Anthropogenic modulation of our cosmic environment

by Peter Jakubowski
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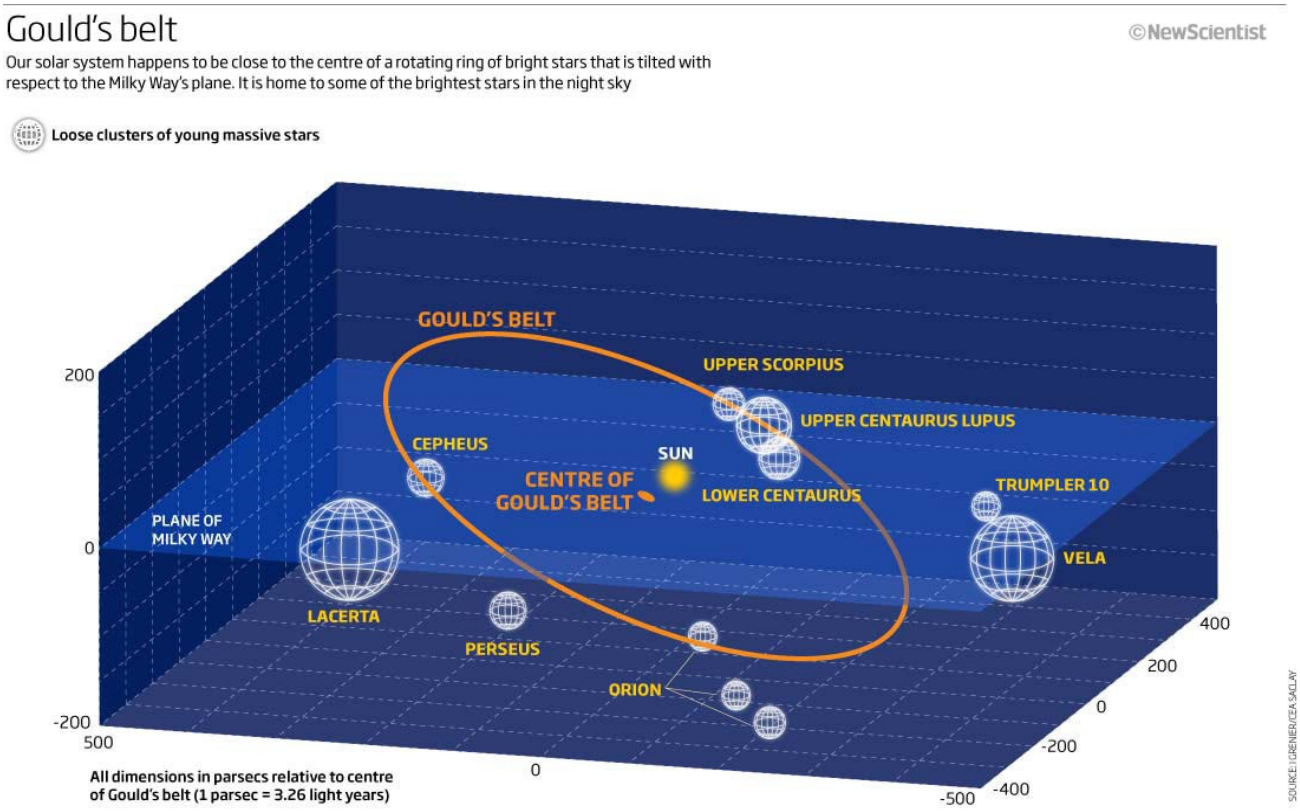
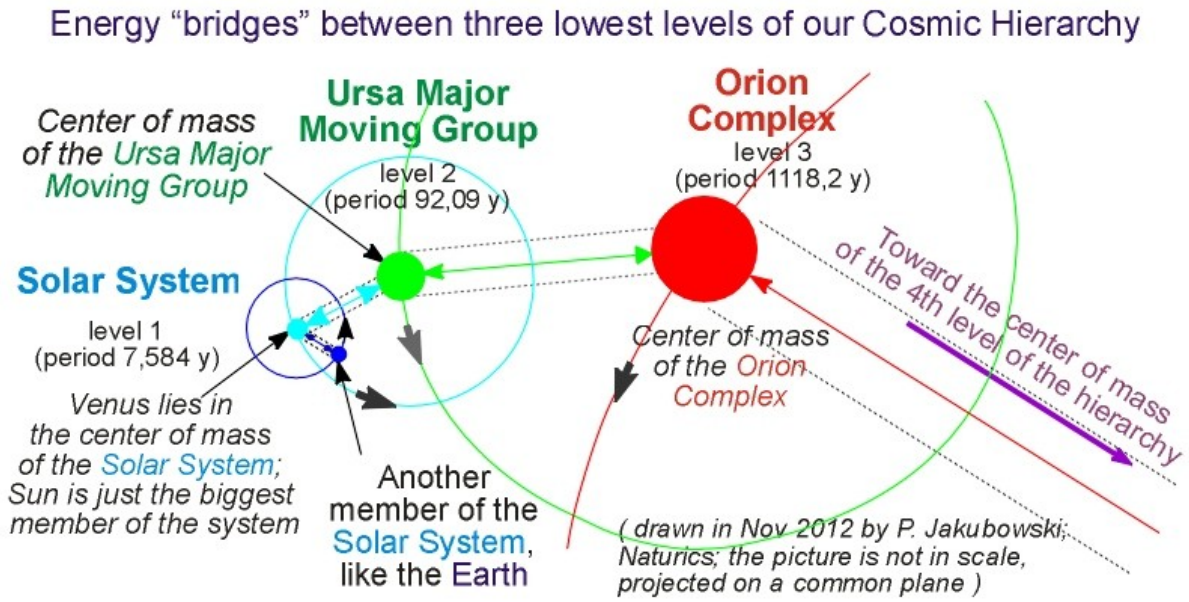
The Unified-Physics definition of the Cosmic Hierarchy of the Solar System seems to be at the moment the best way to properly describe the structure and properties of our cosmic home and its near and far neighborhood. The idea of the Venus-centered Solar System defining the internal part of our cosmic home is ready for a wide application in all scientific research [1]. However, the idea that we ourselves and our predecessors, the Family Homo sapiens, have been, and still are, also modulating the outside of our cosmic home, the cosmic environment of the Solar System, is formulated here for the first time in science.

Many of the brightest stars in our sky seem slightly offset from the band of the cosmic objects we were traditionally used to call our galaxy, Milky Way. These stars are part of the **Gould's Belt**, a ring of bright young stars around the sky that formed under mysterious circumstances quite recently in the history of our cosmic environment. Owing to the idea of our Cosmic Hierarchy, we begin to understand the possible conditions and relations behind the mystery.

If we compare the newest graphical imagination of the Gould's Belt (presented here with permission of *New Scientist* [2]):



with our schematic presentation of the Cosmic Hierarchy of the Solar System (compare Table I),



the similarity of the objects and their dimensions becomes evident, if we identify the third level of the Hierarchy, the Orion Complex, with the Gould's Belt of the previous diagram.

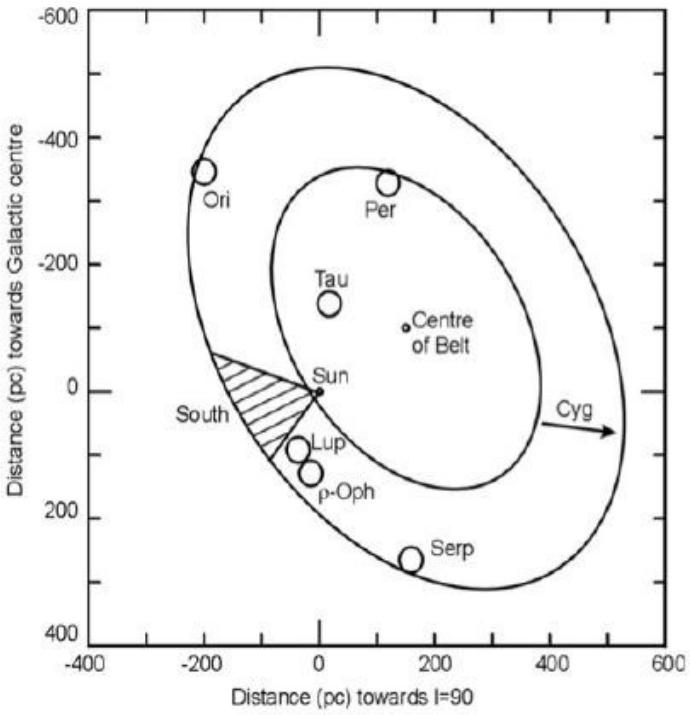
Let us also cite what *New Scientist* publish on its Gould's Belt diagram: "Our solar system happens to be close to the centre of a rotating ring of bright stars that is tilted with respect to the Milky Way's plane. It is home to some of the brightest stars in the night sky."

According to Wikipedia [3], the Gould Belt **(**named after Benjamin Gould, who identified it in 1879) is a partial ring of stars in the Milky Way, **about 3000 light-years across, tilted toward the galactic plane by about 16 to 20 degrees.** The belt is thought to be from 30 to 50 million years old, and of unknown origin.

Ken Croswell wrote an impressive article [4] , "Gould's Belt: Ring Around the Sky", on his website ten years ago:

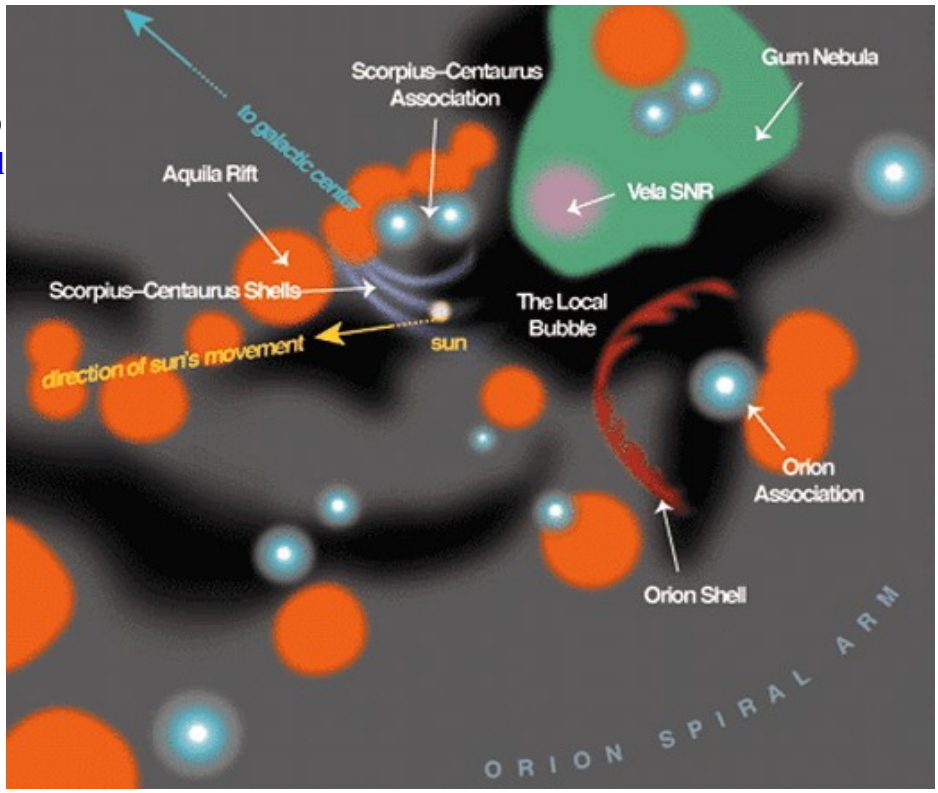
> "Whatever its cause, no one disputes its magnificence. Gould's belt is the most prominent starry feature in the Sun's neighborhood, contributing most of the bright young stars nearby. Nearly two thirds of the massive stars within 2,000 light-years of the Sun belong to Gould's belt. If I were kidnapped by an alien spaceship and taken to some remote corner of the Galaxy, Gould's belt is what I'd look for to find my way back home. … Although Gould's belt is a prominent fixture of the solar neighborhood, no one knows what caused it. Clearly *something* happened some 30 to 60 million years ago. That's the age of the oldest surviving stars in Gould's belt. It's also the expansion age. Both the stars and the gas are redshifted, indicating that Gould's belt is expanding like a ripple racing outward from a pebble tossed into the sea. The speed of the expansion implies that **it began about 30 million years ago**."

According to the JCMT Gould's Belt Legacy Survey [5], **Solar System is actually located some 650 light-years off the approximate center** of this massive ring-like structure, which is tilted around 18 to 20 degrees to the galactic plane and **does not appear to have been generated as part of the Milky Way's spiral structure**.



The second smaller member of our Cosmic Hierarchy shown on our previous diagram above, the Ursa Major Moving Group, has to be correlated (or maybe identified) with the so-called **Local Bubble** of our near cosmic environment [6]. The Local Bubble is a cavity in the interstellar medium (ISM) of the Orion Complex. It is at least **300 light years across**. It contains, among others, the Local Interstellar Cloud (which contains our Solar System). The Local Bubble is actually a tubular, "local chimney" [7] of relative low-density but hot and ionized gas. The Local Chimney has been around for a few million years. **The Solar System has been moving through this region of interstellar gas over the last five to 10 million years**.

The lowest member of our Cosmic Hierarchy, as shown above, has to be correlated to the **Local Interstellar Cloud** directly containing our Solar System. NASA astronomer's best guess is depicted in the map (on the right) of the surrounding 1500 light years constructed from multiple observations and deductions. The Local Interstellar Cloud (LIC), shown in violet, is shown flowing away from the Scorpius-Centaurus Association of young stars.



In an interesting article on the webblog "Daily Galaxy" [8] "Intriguing Hints - Our 30-Light-Year Voyage Through the Local Interstellar Cloud" (May 16, 2015) we read:

> "Our solar system has been voyaging through the very low density Local Interstellar Cloud, **a region about 30 light-years** across that's as sparse as a handful of air stretched over a column that is hundreds of light years long, or about one atom per three cubic centimeters of space. Earth and our Sun has been traveling through the Cloud for **somewhere between 40,000 and 150,000 years** and will probably not emerge for another 20,000 years. ... '**Our solar system is different than the space right outside it**', said David McComas, IBEX principal investigator (NASA's Interstellar Boundary Explorer). ... "

The traditional explanation of the presented data is as follows.

> "Nebular clouds are thought to be most likely environment for synthesizing and promoting the evolution of molecules needed for the origin of life. The building blocks for DNA **could have been generated or combined** within interstellar clouds and DNA **would become part** of the molecular-protein-amino acid complex. Over 13 billion years ago at least one of the domains of life may have begun in nebular clouds. If restricted to the Milky Way, which is 13.6 billion years old, the first chemical combinations would have had billions of years to become a self-replicating organism with a DNA genome long before the existence of Earth. ... Fast forward 4.6 billion years, on Earth the steps leading **from the random mixing of chemicals to the first nanoparticle** would likely require hundreds of millions and even billions of years before the first self-replicating molecular compound was fashioned. Even after billions of years, the first replicon may not have possessed DNA."

This traditional assumption cannot be accepted, because the time that past would be much too short for an accidental "synthesizing and promoting the evolution of molecules needed for the origin of life". On the other side, the Local Chimney has been around for a few million years. The Solar System has been moving through this region of interstellar gas over the last five to 10 million years. The traditional point of view in that case seems to be correct, because as a result, Earth and its life-forms have avoided dangerous flows of cosmic radiation and gas. But it has not saved the life on Earth from regular and sometimes almost deadly cosmic collisions of the levels 6 and 5 of the Cosmic Hierarchy (compare table I). The recent such "bottleneck" for human beings took place not later than around 6820 years ago.

Using our Unified Physics, we are able to give some new explanations to the origin of the Gould's Belt, the Local Bubble (or Local Chimney), and the Local Interstellar Cloud. Expanding the impressive comparison by Ken Croswell ("... indicating that Gould's belt is expanding like a ripple racing outward from a pebble tossed into the sea"), we can suppose that the energy consumed through living organisms on Earth during the recent several millions of years has been clearly modulated through the "waves" of the evolutionary expansions and bottleneck effects according to the periodical events of the Cosmic Hierarchy of our Solar System.

Let us slightly modify the corresponding text from my article mentioned at the beginning of the present article [1]. The shortest version of the answer concerns the enormous increase in the average energy density (or its equivalent value, the speed of light) in the Solar System during the recent millions of years. The speed of light at the beginning of the present period of level 9 of the Cosmic Hierarchy, 3507 million years ago, was c_u = 25741.16 m/s. The corresponding mass density, being the reciprocal value of this speed, was rather high, $r_m = 3.8848\times10^{-5}$ kg/m^3. And the corresponding temperature was as low as 244.033 K. In year 1986, the speed of light was 11646.4 times higher (c_{vacuum} = 299792458 m/s), the mass density was correspondingly lower: $r_m(SS) = 1/c_{vacuum} = 1/299792458$ kg/m^3 = 3.335641×10^{-9} kg/m^3 , and the temperature was also higher with the same factor: T(SS) = 2.842×10^6 K.

It could be thinkable that between the Solar System and its neighborhood exists a gradient of these values, but the observations suggest rather that the energetic wall forms a kind of an "energetic wave", a boundary, where the presently measured values inside of the Solar System meet the primordial values still being actual for the farther neighborhood, the levels of the Cosmic Hierarchy higher than the Orion Complex (see Table I). As we have seen, there is observed such a boundary between the Local Interstellar Cloud (with about 30 light-years across) and the Local Chimney (with about 300 light-years across), and also between that Chimney and the Gould's Belt ring (with about 3000 light-years across), as well as between the Gould's Belt itself and its farther cosmic environment.

So far it was the numerical part of our explanation. But, what could be the natural reason for this wavy increase in the energy density around our Solar System? The only reasonable answer I see at the moment is: it was the wave-like explosions of the higher developed life on our Earth itself. As we can see in Table II, one nerve cell (as a single quantum of energy) concentrates about ten thousand times more energy than a simple (quantum) biological cell. And one (quantum) brain cell concentrates once more about ten thousand times more energy than a single nerve cell. It means, that since *Primates* have begun to produce larger and larger brains 16.36 million years ago, a huge amount of energy from the Earth's neighborhood became increasingly saved in the higher living organisms. This development distinctly accelerated about five million years ago, when the Families of Hominids have begun to create larger and larger brains. And this development accelerated once more, when the evolution of our own Family has reached the mark of about one million members. Next time it should be the case between the last but one and the last glaciation period, between 150,000 and 40,000 years.

The very recent bottleneck in the evolution of human beings took place about 7 thousand years ago, when humanity became almost extinct and had to begin to reset the population from a small number of survivors. One thousand years ago we were about a quarter of the first milliard human beings. From that point the accelerated growth of the world population was never more distinctly slowed down. It is the reason why the “Local Chimney” of the lowered mass density (or equivalently enhanced energy

density) still extends not far beyond the age of thousand or two thousand years (light-years) into the past.

We are consuming the cosmic energy with the actual speed of light. And its rise is parallel with the increasing population. What is exciting here, we can simply check the thesis experimentally. We were said to stop to measure the “vacuum” speed of light in year 1986 (at the value 299792458 m/s), when we were about 4.6 milliard people in the World. Today we are already 7.3 milliard here, and it is sure for myself, the presently measured speed of light should be measurably higher than the “official” value estimated 30 years ago.

In summary, we can say that our modulating influence on the energy-density waves in our cosmic environment seems to be well correlated with the newest observations. The idea of this modulation is very important for the further study of our global consciousness, which is not immaterial, but surely energy-bound. Our all global "conscious" and "sub-conscious" memory cannot be assumed reaching further into our Cosmic Hierarchy than the lifetime of our own Family Homo sapiens.

References

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6. https://en.wikipedia.org/wiki/Local_Bubble

7. http://www.solstation.com/x-objects/chimney.htm

8. http://www.dailygalaxy.com/my_weblog/

Table I. Cosmic Hierarchy of our Solar System

L	**Naturics proposal** (2015)	**Radius** [ULy]	**Period** [ys]	**Evolutionary cycle of life**
9	Sloan Great Attractor	3585×10^6	3585×10^6	Phylum
8	Great Attractor	295.2×10^6	295.2×10^6	Class
7	Virgo Cluster of Galaxies	24.30×10^6	24.30×10^6	Order
6	Andromeda Group of Galaxies	2.002×10^6	2.002×10^6	Family
5	Large Magellan Cloud	164878	164878	Genus
4	Omega Centauri Cluster	13578.3	13578.3	Species
3	Orion Complex	1118.22	1118.22	Civilization
2	Ursa Major Moving Group	92.0896	92.0896	*Our individual life (?)*
1	Solar System	7.58390	7.58390	Cycles during our life
0	Proto-Sun	0.62456	0.62456	Sub-cycles in our life

Table II. Typical values for all possible classes of quanta of matter

Class of material	**Quanta**	**Sizes**	**Frequencies**	**Velocities**	**Temperatures**	**Energy**
4	*superbrain cells*	*0.5 m*	*~2/hour*	*0.26 mm/s*	*2.4 μK*	*$3x10^{-5}$ J*
3	brain cells	5 mm	5 Hz	2.6 cm/s	240 μK	$3x10^{-9}$ J
2	nerve cells	50 μm	50 kHz	2.6 m/s	24 mK	$3x10^{-13}$ J
1	tissue cells	0.5 μm	500 MHz	260 m/s	2.4 K	$3x10^{-17}$ J
0	**membranes**	**5 nm**	**5 THz**	**26 km/s**	**240 K**	**$3x10^{-21}$ J**
-1	molecules	50 pm	50 PHz	2.6 Mm/s	24 kK	$3x10^{-25}$ J
-2	atoms	0.5 pm	500 EHz	260 Mm/s	2.4 MK	$3x10^{-29}$ J
-3	atomic nuclei	5 fm	$5x10^{24}$ Hz	26 Gm/s	240 MK	$3x10^{-33}$ J
-4	*quarks*	*50am*	*$5x10^{28}$ Hz*	*2.6 Tm/s*	*24 GK*	*$3x10^{-37}$ J*