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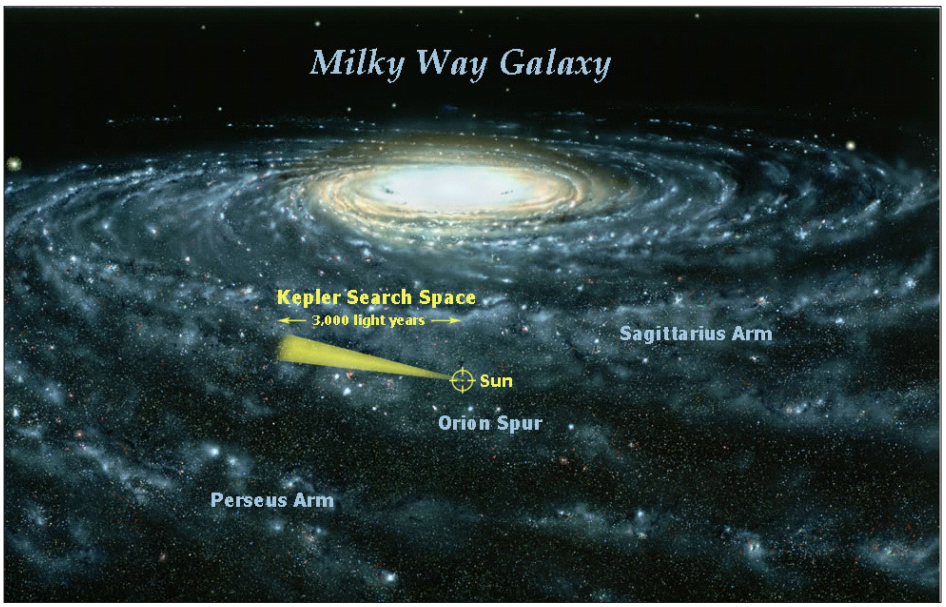
What are you doing for Galactic New Year?

By Robert Barwick



Our Sun, and its solar system travels in an orbit around the Milky Way Galaxy. One such orbit takes a bit over 225 million years; that is, *earth years*. Because an earth year is itself an orbit, the much smaller orbit of the earth around the sun, it is slightly ridiculous to impose the metric from that tiny orbit on the great galactic cycle. Instead, it would make far more sense to denote one galactic orbit of the solar system as its own year, the galactic year.

Every astronomical cycle we know of plays a determining role in the function of life on earth. The day—one rotation of the earth upon its axis—governs sleep and digestion in animals, and the carbon cycle of plant life; the lunar month governs tides and breeding cycles; the earth year governs the seasons and the cycles of plant and animal reproduction, agriculture etc; the 11-year sunspot cycle governs patterns of heating and cooling; and the 25,770-year cycle known as the Precession of the Equinox corresponds to ice age cycles. Mankind's desire to understand these cycles gave rise to the first science—astronomy—and the first great advances of human civilization beyond the intensive existence of hunter-gatherers to maritime cultures which could navigate by the stars. This ultimately led to the present, and mankind's current potential to navigate *through* and beyond those same stars.

Given this, it is natural to inquire into the great, galactic year cycle, and study whether it too plays a determining role in life on earth. From the standpoint of scientific method, this field of inquiry is exciting, because of its *non-reductionist* vantage point. Reductionism is the fraudulent scientific method imposed by Venetian and British oligarchical agents upon mainstream science to destroy it. It insists that scientific understanding must be built from the "ground up", so to speak, that observations of *parts* in the small are the bases for conclusions about the function of the *whole*. Reductionism only allows processes to be understood in a mechanical way, which destroys any ability to properly understand dynamic processes of life and the universe. This is such an obvious fraud, the greatest scientists in history, such as Nicolas of Cusa, Johannes Kepler and Gottfried Leibniz rejected it totally, and consciously adopted the method of mastering the dynamic of the whole to understand the part, a method especially transparent in Kepler's discovery of Universal Gravitation and his Three Laws of Planetary Motion. Kepler's discovered the orbit of the earth by understanding the role of the Sun. We get to examine the role of the *galaxy*!

Creation vs. Evolution

By looking at life processes on earth, the biosphere, as determined by the galactic year, people may finally break out of the mindlessness of the two broad opposing views regarding the origins of life: literal creationism, and Darwinian evolution, aka *natural selection*. Literal creationism is the religious-based belief that the all-powerful God created the world, and the entire universe, in six literal days sometime around 6,000 years ago. (In 1650, Irish Protestant Archbishop James Ussher calculated the exact date of creation as the evening before 23rd October, 4004 BC.) Not all creationists are so literal, some instead choosing to believe God created everything using the principles of natural selection, but the basic belief is a religious one. Creationism is making a resurgence, on the back of the rise of the "Religious Right"—the political movement which was used to put George W. Bush in the White House, twice. In the U.S., creationism manifests itself in the fight to have "intelligent design" taught in schools.

Charles Darwin's natural selection is based on reductionism. It reduces the process of the development of life and the biosphere to the sum total of countless random mutations in individual organisms over geological time, governed only by the biological equivalent of the free market—natural selection, or the harsh realities of nature in which only the fittest survive. Conveniently papered over by today's propagandists for Darwin and natural selection, such as Richard Dawkins, is the fact that Darwin's inspiration for his theory was one of the true monsters of history, Parson Thomas Malthus, the bitter and twisted servant of the East India Company who forecast human population growth would outstrip the food supply, and then nature would kill off the surplus population. Today there are 5-6 billion people more than when Malthus made his false forecast, but it became the basis for Darwin's theory, and a big chunk of modern scientific thought. Darwin himself identified the major implication—in reality, purpose—of his theory: *man is an animal*!

From the standpoint of *causality*, creationism and Darwinism are interchangeable. Creationists believe in an all-

powerful *God* who *arbitrarily* decides to create and destroy; Darwinists believe in *chance*, by which organisms mutate *randomly*. Both views are unreasonable, that is to say they go against the powers of understanding of human reason. So let's employ human reason, to cast our mind over the biggest-possible field of enquiry encompassing the longest-possible expanse of time, the galactic year, and see what we discover.

Galactic cycles

For the sake of space in this edition of the *Almanac*, readers are encouraged to re-read *The Extra-Terrestrial Imperative Part II,* from the October 27, 2010 edition. It establishes the 60-million year and 140-million year cycles of the solar system's oscillations above and below the plane of the galaxy, and transit between the galactic spiral arms, respectively, which cycles govern the fluctuations in flux of cosmic radiation bombarding the earth over millions of years. Those fluctuations have a clear correlation to mass-extinction cycles of organisms on earth, as displayed in the fossil record.

However, the fossil record doesn't just show extinctions. It also shows relatively sudden emergences of new life forms, that didn't previously exist. These emergences have a key characteristic: each successive wave is an evolutionary up shift from previous organisms. The succession of species proceeds from simple life forms to progressively more complex. Examples of this are the period known as the Cambrian Explosion 500 million years ago, when simple, single-cell organisms were overtaken by hard-shell, hard-skeleton organisms with central nervous systems; and the emergence 200 million years ago of mammals, warm-blooded creatures that could regulate their own body temperature, which was a leap upwards from cold-blooded reptiles.

Darwinists interpret all evolutionary changes from the reductionist standpoint of natural selection, but their theory cannot account for these sudden emergences of abundances of more developed life forms. A non-reductionist would readily identify what Darwinists can't; namely, that evolution is a process of the biosphere as a whole, and individual species exist that the biosphere manifests as singularities at that stage of its process. But how does this work? It is relatively straightforward to understand the correlation between the cycles of cosmic ray flux and extinctions. The 140-million year cycle through the galactic arms correlates with major climate change events, including a time of extreme ice age sometimes referred to as Snowball Earth, when the earth virtually froze solid. That would cause a massive extinction event. The 60-million year oscillation cycle correlates to cycles of volcanic activity on earth, which would also drive mass extinctions. But how about the emergence of new life forms? Cosmic ray-driven climate changes would determine which new life forms would be able to exist, but is it possible that cosmic rays could play a more direct causal role in generating such new life forms?

The Oct. 27 *Almanac* reported the work of the Russian biologist Alexander Gurwitsch, and his famous onion experiment and its discovery of mitogenetic radiation. It also covered the 1950s experiments that demonstrated the role cosmic rays played in the feeding cycles of North American clams and the metabolic rate of potatoes. Here we will investigate Gurwitsch's mitogenetic radiation in more detail, as well as the role of radiation-sensitive viruses in DNA.

Mitogenetic radiation

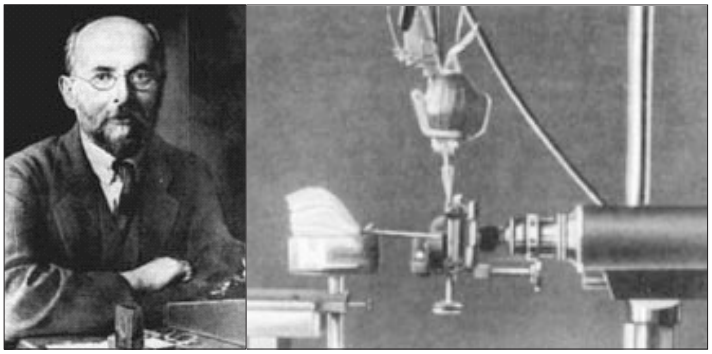
Alexander Gurwitsch was a student of German embryologist Hans Driesch, who is credited with originating the science which led to the modern technology of cloning. Driesch conducted a famous experiment, in which he placed a two-cell sea urchin embryo in a beaker of sea water and violently shook it. The cells broke apart, but each individual cell went on to develop into a complete organism. Driesch described this ability of the separated cells to develop fully as *equipotentiality*.

Gurwitsch *followed* this experiment with his own, in which he placed a 16-cell embryo from the same echinoderm family as the sea urchin into a centrifuge, under the force of which the embryo cells were violently disorganized. Once removed from the centrifuge, the cells resumed their original formation, and developed into a complete, normal organism.

Gurwitsch hypothesised that the process governing this behaviour of cells to resume their integrity as a whole organism was an invisible force outside of the chemical and molecular processes of the life-form itself. Although invisible, it was as real as gravity or electromagnetism: he called it the *biological field*, the electromagnetic organising force of the living state.

It was this hypothesis that was the basis of the rejection of Gurwitsch by mainstream, reductionist molecular biology scientists, who refused to countenance any possibility of a unifying principle outside of the individual chemical and molecular interactions of cells. Molecular biology doesn't differentiate between living and dead cells—just before and just after dying, a cell still contains the same molecules and structures. (In 1953, Gurwitsch was attacked by Nobel Prize-winning chemist Irving Langmuir in a major speech as an example of what he derided as "pathological science".)

It was the investigation of this biological field hypothesis that led Gurwitsch to his onion experiment. Cells that divide are called mitotic cells. He chose an onion, because its cells



Alexander Gurwitsch and his onion experiment.

divided symmetrically, and he focused on the mitotic cells in the root stem of the onion. He pointed the root stem of one onion at one side of the perpendicular root stem of another. The cell-division of that side of the root stem increased by about 25 per cent. When he placed glass in between, the effect ceased, but when he replaced the glass with natural quartz, the effect resumed. Gurwitsch concluded the effect was caused by extremely weak photons of light in the ultraviolet (UV) range, which glass blocks but quartz does not. These photons are now known as *biophotons*.

Scientists had a hard time seeing what could be the source of the photon radiation, and how something so weak could possibly effect something as complex as mitosis. Gurwitsch thought of the living cell as a coherently organised system, in which the component molecules were unbalanced, and required the input of metabolic energy for their existence, which if disrupted would cause the breakdown of the molecule arrangement and the release of their energy. Observing dying cells and cells where the metabolism was disrupted by heating and cooling confirmed his view, because the cells released photons very similar to mitogenetic radiation. He called this "degradational radiation". Later, he experimented with solutions of purified proteins, subjecting them to weak magnetic and electric fields, and seeing that when the fields were removed, the proteins emitted ultraviolet photons similar to degradational radiation. More recent work has shown that it is DNA which is the major

emitter and absorber of photon radiation in the cell.

In Gurwitsch's time it wasn't technically possibly to directly measure biophotons, but in the 1950s Italian astronomers developed a very sensitive photo multiplier, to enhance the light from distant stars. When used on living samples such as leaves, corn, germs of wheat, beans and other things, it detected a constant but weak emission of light.

In the 1970s, German biophysicist Fritz Popp's work on cancer led him to Gurwitsch's work. Popp was considering how a process as complex as the human body could be in harmony. Life forms are dynamically complex:

- Every cell produces some million molecules per second.
- The average human consists of approximately 10 trillion cells (generated by 43 successive rounds of cell doublings).
- However, there is constant turnover: every second, approximately 10 million cells die, and must be replaced quickly, in order to stop decay.
- When a cell will die is unpredictable, but the body has to be finely tuned, because if the replacement rate drops or rises, the body will die quickly.

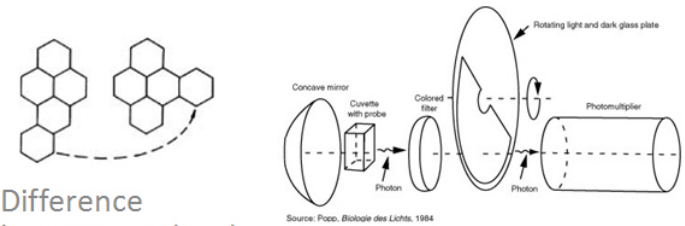
Fritz Popp calculated that the intimate coupling of cell-to-cell communication required to coordinate this harmony could only be possible at the speed of light. Chemical or molecular transmissions of communication would not be sufficient.

In his cancer research, Popp found benzpyrene 3,4, from coal tar and cigarette smoke, which is very similar to the harmless benzpyrene 1,2, was different only in the fact that 3,4 has a strong absorption/emission anomaly in the ultraviolet range. Popp posed the question: could this quality of the molecule be the cause of its carcinogenicity, rather than an assumed chemical effect?

Popp devised a photomultiplier to measure weak light from cells to test his hypothesis. When he applied for funding, he was turned down by the scientific authorities who considered it ridiculous that cells could emit light. Popp reapplied for funding, but changed his story to say he wanted to create a photomultiplier to prove cells didn't emit light, and he got the grant! However, he was able to prove they did, but he was also able to show that the light varies by cell type and in intensity, and often comes as a photon explosion, especially when the cells are irritated by outside means.

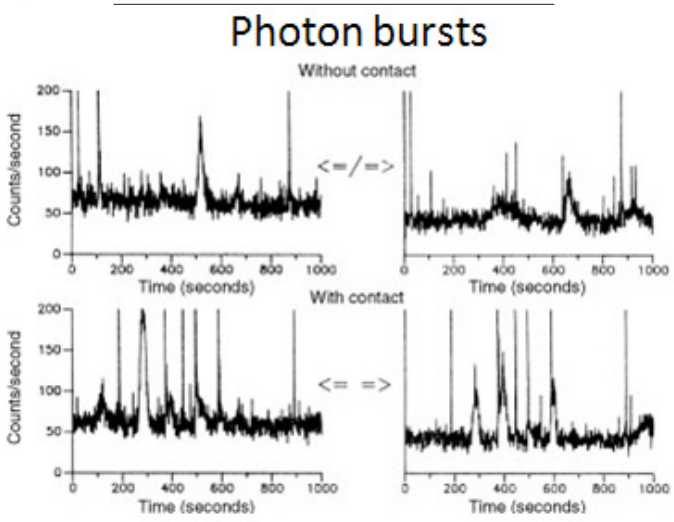
Russian scientist A.B. Burlakov, a contemporary of Popp, conducted a related experimented with fish eggs, in which he brought samples of fertilized fish eggs in different phases of development into optical contact with each other, and observed the mutual effects. He reported the following results:

- Provided the age difference between the eggs or larvae was not too large, there was a significant acceleration in the development of the younger eggs relative to the older ones.
- However, if the age difference was large, the younger eggs showed a strong retardation in development; even deformities and higher death rates occurred. (This conforms, by the way, to observations in nature, that fish normally avoid laying their eggs in sites where other eggs have already been deposited.)
- When he used normal window glass as a filter, all these effects disappeared, but the effects could be observed by use of quartz filters, confirming clearly Gurwitsch's "mitogenetic effect".
- Using filters for different wavelengths and polarizers, Burlakov even succeeded in creating specific alterations intentional-l y, and subsequently undoing them. In this way, monster larvae with multiple heads, multiple hearts, and so forth, were generated, but could be corrected by the appropriate use of other optical coupling effects.

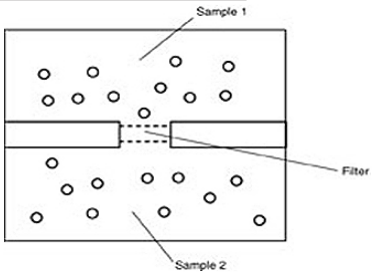


Difference between molecule of benzyprene 1,2 and benzyprene 3,4

Fritz Popp's photomultiplier



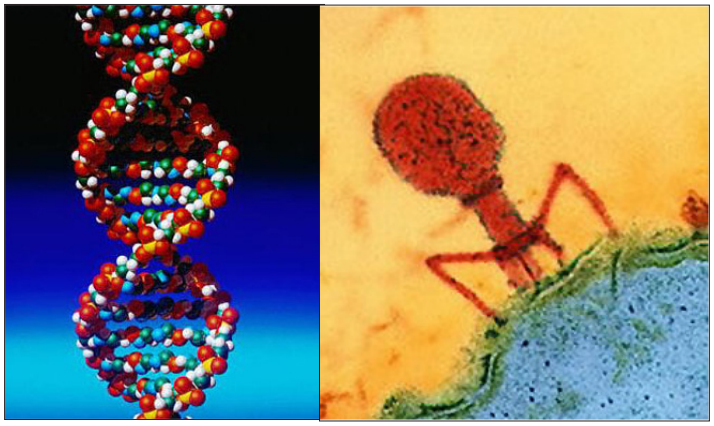
Above: The measured photon bursts of two cell cultures, first without contact, and then with, demonstrating the extra stimulation from UV-range contact; Popp described the bursts as having *harmony*. Right: a diagram of Burlakov's fish egg experiment.



Viruses

As reported above from the work on mitogenetic radiation, it is the DNA component of cells that has the highest absorption and emission of UV light. This is especially fascinating when considering the role of viruses and some bacteria in swapping DNA between different species, and the role that may play in evolution.

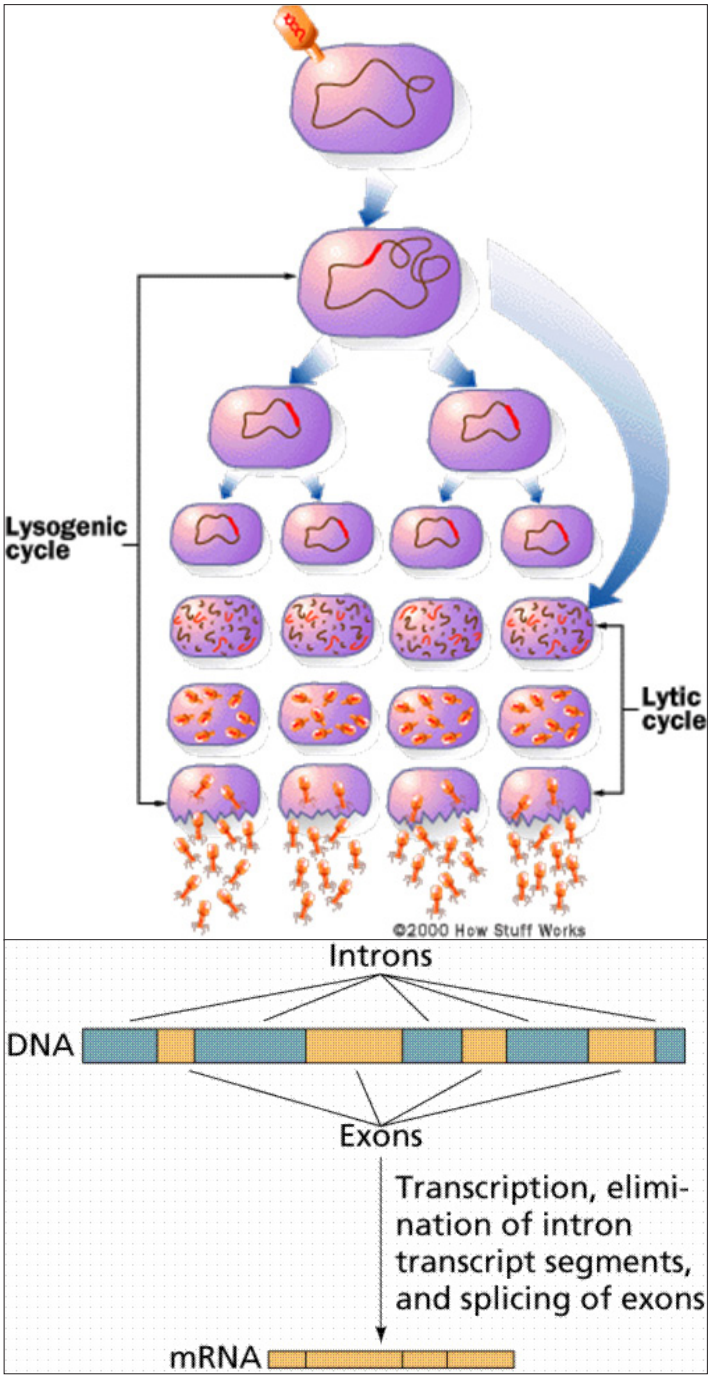
Evolution is usually thought of as a tree, in which all changes and developments are vertical, i.e. changes are only inherited



Left: DNA strand. Right: A virus infecting a cell.

from parents and direct forebears. However, this tree view ignores the behavior of single cell life, which is able to spread DNA horizontally, between the branches of the evolutionary tree.

- In a process known as plasmid transfer, a bacterium will excise and copy a piece of its genome—DNA—and then physically pass it into another bacterium, which incorporates it into its genome. This also happens between different species of bacteria, i.e. outside the normal rules of reproduction.
- Viruses are able to pick up parts of their host's genome, and transfer them to other hosts. It is common for viruses to infect more than one species, so in this way different branches of the evolutionary tree are able to exchange DNA.
- Viruses reproduce themselves in two ways. In the Lysogenic cycle, a virus, which is a DNA strand inside a protein, injects itself into a call, and segments itself into the DNA of the cell. When that cell divides, the DNA strands in the daughter cells contain the virus DNA. When they divide, the virus DNA reproduces again. This can continue indefinitely, until something triggers the Lysogenic cycle to flip into what is known as the Lytic cycle. This is when either the virus DNA already in the cell, or DNA injected by a new virus, takes over the entire metabolic energy of the cell, and reproduces hundreds of copies of itself. At a certain point, the cell wall bursts, and a few hundred viruses are released to go and repeat the process.
- In modern science, DNA is thought of in terms of information technology, as if it is the source code of computer software. However, it is a complex process of which many aspects are not fully known:
- In all higher life forms, plants and animals, large segments of the genome—DNA—are not used. In a process known as "transcription", the segments of DNA that are used—"expressed"—are called exons. Segments of DNA that are not "expressed" are called introns. It is unclear how the transcription process knows which segment to use; also, under certain conditions, a portion of DNA may change its role from intron to exon.
- The genome contains the code for the body, but there is no difference between the DNA in the cells that produce hair and the cells that produce toenails. The cells differentiate the DNA segments based on cells function at that stage of embryo development, by selectively expressing the genome.
- It is possible to inherit changes that are not changes to DNA, but changes in which part of the genome is expressed. This can be through changes in behaviour, such as diet, that trigger internal environmental changes, which alter gene expression, and can be passed on. External environmental factors can also change gene expression. This makes rapid evolution possible, by changes in the sets of genomes expressed, and not simply changes in DNA itself. Higher apes contain a number of genes in common with humans, that the apes do not express, but humans do.
- Not only is most human DNA composed of introns (not expressed), but most of our DNA is viral.
- The human placenta's syncitium (the region across which nutrients from the mother and waste from the child transfuse) requires a particular protein by which the cell membranes of the syncitium dissolve and transform into a gigantic, multi-nucleated cell; this protein is coded for in viral DNA!
- Given the responses of viruses to very specific radiation, especially in the UV-range, and the many unanswered questions abut how it is determined which part of the genome is expressed, it begs the question of whether the interaction between fluxes of cosmic rays and viruses can be a trigger for evolution.



Top: The Lysogenic and Lytic cycles of viruses. Above: DNA transcription

Conclusion

If science can throw off the yoke of reductionism, these examples demonstrate that there is a very strong potential for whole new hypotheses regarding the origin, process and development of life on earth, which could be investigated through the field of cosmic radiation. Like all of the great scientific breakthroughs in history, it would be driven by the desire to find order in the universe, to discover the principles by which the creator creates. Our mastery of those principles will empower our own unique ability as a species to create, but in the new frontier of the solar system and beyond. And when these new discoveries do lead us to conquer space, our offspring will be heard to plan their schedule around the question, "What are you doing for galactic new year?" One thing is for sure: galactic new year will be bigger than 2000!