Crisis in cosmology continues with conference of big-bang dissidents

John Hartnett

On 7–11 September 2008, about 50 dissident astronomers and physicists met at the Red Lion Hotel in the quiet harbour town of Port Angeles, Washington, USA. I was one of them. They met to discuss problems facing the big bang model of the structure and origin of the universe, in the hope of one day developing a robust replacement that is not plagued with the problems the standard model faces.

This was the second in a series that started in Portugal in 2005. The conference was titled *Crisis in Cosmology 2: Challenges to Consensus Cosmology and the Quest for a New Picture of the Universe*.

It was also attended by a few dozen interested observers, and the local media.

Large Hadron Collider and the media

Remarkably, the conference coincided with the commissioning of the Large Hadron Collider (LHC) at CERN in Geneva, and reporters[1] asked questions about the possibility of the LHC recreating some initial conditions of the early big bang universe. As it had been often reported that the LHC may create mini black holes[2] and suck the earth into its wake, the timing seemed perfect.

Scientists from the conference told reporters that such questions hardly apply because the big bang origin of the universe is a *myth*—it never happened. The *Daily Peninsula News* quoted them as follows:

> 'Said physicist David Dilworth: The "big bang" theory is a house of tissue paper that is about to collapse under its own weight.'
>
> And,
>
> 'Cosmology studies the natural order of the universe. A "good cosmology" would explain how the universe works, but not necessarily explain its origin, van Flandern said … the "big bang" theory does rely on unproven ideas.'

In that article, van Flandern went on to say that a level of agreement had been reached amongst the attendees. I would actually dispute that, unless he is referring to the fact that the only agreement was that the big bang is a poor description when compared to what we observe. The common thread of the conference was that something better is needed. And there was a lot of emotion—it seemed each had his own cosmology, and most were also atheists.

Alternate Cosmology group

Most who attended were taking time off from their jobs or were self-employed. Only about eight were officially representing their own universities—myself included. Many others, some well-known astrophysicists, had been invited and though sympathetic to the ideas expressed, were afraid to attend, afraid of being labelled by association with this group. Prof. Halton "Chip" Arp who has for a long time championed the idea of quasar associations with low-redshift active parent galaxies 'attended' from Germany via video-link.[1-5]

This group started the Alternate Cosmology group[6] a few years ago with a general mission statement 'Open Letter'[7] that was published in *New Scientist* and outlined the many major problems with the standard ΛCDM (cold dark matter) big bang cosmology.

Initially only a small number had signed the letter, but when the website went up the list grew to more than 300, many from reputable universities.

During the introductory comments Peter Beckman was quoted saying, 'He peered past the giants who were blocking the light.' This was in the context of Sir Isaac Newton, who, referring to his scientific advances, said 'I have seen farther by standing on the shoulders of giants'—those who had gone on before. Clearly they feel that the dominance of the standard model now stifles new ideas—a dictatorship that controls how they must think.

The Creator is excluded *a priori*

I asked a few attendees what their reason was for disliking the big bang. For example, if it was found that it could explain the observational data without introducing fudge factors, would you accept it? One participant told me, 'For me it is philosophical.' Another said he *believed* the universe was static. Another said he didn't *believe* in the big bang, because it begins in time and that must have been a miracle. (It always ends up being a matter of faith—a worldview.)

Tom van Flandern, of MetaResearch Institute, laid out his requirements for a good model. They included that there must be no miracles. He stressed that almost every day—as if he felt that if he said it often enough, others would eventually believe him. Some didn't accept that condition (me included) but for those others who didn't it seemed it was not because they believed in miracles but because they believed the universe itself could create matter out of the 'nothing' i.e. creation *ex nihilo*.

Van Flandern was very dogmatic about not being dogmatic. He was convinced of his own belief in a static infinite eternal flat universe. He was quite forceful in putting his view, excluding all others.

Presentations

I presented the work I have done on large scale periodic structure of the universe as determined from the Sloan Digital Sky Survey (SDSS) and the 2 degree Field Galaxy Redshift Survey (2dF GRS). Eric Lerner commented that what I have shown them may well be the largest single space structure ever discovered—billions of

light-years across. I think it could well indicate that our galaxy is cosmologically near the centre of the physical universe—that we can see anyway.

University of Alabama astronomer Professor Richard Lieu presented a paper entitled '*LCDM cosmology: its bright and its dark sides*', where he highlighted some successes of the standard model but did not hold back in his criticism. His summary includes:

> 'The success of LCDM cosmology lies with its ability to explain by one mathematically sophisticated model the scale dependence of the CMB anisotropy, structure formation, light element abundance and the age of the Universe. *There are however at least six independent assumptions about space, time, matter, and energy that do not correspond to our everyday experience and cannot be verified in the laboratory within the foreseeable future*. Examples are the Hubble expansion and the Planck time. There are also many unexplained phenomena, labelled as "small details", such as the missing 50% of the baryons at low redshift, the anomalies of cluster X-ray spectra, the dwarf galaxy rotation curves and the abundance of satellites around the Local Group spirals.'

Van Flandern presented a paper entitled '*Two Pillars of the Big Bang Fall*'. For decades, van Flandern has maintained a list of serious problems with the big bang theory and now numbers them at around 60. In the last three years, observational evidence has accumulated that challenge two of its most fundamental assumptions:

1. That cosmological redshift indicates universal expansion; and
2. That the microwave background (CMB) originates primordially, beyond all visible structure.

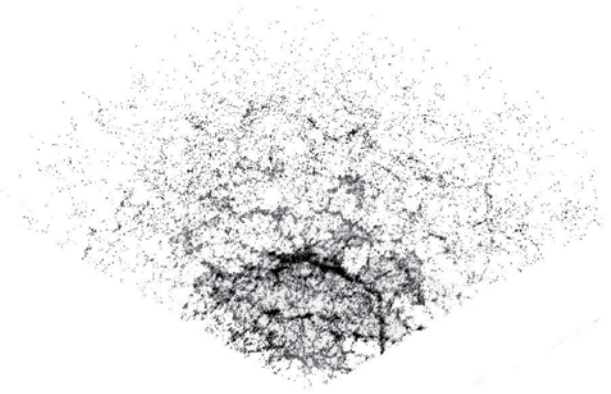

Image from <www.sdss.org>

Sloan Digital Sky Survey map. Each point shows the position of galaxies with respect to Earth at the apex. The distances of the galaxies were determined from their spectrum to create a 2 billion light-year-deep 3D map, where each galaxy is shown as a single point. (From a collaboration of the Astrophysical Research Consortium (ARC) and the Sloan Digital Sky Survey (SDSS).[8]

In regard to supernova (SN) light curves confirming the expansion of the universe, a well known selection effect has been overlooked. When SN data are corrected for Malmquist bias, all evidence for time dilation disappears, with the obvious implication that the universe (or space itself) cannot be expanding. Malmquist bias here is simply that as one peers deeper into space the brighter objects are preferentially observed and hence bias the result. Once corrected for, no expansion is indicated.

Analysis of WMAP data has produced two unexpected results:

1. Correlation of the spheroidal, octopole and quadrupole moments with the ecliptic plane and solar motion through the interstellar medium; and
2. The refutation by observation of expected heating of the CMB by X-rays from the Sunyaev-Zeldovitch effect in galaxy clusters, which indicates cooling (random fluctuations rather than X-ray heating) in about half the galaxies studied.

Van Flandern concluded his session with '*By any reasonable standard, the theory is now falsified.*'

Ashmore presented a paper on hydrogen cloud separation as direct evidence of expansion. From a literature search, Ashmore attempted to reconstruct the history of the separation of hydrogen clouds over past epochs. He found no direct evidence to confirm whether the universe has expanded. In a static universe one should find constant spacing of these clouds over all redshifts. In an expanding universe, the clouds separate as a function of time and hence their separations should decrease with redshift. As a result he asked this question. If quasars are at cosmological distances and Lyα lines represent hydrogen cloud separation, then why do we see in an expanding universe hydrogen clouds, locally, on average, equally separated over a range of redshifts?

Lerner presented his analysis of the Tolman surface brightness test for galaxies as a function of redshift (from $z = 0.03$ to 5.7), hence distance in the universe, when we look deeper and deeper into space. His claim is that the data will only fit a static non-expanding universe. This was also supported by a study of the separation between hydrogen clouds from Hubble Space telescope data. It found that they have constant separation as a function of redshift. This is certainly contrary to the notion that space is expanding and hence to the big bang. And it is also a problem to any expanding universe model.

Conclusions

There was a lot of emotion and little agreement amongst the attendees. At times emotions were so strong that discussion became heated. But these men are passionate and I believe it is better to be passionate and seek a better answer than to passively accept a flawed model. There is desire among them to expose the big bang but they really don't know how to proceed. It seems again to be a battle between David and Goliath.

While van Flandern, as stated earlier, was very up front about rejecting miracles, others didn't necessarily agree. As one told me, that supposes he knows all that can be known about the universe. It is a pity that this talented group is so against the notion of a Creator, who told us that He did create the universe in a specific way some six thousand years ago as measured by Earth clocks. It is only left up to us to find out some of the details.

References

1. Page A6, September 11, 2008.
2. This was voiced by some lone physicist but there seem to be no grounds for such a belief. Some very high energy cosmic particles exceed the final energy of the protons in the LHC, so few physicists give any credence to the claims. Nevertheless the opposing beams of protons racing around the 27 km beam path are not to collide for some time yet as various stages of commissioning and calibration are carried out. Full power will not be reached until after a year.
3. Arp, H., Quasars, redshifts and controversies, Interstellar Media, Cambridge University Press, Berkeley, CA, 1987.
4. Arp, H., Companion galaxies: a test of the assumption that velocities can be inferred from redshift, *Ap J* **430**:74–82, 1994.
5. Arp, H., *Seeing Red, Redshifts, Cosmology and Academic Science*, Apeiron, Montreal, 1998.
6. <www.cosmology.info>.
7. <cosmologystatement.org>.
8. For a more detailed and complete map, where luminosity is represented by colour, see <www.sdss.org/news/releases/galaxy_zoom.jpg>.

Evolution of multicellularity: what is required?

Shaun Doyle

All evolution assumes either the augmentation of some prior system to fit a new need, or lateral gene transfer adding information for the same end. Even systems that seem to require completely new structures (feathers for example) are assumed to be modified from pre-existing structures. However, there are two significant events in evolutionary history where far more would have been required—the origin of life, and the origin of co-ordinated multicellularity.

Requirements for multicellular evolution

Genetic sameness

The first requirement for multicellularity to emerge is that all the cells must contain the same genetic information. Wolpert and Szathmáry provide a good overview of why genetic sameness is required for a multicellular organism to be viable as an individual:

> 'The first step in the development of a complex organism is the establishment of a pattern of cells with different states that can differentiate along different pathways. … [P]atterning processes require signalling between and within cells, leading ultimately to gene activation or inactivation. Such a process can lead to reliable patterns of cell activities *only if all the cells have the same set of genes and obey the same rules* [emphasis added].'[1]

Without the same genetic blueprint to work from, there is no guarantee that cells will be able to communicate properly so as to co-ordinate their actions.

A new level of biological organisation

Evolution requires more than a mere augmentation of an existing system for co-ordinated multicellularity to evolve; it requires the *ex nihilo* creation of an entirely new system of organisation to co-ordinate cells appropriately to form a multicellular individual. Nedelcu and Michod concur:

> 'The current hierarchical organization of life reflects a series of transitions in the units of evolution, such as from genes to chromosomes, from prokaryotic to eukaryotic cells, from unicellular to multicellular individuals, and from multicellular organisms to societies. During these evolutionary transitions, *new levels of biological organization are created* [emphasis added]'.[2]

Williams talks of the irreducible structure of the cell, and finds a universal example in *autopoiesis* (self-making).[3] He describes five levels of organisation in all living things that are needed for autopoiesis to occur:

1. Perfectly-pure, single-molecule-specific biochemistry
2. Molecules with highly specific structures
3. Highly structured molecules that are functionally integrated
4. Comprehensively regulated information-driven metabolic processes
5. Inversely-causal meta-informational (information about information) strategies for individual and species survival.

Moreover, each level is greater than the sum of the levels that make it up such that the only way these levels can be explained is by *information*.

> 'Each level is built upon, but cannot be explained in terms of, the level below it. And between the base level (perfectly pure composition) and the natural environment, there is an unbridgeable abyss .'[4]

To Williams' autopoietic hierarchy, I wish to add another level of structure found only in multicellular organisms: *intercellular co-ordination*. The organism has strategies for arranging and differentiating its cells for survival and reproduction. With this comes a communication network between the cells that regulates the positioning and abundance of each cell type for the benefit of the whole organism. A fundamental part of this