

MACARTHUR ASTRONOMICAL SOCIETY Inc.

Journal



PRIME FOCUS

Volume 10 Issue 8

September 2005

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Presidents Report

Last Month: It was with pleasure that we had Dr Miroslav Filipovic visit us last month. His talk gave us an insight into the background of the "Deep Impact" probe and the various relations that professional astronomers have with the other establishments, a very insightful talk. Thanks to Miroslav for spending time in talking to us. For a while now I have been reflecting back on the amazing range of topics that have been covered by some fantastic speakers. It's my view that the subject of "Radio Astronomy" has been swallowed up into a black hole, pun intended!

Tonight: So tonight it gives me great pleasure to introduce to you Dr Enno Middleberg a professional Radio Astronomer from ATNF. Tonight he will cover the different antennae used, the difficult ties in making images and how multiple antennae relate to visual astronomy. I am sure everyone will make Dr Middleberg most welcome tonight.

Next Month: Glenn Dawes will be our guest speaker. Glenn is the part of the team that brings us the Astronomy Ephemeris each year.

Bishop Chris Toohey will be on board as our end of year speaker. I hope to have an update on the observatory proposal this time next month. I am waiting on hearing back from a few people, fingers crossed!

The Dates

26/09/05	The Oaks
01/10/05	The Forest
07/10/05	Rotary Observatory
7/10/05	Monthly Meeting
29/10/05	The Forest
04/11/05	Rotary Observatory
05/11/05	The Oaks
1/11/05	Monthly Meeting
26/11/05	The Forest
03/12/05	The Oaks
24/12/05	The Oaks???

Of course due to weather or a reschedule you should confirm before committing yourself for a drive out, especially as petrol prices are really hurting the hip pocket. But the dates do look OK to me and as always a dollop of common sense goes a long way.

Special Note: To check the Star Night weather conditions call **John Rombi** on 0425249301 or **Noel Sharpe** on 0410445041.

Events and Happenings

The star night at St Mary's was deferred until next term due to incoming cloud. The night at Mary Magdalene was excellent, a crowd of around 50 enjoyed the sights of Jupiter and Venus and our friend the Moon. Both Lloyd and myself grabbed some superb views of the Jewel Box. The light conditions were poor, however it tends to knock out some of the more busy background stars and this makes the cluster stand out a bit more clearly. Try for yourselves and let us know if you observe the same.

It was great to catch up with Peter and Bobbie Elston at the school. They asked for a bit of a hand for the night and John, Lloyd, Martin and myself were glad to help. Peter brought along his "Big Whopper", a 14inch reflector which is a huge light bucket by any standards. I wonder if it will fit on my EQ6 mount?

The Oaks public night promised so much, we had some excellent advertising and plenty of enquiries. We were on a roll, however the message to the weather gods got lost in the translation. Some members of the public did turn up. It's amazing how quickly you can move when bolts of lightning, gale force winds and a deluge of rain slam into your face. Immediate and definite cancellation.

Friends, Wine and a Blowfly.

When down at the Forest on the 3rd of Sept it started to cloud over and rain quite heavily. I wanted to travel down regardless just to take a break from things and enjoy good companionship, a warm fire and a glass or two of fine wine.

However, upon retiring I had an ongoing battle with a rather annoyingly large blowfly that insisted on buzzing around whilst endeavouring to make my sleeping bag his home for the night. Sorry mate, it's room for one and it better be me.

I went to the kitchen and stealthily returned with a can of trustee Mortein fast knockdown spray, and a flashlight. With great patience, the kind of patience that enabled me to record my first Messier object, I skilfully lured this behemoth of an insect to the soft white reflection on the wall in front of me. It must have been quite a sight with my head, a can of Mortein and a flashlight poking out of the sleeping bag.

There she blows! My opportunity was here at last. Quick and delicate pressure on the nozzle enabled me to dispatch this wretched creature once and for all. I settled back and relaxed, falling asleep to the now changing pitch of the blowfly's wings buzzing to ward off the inevitable.

So why am I telling you this? Well what else does one do when it's raining on a star night?

Noel Sharpe

President ■

A Verse to Black Holes

Sucking, sucking, hole so black

Perhaps it's not just light you lack.

Lost dimensions one, two, three

Cursed singularity.

RB

Wot IC This Month

Sept 19 – October 16, 2005

The Sky at 8 pm

Scorpius, Sagittarius in the west, Andromeda rising in the east, just about directly north there is Lyra, Aquila, Cygnus, Aquarius, Capricornus, and Pegasus galloping to catch up.

Turning to the south we have the Pointers and the Cross sinking in the west, then the faint star area of Ara, Telescopium, Pavo, Indus, Fomalhaut, and the long neck of Grus before we see the Magellanic Clouds, large and small, underneath Eridanus, Phoenix and Horologium. Orion will rise later in the evening.

Moon Diary

25th September: Last Quarter

3rd October: New Moon

11th October: First Quarter

17th October: Full Moon

On October 17th there will be a partial Lunar Eclipse which will shadow the full moon between 8.00 and 10.30 pm. This is the night of our next meeting at UWS.

Evening Planets

Mercury rises in Virgo at 5.45pm with the setting Sun. But it will climb to join Jupiter on 5th October when Spica, the crescent Moon and Mercury will be in a horizontal straight line. All through October Mercury will be visible in the western twilight up until 8 pm.

Jupiter remains in Virgo sinking to the west and into the sunset by mid October. The Galilean moons still make good viewing but best views of the planet markings have gone for now.

Venus has been magnificent as usual these past months. Moving into Libra and then into Scorpius it will set by 10 pm. Reaching its closest approach to Earth this month it will be bright at -4.3 magnitude even though the disk will be less than half full. On 7th October it will team up with a crescent moon

Mars rises in Aries about 10.00pm and dominates the late evening sky at magnitude -1.3. The red disk will move into Taurus briefly at the end of September and then back to Aries. Growing larger each week approaching opposition in early November, it is visible all night so you can leisurely search out the dark features. Refer Astronomy 2005 for further details.

Neptune is just 2° from 29 Cap and is just past opposition. Visible all night it is at its brightest for the year. **Uranus** is coming to opposition so is also bright and visible all night in Aquarius. You can find the green disk 2-3° SW of Lambda Aquarii.

Saturn is rising from conjunction with the Sun about 4 am and will pass close to the Beehive cluster (M44).

Comets There are no comets brighter than 11-12th magnitude this month. Poor old battered Tempel 1 is near M6 in Scorpius but a faint 12th mag.

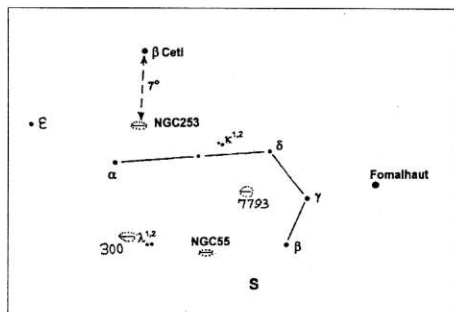


Portraits in the Sky

SCULPTOR

- The Sculptor's Studio

Passing overhead at midnight on 6th October, Sculptor is one of those obscure constellations invented by Nicolas Louis de Lacaille to help fill in part of the southern sky. Its stars are generally 4th and 5th magnitude. The constellation has two bright binaries with very long orbits, and several spiral galaxies.



Double stars in Sculptor

Delta Sculptoris is a multiple system: AB: 4.6, 11.5; separation is only 4" so will require careful observing. C is easier at 9.5, separation 75".

Epsilon Sculptoris is a slow moving binary with an orbit of about 1200 years: 5.4, 8.6, separation 4.7".

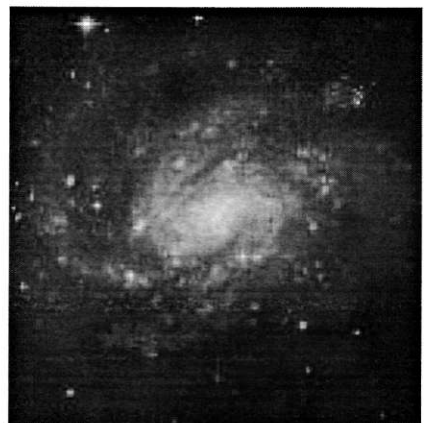
Deep Sky Objects:

NGC 253 is one of the easiest spiral galaxies to observe from Australia. Join the group of MAS fans who can't go past this bright spiral of the Sculptor Group. It is found 5° NNW of alpha Sculptoris. Just ask Dick Everett!



NGC253

NGC 300 is a large loosely structured galaxy similar to M33. Although rather fuzzy this is one of the Caldwell objects, so if you want to tick it off here's your chance



NGC300

NGC 55 is a spiral galaxy, seen nearly edge-on. It's located 12° southwest of alpha Scl. The nearest star to this galaxy is alpha Phoenicis 3.5° southeast. This is a member of the so-called Sculptor Group, which is one of the nearest galaxy clusters to the Milky Way, at about 8 million light years.



NGC55

NGC 7793 is a very open spiral galaxy which stands out in a starless field. At 9.3 mag. it should be brighter than some Messiers.



NGC7793

Phoenix - The Fire Bird

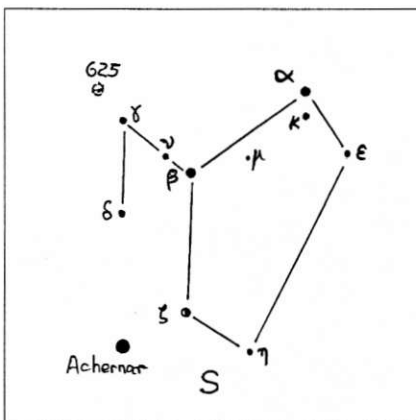
In mythology the Phoenix was a bird of great beauty that lived for 500 years, then it builds a nest of twigs and fragrant leaves which would catch fire by the rays of the noontime Sun (must have been gum leaves). The flames consume the Phoenix, but a small worm would wriggle out of the ashes, bask in the sunlight and quickly evolve into a brand new Phoenix. The legend was common throughout the ancient world and pictures have been found in ancient Egypt and on Roman coins.

Introduced to the western world by those intrepid navigators Pieter Keyser and Frederick Houtman in 1590. Bayer in 1603 was the first to put it on a map but the Chinese were the first to put a Fire Bird in the sky.

Arab astronomers saw a boat in this area on the banks of Eridanus The River.

"The Boat" can be traced by the stars α , κ , μ , β , ν , γ a large bowl shape curving line down and to the left of α .

Phoenix lies to the left of Grus and between Achernar and Fomalhaut, both 1st mag. stars. Lots of faint galaxies, no Messiers, but interesting stars



α is a yellow giant shining at 2.4 mag. standing out from the nondescript other 4th mag. stars β is a very close double yellow, which needs 300mm to split. γ is an orange giant shining at mag. 3.4.

ζ is a complex multi star. The main star is an eclipsing variable at mag. 3-4 fluctuating every 1.5 days, and a companion star at 6.9, which is also a double

Double Stars in Phoenix

There are several nice doubles in Phoenix but only one is a named star so you will need a map to find them. I have selected five for interest.

Zeta Phe is the exception and that is 4.5° from Achernar in Eridanus, well within a binocular field. This is two blue-white stars with a magnitude difference which may make it hard to separate. The primary is 4.0, the secondary 7.0 and the split is 6.4 arc seconds.

Another double is about 1° south of NGC 55 called (Hipparcos) HIP 1225. This is an 8th magnitude orange star and a gold coloured 9th magnitude star separated by 14 arc seconds. That's about the same distance as Alpha Centauri, - easy!

If you want to know the other three see me for a map

Galaxies in Phoenix

NGC 625 is an elliptical galaxy seen edge-on with a bright centre. Located 2° from Gamma Phe in a straight line with Beta Phe; it is only rated at 11.6 mag. so look carefully.



NGC625

If you are into faint galaxies there are two clusters of 12th magnitude spirals and ellipticals 1° north of Beta Phe in a nice star field and another between Theta Phe and the Grus constellation. Only for the scopes 200 mm and upwards I would say.

The warm but short summer nights are coming. Make it your aim before year's end to join in a field night observing for a couple of hours. For directions ask one of the observing group or a committee member.

Good seeing

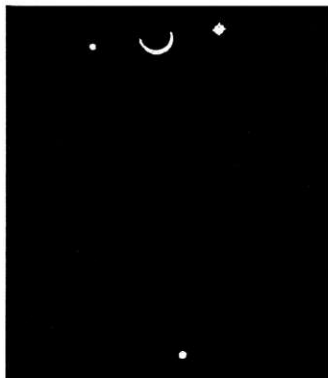
IC



Cosmic Art

Were you lucky enough to see the jaw dropping display of Venus, Jupiter, Spica and the Moon in the west on Wednesday 7th September? Wasn't it beautiful? The sky was great, and to quote Astronomy 2005: "It doesn't get much better than this."

What pleased me was the number of ordinary people on the station and car park who stopped to stare and talk about it. I took the opportunity to explain to a few people what the bright lights were. They were fascinated, but mostly with the sheer beauty of the scene.



RB

THE ANTHROPOCENTRIC UNIVERSE Frank Kish Jan. 2005.	Part 2
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[This is the continuation of Frank's article]

2. ANTHROPOLOGICAL REASONING

2.1 The Basic Anthropological Theory

The recent theory of anthropological reasoning dates back to R. Dicke's article of 1961 on "Dirac's Cosmology and Mach's Principle", which contains in part how long the Universe has been expanding. In it Dicke proposes that the present value of the Hubble age is not a random choice from a wide range of possible values, but it is set within the very *limited time span* that was available for the biological requirements to be met for the development of life.

The **lower limit** is the *first requirement*, that is the availability of elements heavier than hydrogen, such as carbon, which conforms to (the lower limit of the present value of Hubble age), the age of the *shortest lived* stars.

The **upper limit** is the *second requirement*, that is the availability of sufficient thermal energy and light on a planet (like Earth), provided by its star (like our Sun), which conforms to (the upper limit of the present value of Hubble age), the age of the *longest lived* stars.

For easier understanding of this startling concept, see the enclosed single-line diagram.

Note: The very essence of the *Basic Anthropological Theory* is centered around this "*limited time span*", within which time the so called coincidences of precise fine-tuning for all specific conditions that were required for life to develop had to take place.

(The age of the Universe = 14 Gy +/- 3 Gy (A. Sandage, 1999; as derived from old stars,

radioactive elements, etc., not from Hubble constant. The Hubble constant = 65 +/- 15 km/s.Mpc; consistent with ages from 7.5 to 22.5 Gy. The Hubble age is understood the age of the universe as based on the Hubble constant).

Considering the above *two time limits* of stars set out as the conditions for life to develop anywhere in the Universe, reveals that the present value of the Hubble age, previously regarded by cosmologists as arbitrary, is now given an entirely *new meaning* and a basis for a new argument.

With regards to development of life, previously *biological* conditions were explained in terms of *physical* values; now *physical* values are explained in terms of *biological* conditions.

This way of reasoning, according to some cosmologists is neither causal nor deductive, in other words it is not a strictly scientific process, however, it may be admissible as a scientific explanation.

This *basic anthropic theory* became appreciated by the wider scientific community only after B. Carter developed it in his paper of 1974: "Large Number Coincidences and the Anthropic Principle";

In this paper Carter made the distinction between the **weak** and **strong anthropic principles** for the first time.

2.2 The Weak Anthropic Principle

This A.P. states that our location in the Universe is necessarily privileged to the extent of being compatible with our existence as observers. This principle then refers back to the *two time limits* in the Universe, all as described above.

Carter makes a plausible conclusion that the weak anthropic principle vindicates Dicke's deduction of the Hubble age.

Sir Martin Rees, Astronomer Royal, makes the following interesting observations:

"What makes things hard to understand isn't how big and vast the galaxies are, but how complicated they are. And yet, they don't have the same intricate layer upon layer of structure that an insect does, for instance. And so the task of understanding the complexities of life is in some respect more daunting than the challenge of understanding the Big bang and the micro-world of atoms....

"It is rather interesting that the most complicated thing in the Universe, namely human beings, are in a well-defined sense midway between atoms and stars. It would take about as many human bodies to make up the mass of the Sun as there are atoms in one human body.... The geometric mean of the mass of a proton and the mass of the Sun, is about 55 kilograms, not far of the mass of an average human body. It is not surprising that the most complicated things in nature are on this intermediate scale between cosmos and micro-world."

2.3 The Strong Anthropic Principle

This A.P. provides the *firm basis* as evidence for the *claim* made in the Weak A.P., that is for some people the fortuitous arrangement of the physical world confirms their belief in *intelligent design*. This basis comprises scientific observations made in the microscopic and macroscopic nature, claiming that numerous physical and cosmological quantities of laws, constants and large numbers cannot be easily explained either for their apparent necessity in precision or as having any logical reason for existence in themselves.

2.4 The Fine-Tuned Universe:

The *firm basis* of the Strong Anthropic Principle is the scientifically proven *fine-tuning* of the physical quantities in nature by the *claimed* causative act of *intelligent design*.

These fine-tuned *quantities* of the Universe indicate one common, principle feature that is: they are all precisely tuned through a very specific and *unnatural* selection, to **hold together** some vital element in nature, at the critically set strength, direction and distance, through the strong and weak nuclear forces and the gravitational force. Above all, this fine-tuning process had to be completed in the *very early life* of the Universe, (unlike the analogous Darwinian development of life on Earth), and not spread over the cca. 13.7 Gy. life-span, in order that these fine-tuned entities could govern the subsequent phases of development in the cosmic nature and life in it. Could there be otherwise a *gradual* development in the speed of light or in the force of gravity?

Regarding the items of *fine-tuned quantities*, Particle Physics has more than 20 adjustable parameters, which are not determined by any known physical principles, but they are merely based on observations and mathematical calculations. These are considered the *cosmic events* or conditions of existence of the Universe.

The *Standard Cosmological Model* has similar 15 parameters.

The problem is how these parameters are determined, and which ones are considered *fundamental*.

While refuting the causality-based fine-tuning in the *Strong A.P.*, there are general uncertainties and spectacular failures among cosmological theories, including the Standard Cosmological Model. Even the latest Super-String Theory is already torn to shreds by some scientists, as these theories serve mainly to shore up the adversarial views against the Strong A.P. In the opinion of these adversaries, the Strong A.P. *is indeed on a very shaky ground*, (i.e. despite all the scientific proof of the fine-tuned quantities).

The element of truth in this is that the items of fine-tuned quantities are hard to falsify, while many of them outright mystify science. The ultimate hope for scientists lies in the Grand unified Theory, (GUT), but what good will it do when it is already riddled with *infinities*, especially where gravity is involved. As scientists say, some *infinities* are embarrassing, but can be lived with. The Super String Theory may dissipate *infinities*, but it presents new challenges to pure mathematics. Thus, in a concerted effort, more and more conflicting theories are published, whereby the theoretical complexities are on the increase.

Principal Features of Fine-Tuning:

(Compiled from various sources.)

- i) They are built into the fabric and became the basis of the structure for our Universe from the time of the Big Bang.
- ii) They provide special (anthropological) conditions within the *two time limits*, suitable for the development of our Universe itself and conscious life on Earth.
- iii) They are unfailingly true in all conditions and at all times, throughout the microcosm and the macrocosm, without conflict or contradiction with one another.
- iv) They are critically sensitive to any change in their values; otherwise any change could annihilate either the Universe itself or life in it or both.
- v) We have theories about the significance of these anthropological numbers, but we still have no theory that could explain the nature of the values themselves.
- vi) Although these critically fine-tuned conditions thought to suit our Universe and conscious life on Earth, the *important question* still remains whether all this fine-tuning process came about by a causative act of an intelligent design or merely by blind chance?

General Comments on Fine-Tuning:

- Scientists understand the importance of fine-tuning and yet, they seem to have no understanding of any reason why the results of these mathematically proven quantities should be selected by nature and act the way they do individually by themselves.
- Every one of these fine-tuned quantities is acting in concert with all other similarly fine-tuned quantities, without conflict or contradiction with one another; This makes the whole Universe acting *causally* towards a common purpose, namely to set the basic requirements for a carbon- and biology-based life on Earth.
- The basic Anthropic Theory, (the Strong- and the Weak A.P.'s.), asserts the only explanation for the above scientific facts that there was a *pre-determined* purpose built into the Universe from its very beginning, by an intelligent design, which not only made specific conditions suitable for life to develop in the Universe, and within the *two time limits*, but it also made suitable for human beings with intelligent consciousness and with free-will to develop on Earth.

In association with this item, B. Carr and Sir Martin Rees, 1979, in the "The Anthropic Principle and the Structure of the Physical World", give ample evidence for the fundamental constants of physics that claims to determine the existence of life on Earth.

2.5 The Multiverse Theory

The theory of *Multiverse* has been proposed on the basis of *quantum-chance fluctuation* of many worlds, called the *universe-domains*, in order to avoid the fine-tuning by *intelligent design*, that would be required to set up the anthropological conditions for our Universe and life in it to exist. Many scientists, (Dicke, Carter, Everett, Wheeler, Rees, Weinberg,

Davies, Tegmark, Linde, Smolin, et.al., assume that it is quite feasible to imagine carbon and water-based life form to exist not only in our Universe but also in many of the other worlds, such as claimed in the theory of the Multiverse.

But according to Hawking, it is also possible to imagine some sort of life composed of hydrogen and helium alone or life without stars and heavy elements, with special laws to exist somewhere in the many universe-domains. One may ask: *But where is the limit before we go way beyond science fiction?*

The answer is: The quantum theory dictates that everything could happen in some *universe-domains*. Our Universe is just one of the *indefinite number* of such universe-domains. Furthermore, every universe-domain would have its *unlimited number* of subsidiary universe-domains of ***infinite varieties***, meaning in effect that there are ***infinite numbers*** of universe-domains, all as per *uncertainty* of quantum theory. All universe-domains would have *causal* interconnection with one another, they could act on one another, and they all still would have one *common origin* with our Universe in space and time. There may be some difficulties in explaining in the Multiverse the Darwinian theory of biological selection, which is "*sublimely and quintessentially non-random*" Dawkins.

Our Universe, as all other universe-domains happened to develop through *blind-chance* and during the same limited time-span of cca. 13.7 Gy., thus all or some of these universe-domains have *collectively* contributed to the *fine-tuning* of our Universe. The problem with the Multiverse is that those *collective fine-tuning* had to take place *simultaneously*, at the very *beginning* of the Universe, and not drawn out over the entire 13.7 Gy. period. So

far, in the present theory, there is no explanation as to how or if this requirement was achievable.

For further explanation see Clause 2.4, "The Fine-Tuned Universe".

Dilemma of Uncertainty: Extract from: "*Multiverse & Physical Cosmology*".

*Apart from the quantum-based nature of the Multiverse theory, oddly enough the anthropocentric aspect, from which the adversarial cosmologists wanted to extricate themselves in the first place, find themselves now in a more serious anthropocentric dilemma to explain, that is the working of the **human mind** itself in an uncertain quantum environment.*

*The following appears to be **the principal reason**:*

The faculty of human mind, in its conscious self-awareness, is generally accepted as the ultimate effect in the long line of evolution in nature.

This intellect is endowed with certitude of logic attained by the use of laws of critical thought.

*Therefore, this reasoning faculty of an **observer** by analyzing and judging truth against falsity must apply in all possibilities, and at all times, even in the quantum uncertainties, which is the assumed basic nature of the Multiverse. If this is found to be a correct assumption, it should negate the very conclusion that the reasoning faculty of this human mind will have been able to achieve any knowledge with certitude in a quantum world.*

After all, how can the functioning of a human mind be exempt from an uncertain world in which it is supposed to exist?

Or if it is not exempt, how is it possible for such an uncertain mind to elicit any

judgement based on law-like logic, about its uncertain surround, with certitude?

On the basis of the above described quantum-uncertainty of knowledge in a Multiverse, the application of the quantum theory as the basis for the Multiverse itself could be in doubt as well.

General Comments on the Theory of Multiverse (Compiled from: "Multiverse & Phys'I Cosm.")

- The Multiverse theory is also *anthropological* in essence, insofar as cosmologists intend to replace the fine-tuning of A.P. by *design* with fine-tuning by *blind chance*, for the benefit of conscious life on Earth.

- The theory of Multiverse challenges the *uniqueness* of our Universe.

- The uncertainty principle may produce fine-tuned quantities in our Universe, but there is no indication of how life could have developed. Could it be that the basic development of our Universe, through its quantum-chance fluctuation of fine-tuning, followed by another chance fine-tuning for the development of life on Earth? One may wonder how these could happen? For additional ideas see Clause 2.4, "The Fine-Tuned Universe".

- The infinite varieties of the universe-domains imply that those entities could also be infinite by nature, whereby we are to consider a contradictory concept of infinities of infinity.

- The infinite varieties of the universe-domains, where anything or rather everything that is possible to happen by *chance*, will happen, and in fact has happened already,

just we are unaware of their existence. These *happenings* negate the *absolute* nature of *reality*, as the existence of everything and in all universe-domains are related only to localized chance-happenings. If this theory is *true*, then all our philosophies, science and knowledge that are based on logic are *false*. The reason is because the creative faculty of the human mind has an innate affinity for *logical order for itself*, which is manifested in searching *truth* in all its forms, in everything.

- One could imagine many chance-events that may *contradict* with one another within and among the infinite universe-domains, including our Universe, as opposed to a coordinated and precise fine-tuning of nature that is required in our Universe and elsewhere, where life is expected to develop.

- If an *infinite* Euclidean space may arise in the infinite varieties of the Multiverse, it would be a *pure abstraction* that is almost certainly never realized in the physical reality.

- As in our Universe, so also in the Multiverse, the effects of intellectual consciousness, that is the freedom of *mind* and freedom of *will*, can not be *described* by the laws of physics.

- *The Principle of Specification* in the Multiverse, by which one physical entity is distinguished and identified through its individually quantifiable form, from every other kind, *breaks down* completely, because Multiverse is based on *infinite* physical *entities*, without having limit to their specifications in space, time, number of component parts, etc.

On this basis alone, the theory of Multiverse *denies* its very own physical existence, because as it is known in general, there is no entity without identity.

- Apart from the near-enough accuracies in describing the theory of Multiverse, it is claimed that certain universe-assemblies do exist rather than all other possibilities, without producing any direct evidence of existence of any or other assemblies. If one cannot show which particular assembly exists, then it is *doubtful* one can show that any one exists at all.

- If in the Multiverse everything is a result of *chance-events*, i.e. accidents, why is it that every law and constants of nature, as well as the established complexities of *biological life* in our Universe follow a precisely *predetermined* order, (e.g. the DNA)? This is a direct opposite of the quantum uncertainty, where *nothing should be the same*, ever.

- The theory of Multiverse can not be tested and verified for its existence and attributes directly or indirectly in the usual scientific sense. Therefore it remains a matter of *faith*, which cannot be used as an argument against the scientifically proven fine-tuned quantities of our physical reality.

End of Part 2 (To be continued...)

A Flare for the Dramatic

"A series of coronal mass ejections occurred directed partially Earthward over the days after September 7th 2005. The Earth has observed impacts from some of the stronger events. Periods of intensifying auroral activity were observed during the following several days. The first of the larger impacts occurred near 01:19 UTC on 11 September produced periods of minor to major auroral storm conditions, sporadically during the next 12 to 18 hours. Additional strong impacts were

experienced over the next several days. Some of these disturbances are cannibalising other CMEs, and as a result, the potential geo-effectiveness were complex and difficult to accurately predict. Nevertheless, the potential existed for periods of strong auroral storm conditions developing during the following several days (at least). Near-continuous storm-level activity was possible during the next week, if sunspot complex 10808 continues to impress with energetic flare activity."

The above is a paraphrase (in the past tense) of a warning given on the website "Spacew". Following that, the web was full of stories of beautiful aurorae (both north and south.) The table below shows how the guilty sunspot was the 4th largest X-Ray Class eruption recorded since 1986.

Ranking	Date	X-Ray Class
1	04/11/03	X28
2	02/04/01	X20.0
2	16/08/89	X20.0
3	28/10/03	X17.2
4	07/09/05	X17
5	06/03/89	X15.0
5	11/07/78	X15.0
6	15/04/01	X14.4
7	24/04/84	X13.0
7	19/10/89	X13.0
8	15/12/82	X12.9
9	06/06/82	X12.0
9	01/06/91	X12.0
9	04/06/91	X12.0

After Dick Everett's tip-off on Monday 12th, I took my \$5 solar spectacles into Hyde Park and took a peek at the Sun. Awesome! A black freckle on the Sun, probably as big as Earth. And it was still there on Tuesday.

RB