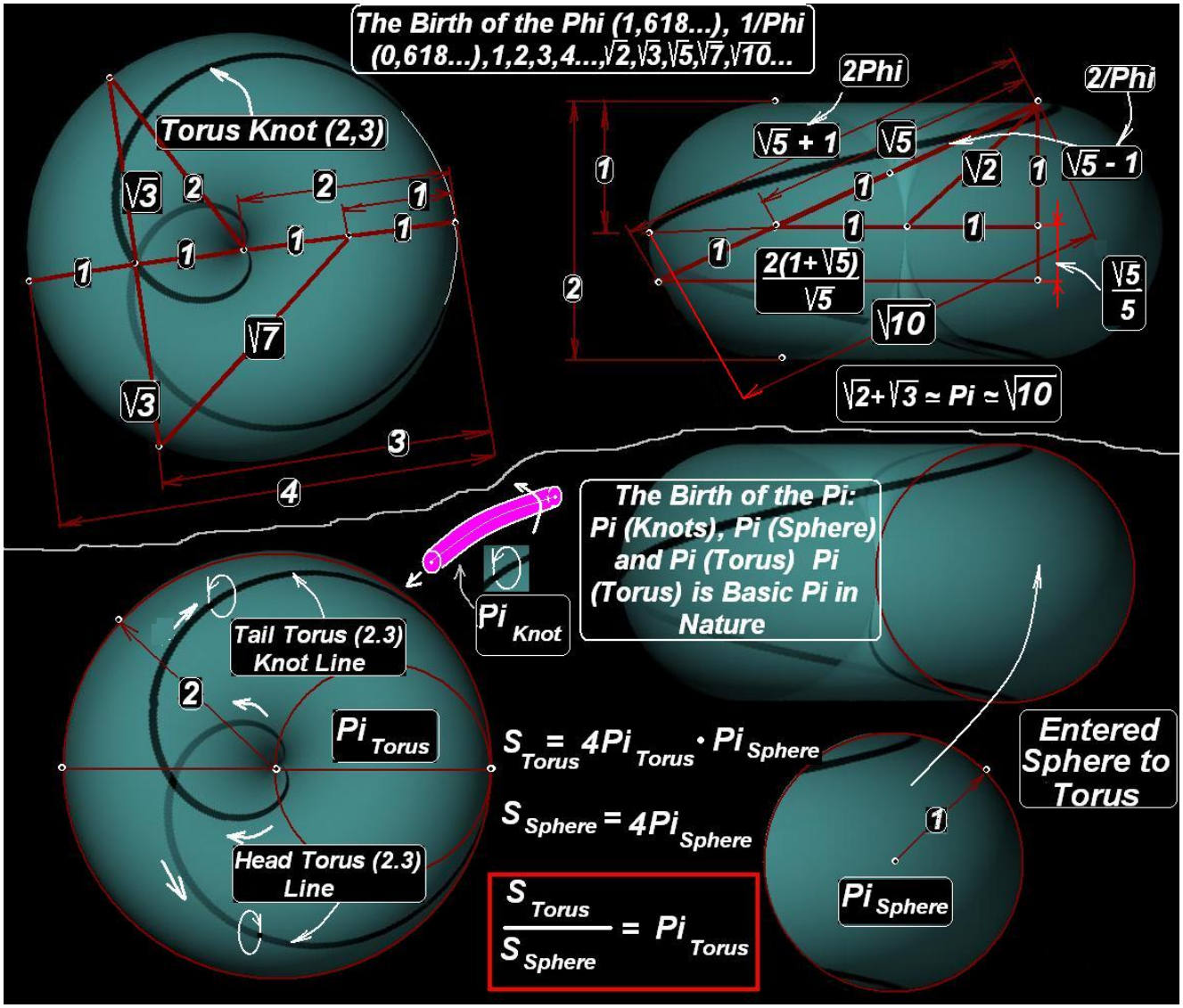


Fig. 4. The "birth" of the ***Phi***, numbers *1, 2, 3, 4..., √2, √3, √5, √7, √10, Pi_{Sphere}, Pi_{Torus}* and Pi_{Knot}.

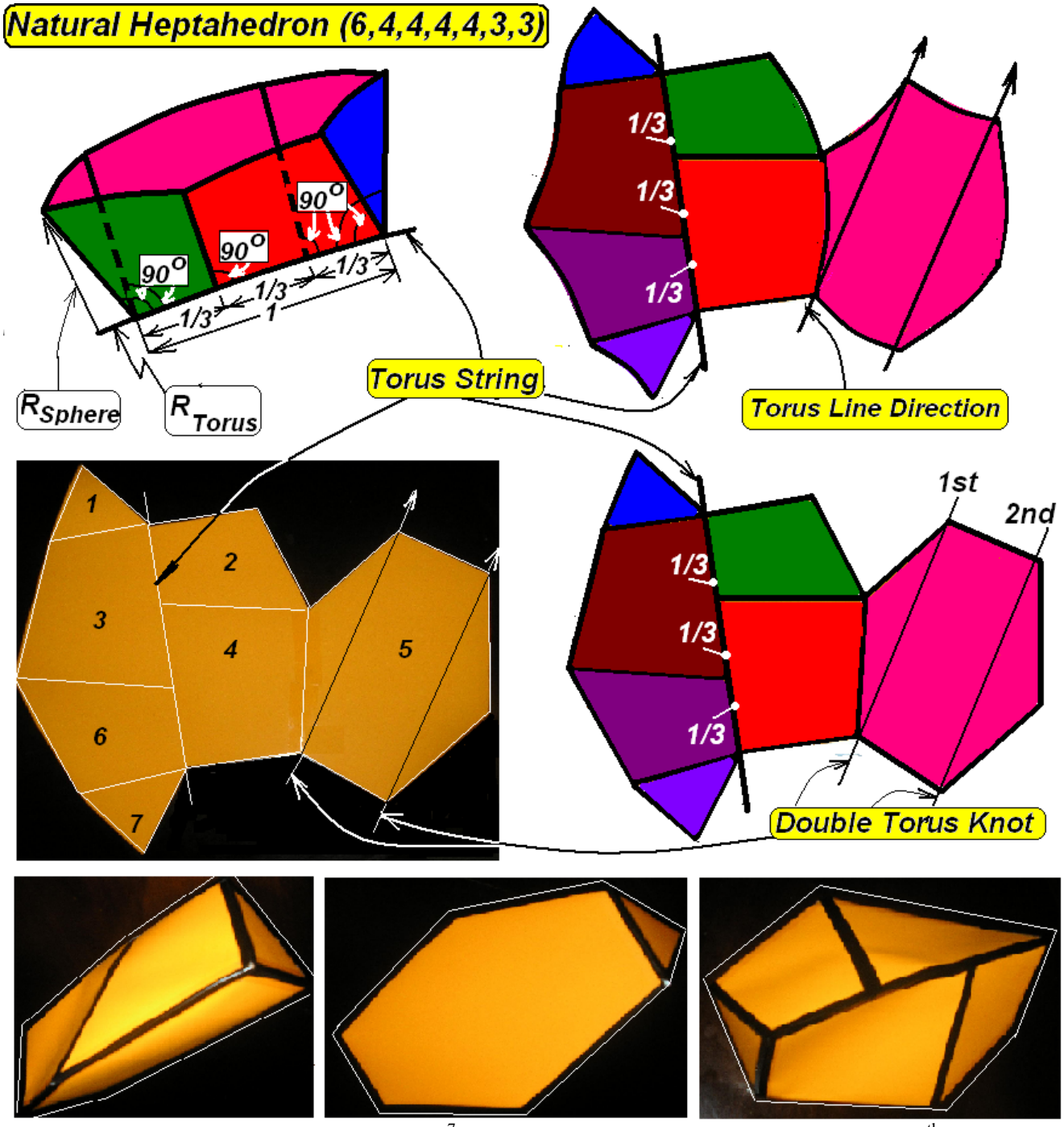


Fig. 5. The structure of the Shikhirin Cell[7] or Natural Heptahedron (6,4,4,4,4,3,3) as 1/7th of a torus, which is shown as "1/7th" part of the torus cylindrical perform.

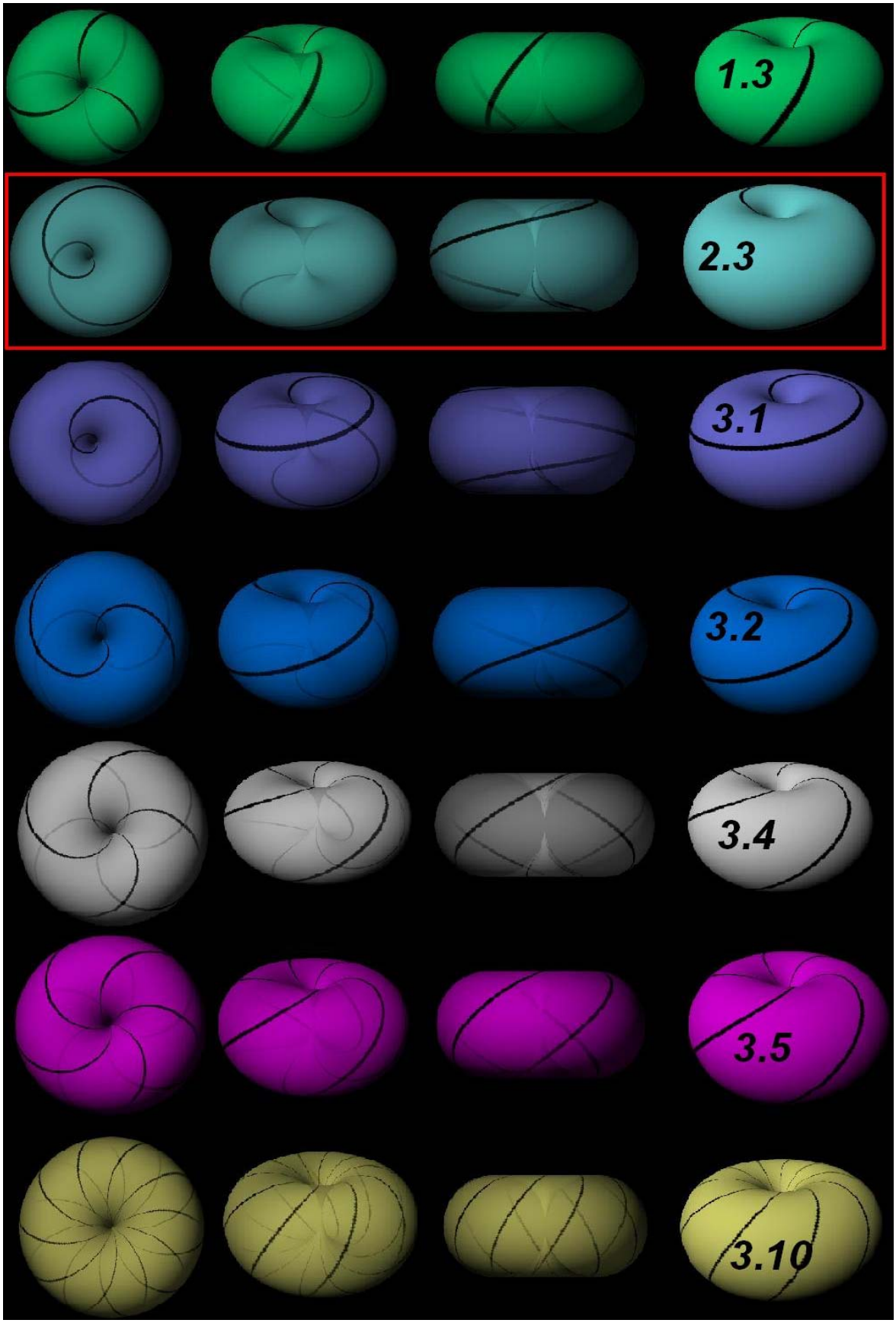


Fig.6. Examples of logarithmic spirals as “flat” projections of torus knot lines. The tori shown in the first three columns are “transparent”.

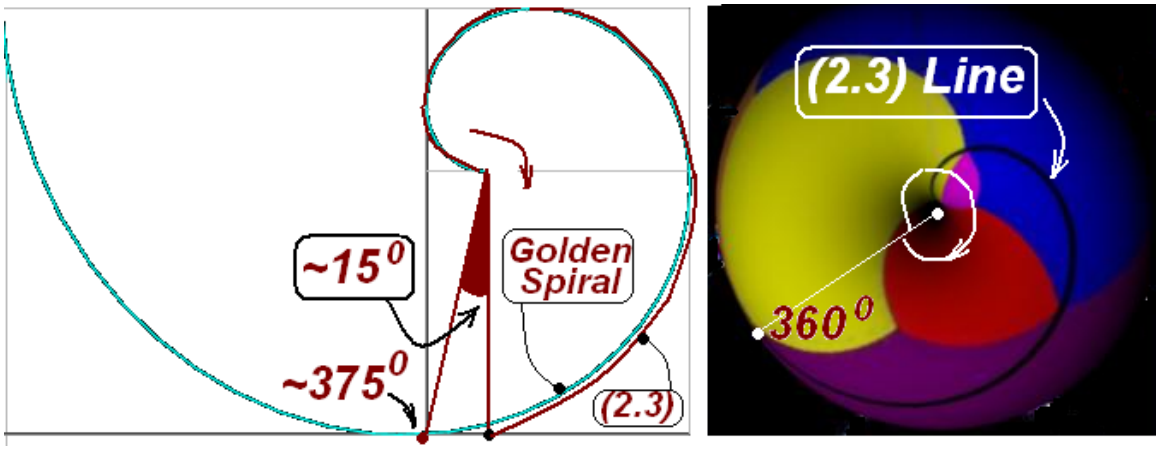


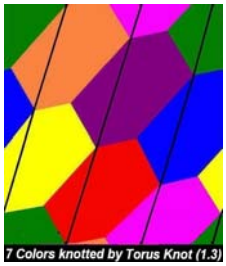
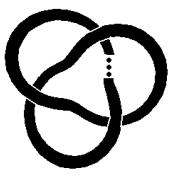
Fig. 7. The "Golden Spiral" and the torus (2.3) knot spiral (line) in projection.

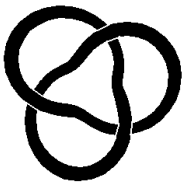
The Structurization energy:
A VTortex generates the following energy fields, see [1] for details:
- $F_{Po,To}$ - Overpressure, P_o , and temperature, T_o, field;
- $F_{P-,T-}$ - Vacuum, P^- , and temperature, T^- (torus head), field;
- $F_{P+,T+}$ - High pressure, P^+ , and temperature, T^+ (torus tail), field;
- F_E - Electric (static) field, E^+ (torus tail) and E^- (torus head);
- F_M - Magnetic field, M^+ (torus tail) and M^- (torus head);
- F_{Tr} - Torsion field, T^+(torus tail) and T^- (torus head), etc.

Table 1

Torus Double Knots Family

1-st level

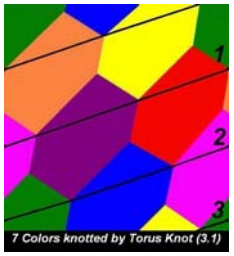
Basic torus knot types (7 Colors)	**Right (→) и Left (←) (Directions)** *The external view of basic double [1] torus knots (1.3), (2.3) and (3.1)in dynamics (animated) shown in* http://youtube.com/user/elastoneering, *part 3*
(1.3)   Unfolded torus (a preform)	 $_{\rightarrow}(\{n_p + [(n_p - 1)/2]\} ; 3n_q)^{\rightarrow}$ $_{\leftarrow}(\{n_p + [(n_p - 1)/2]\} ; 3n_q)^{\leftarrow}$ **или** $2(\{n_p + [(n_p - 1)/2]\} ; 3n_q)$ $p = \{n_p + [(n_p - 1)/2]\}$ is *the number of turns around the torus meridian*, i.e. a number sequence 1,2,4,5,7,8,10, ... consisting of positive integers except number 3 and multiples of 3, where n_p are positive integers, while operation [X] is an operation of taking an integer (integer division). $q = 3n_q$ is *the number of turns around the torus longitude*, where n_q are positive integers. $p = \{n_p + [(n_p - 1)/2]\}$ and $q = 3n_q$ can be combined to produce a number of options, for instance,2(7;3x12) = 2(7;36), 2(4;3x3) = 2(4;9)
(2.3) **The Trefoil Knot**	 **The Big Trefoil Knot** $_{\rightarrow}(2\{n_p + [(n_p - 1)/2]\} ; 3n_q)^{\rightarrow}$ $_{\leftarrow}(2\{n_p + [(n_p - 1)/2]\} ; 3n_q)^{\leftarrow}$ **or** $2(2\{n_p + [(n_p - 1)/2]\} ; 3n_q)$



Torus preform

$\boldsymbol{p = 2\{n_p + [(n_p - 1)/2]\}}$ is *the number of turns around the torus meridian*, i.e. a number sequence 1,2,4,5,7,8,10, ... consisting of positive integers except number 3 and multiples of 3, where $\boldsymbol{n_p}$ are positive integers, while operation [X] is an operation of taking an integer (integer division).
$q = 3n_q$ is *the number of turns around the torus longitude*, where n_q are positive integers.
$\boldsymbol{2p = \{n_p + [(n_p - 1)/2]\}}$ and $\boldsymbol{q = 3n_q}$ can be combined to produce multiple options (combinations), for instance, 2(*2*x5;*3*x7) = 2(10;21), 2(*2*x12;*3*x10) = 2(22;30)

(3.1)

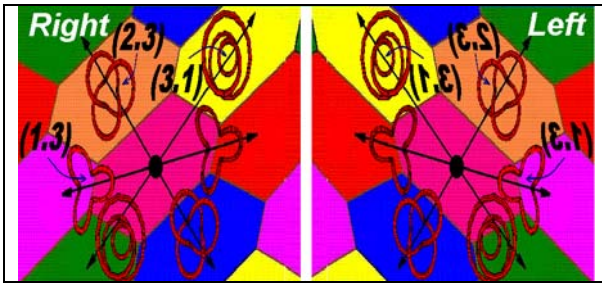


Torus preform

$\rightarrow\boldsymbol{(3n_p\,;\,\{n_q + [(n_q - 1)/2]\})}^{\rightarrow}$
$\leftarrow\boldsymbol{(3n_p\,;\,\{n_q + [(n_q - 1)/2]\})}^{\leftarrow}$
или
$\boldsymbol{2(3n_p\,;\,\{n_q + [(n_q - 1)/2]\})}$

$\boldsymbol{p = 3n_p}$ – is *the number of turns around the torus meridian*, where n_p are positive integers.
$\boldsymbol{q = \{n_q + [(n_q - 1)/2]\}}$ is *the number of turns around the torus longitude*, i.e. a number sequence 1,2,4,5,7,8,10, ... consisting of positive integers except number 3 and multiples of 3, where $\boldsymbol{n_q}$ are positive integers, while operation [X] is an operation of taking an integer (integer division).
$\boldsymbol{p = 3n_p}$ and $\boldsymbol{q = \{n_p + [(n_p - 1)/2]\}}$ can be combined to produce multiple options (combinations), for instance, 2(*3*x12;*2*x11) = 2(36;22), (*3*x102;2x8) = (*306*;16)

2-nd level



$\boldsymbol{2(\{n_p + [(n_p - 1)/2]\}\,;\,3n_q)}$, $\boldsymbol{2(2\{n_p + [(n_p - 1)/2]\}\,;\,3n_q)}$ and
$\boldsymbol{2(3n_p\,;\,\{n_q + [(n_q - 1)/2]\})}$
can be combined to produce multiple options (combinations), *for instance*, 2(7;36), 2(10;21) and 2(36;22)

What makes the Basis of Alchemy (of which Chemistry is only a small part) or the infinite periodic table, is, in my opinion, only a part of self-supported VTortexes knotted by Family Torus Knots $\boldsymbol{2(\{n_p + [(n_p - 1)/2]\}\,;\,3n_q)}$, $\boldsymbol{2(2\{n_p + [(n_p - 1)/2]\}\,;\,3n_q)}$ **and** $\boldsymbol{2(3n_p\,;\,\{n_q + [(n_q - 1)/2]\})}$, ***of which*** (1.3),(2.3), (3.1) (Fig. 8) are the simplest or the primary knots.
Family Torus Knots may enter into a plurality of combinations (options)***, for instance,*** 2(7;36), 2(10;21) and 2(36;22).

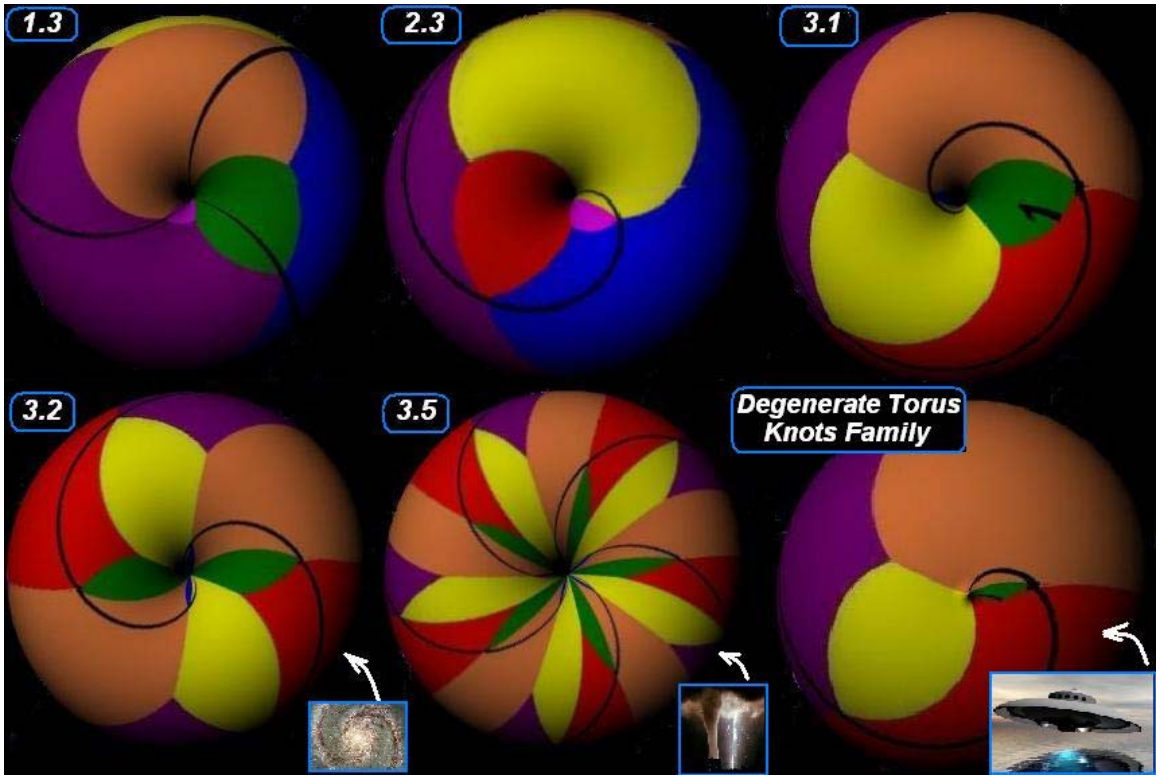


Fig. 8. Basic torus (1.3),(2.3), (3.1) knots and torus-knot-based systems, such as a galaxy (3.2), a tornado (3.5) , etc., known in Nature and engineering

Torus "snapshots" (Figs. 4, 6-8) were made by Nikolay Shikhirin from his own animations shown in http://youtube.com/user/elastoneering, parts 3-5,7,8**.**

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