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Presidents Report

John Rombi

Welcome to the May edition of *Prime Focus*.

Last month we held our A.G.M.

I would like congratulate the members of the new committee, especially our newest additions Trevor Rhodes (V. President) and Tony Law (Treasurer)

Our retiring members Daniel Ross (V.P) and Dick Everett (Treasurer) are leaving behind a great legacy of hard work and dedication, something that will benefit M.A.S for a long time to come.

THANK YOU!!

Post A.G.M

Our post A.G.M entertainment was provided by Trevor & Anne Rhodes; they had put together a great trivia quiz that at times had us stumped for answers.

This was a very different approach to our normal meetings and allowed the members to have a lot more time for socialising. The addition of prizes for the best team (Chocolates) certainly added another dimension (I think my team was the best) Thanks Trevor & Anne, I'm sure to call upon your skills again soon.

Observatory Training

As this edition goes to print, 6 members have begun their training in the operation of the observatory equipment; I would like to thank Dr Ragbir Bhatal and Mark Johnstone for giving up their personal time to accomplish this important part of M.A.S's involvement with U.W.S.

Also a VERY BIG thank you to U.W.S Provost, Prof Anne Cusick for overseeing this very important collaboration between the two organisations.

Public Nights

We've just completed our second public night of this year (May 2nd) like the first, it was an overwhelming success.

We had the smaller dome with the 10" telescope open for use. This was complemented by over a dozen M.A.S member owned and operated telescopes. The large crowd in attendance were transported to numerous areas of the sky to view the wonders of our Universe.

I received numerous compliments for the generous nature and abundant knowledge that was shared that night. Many people were wanting to know when the next observing night would be held, so they could get their next "fix" of Astronomy!!

Congratulations to everyone that helped out on the night, Astronomy was the BIG WINNER. I would also like to thank George Ward and Rotary. Their B.B.Q and the subsequent delicious aroma's attracted a big crowd to their stand; it certainly helped fill a few holes in the empty tummies.

Historical Societies

Saturday April 18th was a busy day for M.A.S. We first attended an open day at The Campbelltown Historical Society (Glenalvon House) we set up our scopes under a mild clear sky that lasted all day.

The numbers were a little down on what we thought would attend, but never the less those that made the trip were shown the intricacies of a telescopes workings, plus Roger Powell took them on a visit to the Sun with his appropriately Solar Filtered S.C.T.

Our resident "GOLDEN TONSILS" Bob Bee, gave two presentations on the History of Astronomy (11.00am & 1.00pm) Both sessions were filled to the brim, THANKS BOB!

For the evening session we traveled out to The Oaks, where Bob presented the talk he had given earlier that day (again to a packed house) Once Bob had warmed up the crowd with in, our guests were escorted out to the telescopes where the M.A.S astronomers once again weaved their magic.

THANK YOU!!

Stargard & The Forest

After the marathon of April 18th, a few of us ventured over to Stargard (this was a gazetted night) Chris had already been there for a few hours and was merrily enjoying the clear sky.

When Trevor, Anne, Debbie, Carol and I arrived at 9.30pm, the sky was still clear but within a half hour the dreaded Stargard Jinx "CLOUD" had rolled in, there goes another night!!.

The Forest (April 25th) weather prediction was for showers at worst and clouds at least, this kept all but a handful of members from attending the "FREE" weekend. As it turned out the weather Bureau got it ALL wrong and the lucky few were treated to a couple of nights of brilliant skies!! From now on I think I'll ignore the forecasts and just go.

What's on?

There are many more functions being held throughout the year, so please check out the website's "What's on" column. Please let Roger or I know if you can attend.

Tonight.

I would like to welcome (for his second trip to M.A.S) Prof Bryan Gaensler.
His presentation will be on "Magnets in the Sky"
Thank you Bryan.

Until next time, Clear Skies, John Rombi

Observing Dates

May
18/05/09 General Meeting
23/05/09 The Forest

June
15/06/09 General Meeting
20/06/09 The Forest
27/06/09 Stargard

July
18/07/09 Stargard
20/07/09 General Meeting
25/07/09 The Forest

August
15/08/09 Stargard
17/08/09 General Meeting
22/08/09 The Forest

September
12/09/09 Stargard
19/09/09 The Forest
21/09/09 General Meeting

October
10/10/09 Stargard
17/10/09 The Forest
16/10/09 General Meeting
19/10/09 General Meeting

November
14/11/09 The Forest
21/11/09 Stargard

December
12/12/09 Stargard
19/12/09 The Forest

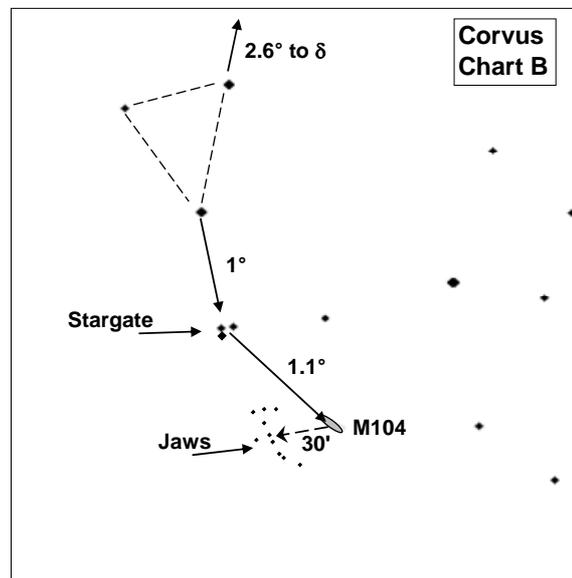
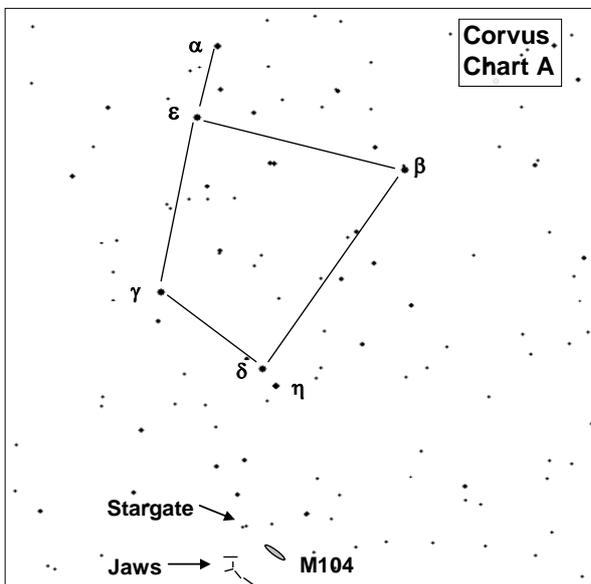
**Stone the Crows,
It's Jaws and Stargate**

Bob Bee

Most of us know how to find M104, the Sombrero Galaxy that sits in Virgo but hovers on the border to Corvus, the Crow. (See June 2007 issue of Prime Focus for a refresher.)

But some of us aren't aware of two delightful asterisms that inhabit the same region of space. They are commonly known as 'Stargate' and 'Jaws'. I'd heard about them 'around the traps' and recently read Sue French's article in May 09's S&T. This inspired me to go shark hunting from my backyard and was pleasantly surprised that they are easy to find, once you've got Corvus and M104 sorted out.

See the charts below for a refresher on how to find M104. They also show the general locations of M104, Jaws and Stargate.



The trick is to locate δ and η Corvi and drop down 2.6° to the triangle shown. Then follow the directions from there. In fact, one of the guide stars to M104 from the triangle is actually the Stargate. How easy is that?

Once you locate M104 (you can't miss it, the old Sombrero Galaxy), move 30' west and Jaws will eat you up. It shows up well on low to medium magnification.

'Stargate', so named by an American John Wagoner at the 1980 Texas Star Party (or so the story goes) because it reminded him of the hyperspace stargate used by the hero Buck Rogers in the 1979 television series (not the more recent series of the same name) has the official name Struve 1659 ($\Sigma 1659$). As seen in the image below, it is a fairly rare pattern of two nearly equilateral triangles, one within the other. Cute!

The triangle is about 5' long and shows up well at low mags of about 40x as I found out in my 250mm Dob. Increased magnification improves it but don't use too much. Obviously it is best all kept within your field of view. The stars of each triangle vary in brightness, especially the inner triangle where one is much fainter than the other two.



'Jaws' obviously refers to the great white shark in the film of that name. This is made of fainter stars and doesn't show up well in your finder scope. But if you move the scope to the approximate position as shown (about 30' west of M104) you'll see it in your main eye piece. In fact, with a low enough magnification, the asterism and M104 should share the same field of view, as shown in the image below (north is down).

The shark is about 30' long from mouth to tail. While some can see the three bright stars at the southern (top) end as the shark's open mouth, I can't. I see it more like the snout of a hammerhead shark. What do you think? The name 'Jaws' is said to have been given by the American amateur astronomer and author Phil Harrington (check the web for all the books he has written).



The sharks body is made up of about six stars in a gentle curve, with one star offset about one third the way from the head, depicting its huge dorsal fin.

It's a wicked asterism, well worth searching out and enjoying, along with the Stargate. Makes hunting down M104 a bit more fun. Also something else to show the public this coming Public Star Night.

Secretary's Column

Roger Powell

Many thanks to all members for re-electing me as Secretary for 2009-10 at the April AGM. I look forward to the year ahead with enthusiasm and hope our Society will continue to gain in experience and grow in numbers

On behalf of the other members of the outgoing committee, I want to thank John for his very kind words about each of us individually, in his annual report. John has always been very generous with his praise for many of our members throughout the year but naturally, being the author of the annual report, his own contribution over the last twelve months was overlooked. For the record, John puts a huge effort into organising events and robustly looking after our interests over the course of the year. It consumes a lot of his spare time and with Jenny's support his contribution was quite literally second to none of us. The Society is in very good hands under John's strong leadership.

The new committee has already held it's first meeting and is planning the year ahead. A guest at the committee meeting was Dr Ragbir Bhathal from UWS, our Patron and a long-term member of our Society. Ragbir proposed three new projects for MAS to consider, which include educational programmes and an upgrade for the UWS Rotary Observatory.

This month I wanted to say something about Bob Bee's lectures. In April, Bob gave his excellent talk on the *'History of Australian Astronomy'* to three audiences in the space of eight hours! This was part of our contribution to The National Trust Festival and it's theme 'Our Place In Space – Under The Southern Cross'. It was a marathon performance from Bob, supported by many members with their telescopes during the day and evening. Bob spent many hours researching his topic and was very well received by each audience, judging from the comments I received afterwards.

Amazingly, Bob was at it again only a few days later, giving a talk on *'Astronomy for Beginners'* to about thirty young children and adults at the Australian Geographic Shop, Macarthur Square. I went along to observe and Bob was even better with the youngsters than he was with the adults, although it seems the younger the audience, the curlier the questions! If some of these kids become the amateur astronomers of the future, it will be - in no small way - due to Bob's talents. Bob will give another talk to students at Tudor House School, Moss Vale on 13th June, and will be our own guest speaker on 15th June.

The main emphasis for the rest of the calendar year will be on our public nights at the Rotary Observatory. The first two were both a stunning success. Please continue to support these public outreach initiatives by bringing along your telescopes or volunteering to assist in other ways on the night.

We were recently donated a set of 6" mirror blanks and other assorted telescope building components by a former member. After advertising it on the Forum, Chris Malikoff was the only person interested. I look forward to regular monthly reports and photos from Chris on his venture into telescope building and mirror grinding in particular.

70,000

The number of people living in Australia who listed their religion as 'Jedi' in the 2001 government census. In New Zealand there were 53,000; and in England and Wales an amazing 390,000 people entered Jedi as their religion. I am not sure how many of these folks were serious about it but it appears that a lot of them were!

Star Hopping to Messiers #12

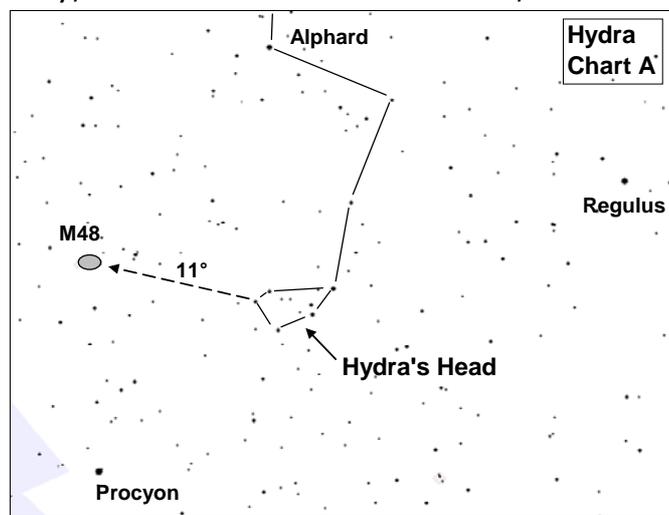
Hydra (M48, M68 & M83)

Bob Bee

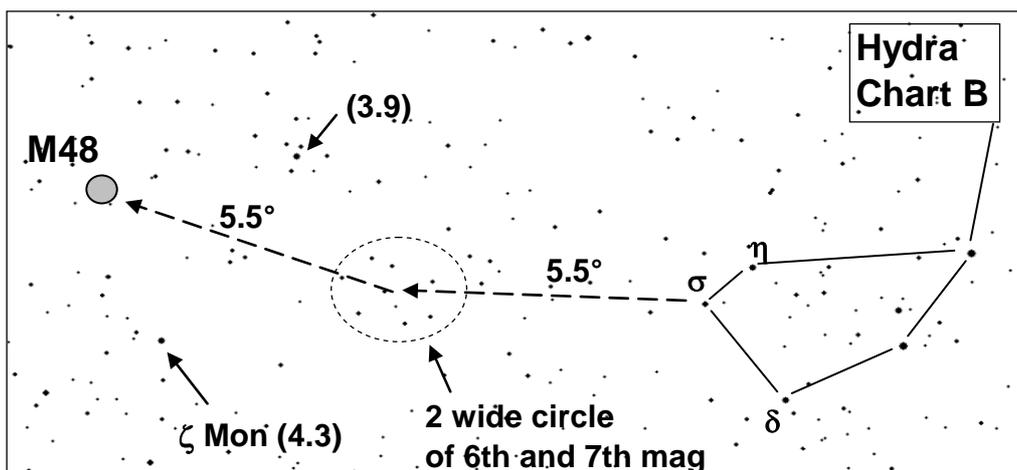
Hydra has three Messier objects – an open cluster, a globular cluster and a spiral galaxy.

Messier	M48	M68	M83
Type	OC	GG	SG
Size (')	54	12	11.2
Mag.	5.8	8.2	7.6

M48 is observable in binoculars as a large open cluster with about 80 stars so it should show up in a 50mm finder scope. Its location is generally 11° south of (above) the Head of the Hydra when at the meridian (in April). The head can be found approx. midway between the stars Procyon and Regulus. In May, M48 is more west of the head, as shown in the Chart below.

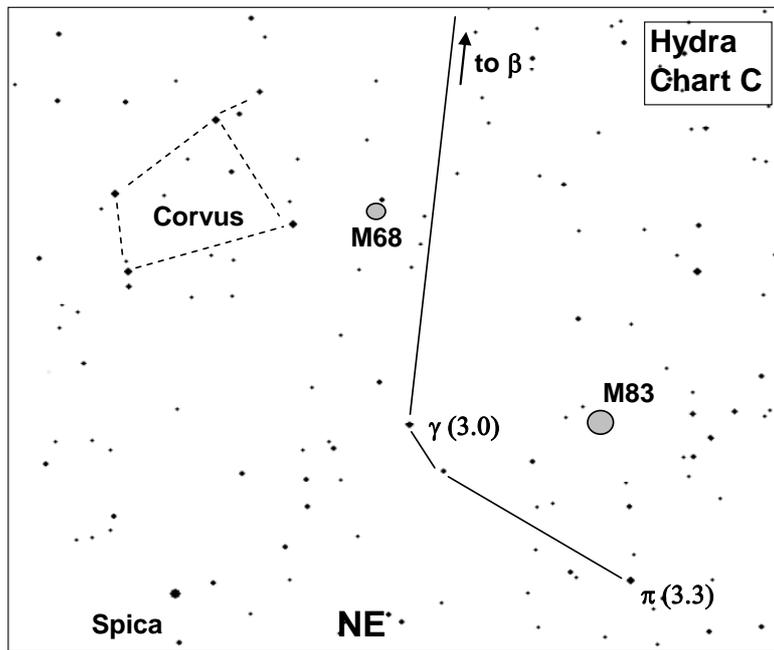


Because M48 is relatively bright, detailed star hopping is not that essential, but just to be sure, see Chart B below.



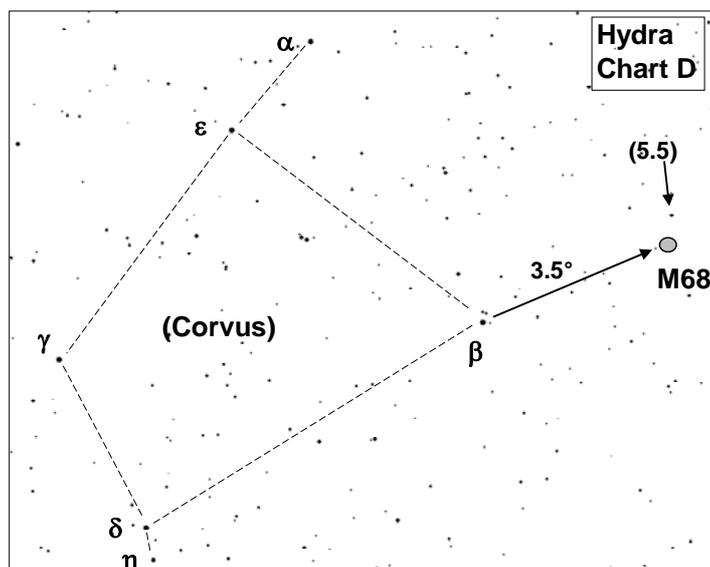
Start at the west end of the Head, σ Hydrae. In your f/s, move just over 5° west and you should see a 2° wide field of 6th and 7th mag stars. That's halfway to M48. Now continue to move west just over 5° (a f/s FoV). Above and below your pathway, you should see two relatively bright stars (mags 3.9 and 4.3) about 4° apart. Continue between them and you will land on M48. Enjoy!

Now **M68** and **M83** are at the other end of the serpent towards the east, a long way away in the sky. The stars of Hydra's tail are pretty indistinct except perhaps for gamma (γ) and pi (π) which are mags 3.0 and 3.3 resp. In finding M68, it is more useful to work from nearby Corvus which stands out like, well, like a Crow on a rock. See Hydra Chart C below.

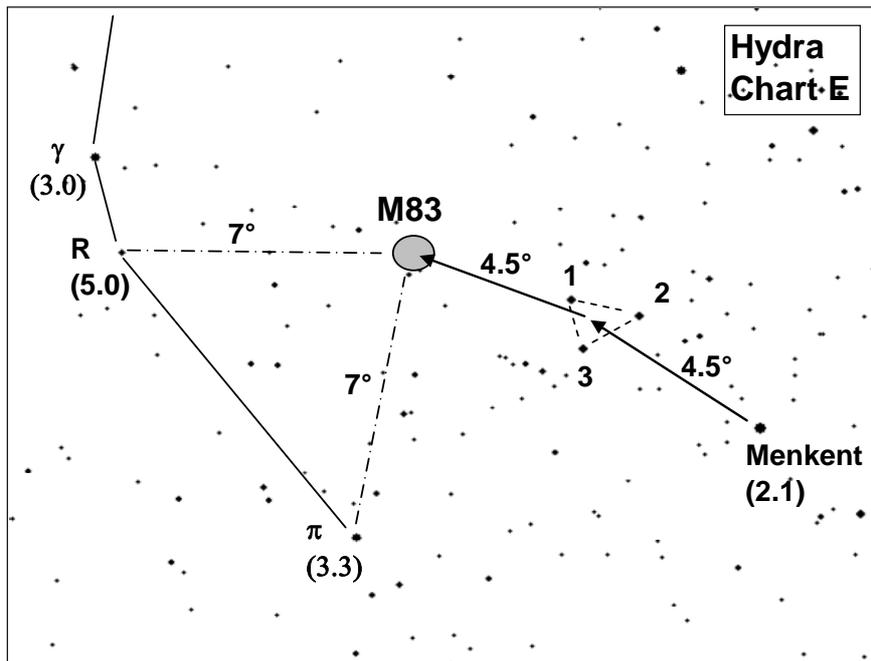


To locate **M68** which is an 8th magnitude globular, in dark skies it can show as a faint fuzzy star but normally it would be tough to spot in your finder scope. First identify Corvus. Its distinct shape should be easily found about 75° above the NE horizon at about 7.30pm in May. (Check your planisphere for your date and time). We'll work from Corvus's most easterly star, β or Kraz. See Hydra Chart D below.

Our strategy is to move from β Corvi in a continuation of the line from δ to β towards a mag 5.5 star about 3.5° away from β . So centre your f/s on β Corvi. Then move in the direction away from δ Corvi until β is on the edge of your FoV. You should see close to the FoV centre the 5th mag star. Centre your f/s on a spot about 0.5° 'below' that. Check your main eye piece to see if you have M68. You should.



Now for **M83**, the face on spiral galaxy. Like all things, there are a number of ways to skin this cat. Here are two suggestions. Take your pick. Look at Hydra Chart E below.



Method 1: Identify the tail stars of Hydra from your charts, especially the last three, γ , R and π . (Chart C will help there, in relation to Corvus.) Now you will notice from Chart E that R, π and M83 form an isosceles triangle, which is almost a right angle at the M83 point. The sides adjacent M83 are 7° long. That's close to a f/s FoV. So if you can estimate 7° in your f/s FoV, start from R Ydrae and move east 7°, or start from p Hydrae and move up (south) by 7°.

Method 2: This involves shorter hops from star to star etc. It may be easier. First identify the mag 2.1 star Menkent (θ Centuari) to the right (technically, the south) of Hydra. It's the brightest star in that part of the sky. (See your charts of Centaurus and trace it out. Menkent is the Centaur's head.) Now, happily, Menkent is 9° from M83, which itself lies almost midway on the line from Menkent back to γ Hydrae. Even more happily, there is a neat 1.5° sided (almost) equilateral triangle of 4.2 mag stars (1, 2 & 3 Centauri) exactly midway between Menkent and M83. So, start from Menkent. Put your f/s centre on it, then move towards γ Hydra until you come across the triangle. Menkent and the triangle should just fit into the same FoV. Centre on the 4.2 mag star (1 Cen.) furthest from Menkent then keep moving the f/s away from Menkent. When 1 Cen. is at the FoV edge, M83 should be inside the other edge. Move a tad further and check your main eye piece. M83 should be there.

As mentioned in earlier articles, when referring to the charts here, you need to allow for any reversals or inversions of views in your finder scope. These charts show 'as in the sky' views.

Good Hopping.

Black Holes Ain't Holes – Part 10

An essay on the problems perceived with the concept of black holes

Robert Zindler

(Editors Note: Robert Zindler has kindly offered the readers of Prime Focus sections of an essay he producing. This is the last installment of Roberts Essay)

Scientific black holes

And finally, to the question, are black holes scientifically legitimate cosmological objects, the unequivocal answer must be a resounding NO. This is because black holes, by their very nature and definitions, are unobservable and therefore un-provable. This renders black holes to be speculative objects. This in turn places black holes squarely in the cosmological realm, and outside the realm of scientific astronomy. Astronomers – and of course cosmologists – can only speculate about the putative physicality of black holes, without proof of their existence. However, in view of all the foregoing, I would suggest: solid primordial and cosmic cores: yes; holes: no.

To sum up

A hollow black hole with its putative attending 'structures' and properties is not possible and needs to be replaced with the more logical concept of a solid core. *Black holes are not holes.* Let us, therefore, not pretend one thing and say another. Let us be self-consistent, at least, in this aspect of our theories and update our terminology from 'holes' to 'cores'.

One may then arrive at the following conclusion: the concept of black holes is a scientific theoretical mishap. It is fundamentally wrong; it was ill conceived and should be changed.

It is, in fact, time for cosmologists to discontinue the myth of black holes.

SOME ADDITIONAL ISSUES

Scientific certitude?

As a theoretical cosmologist, I have philosophically – using philosophical logic and reasoning as my cosmological tools, equivalent to the telescope, computer and mathematics as the tools of astronomers – addressed my initially vague metaphysical ideas about the cosmos and its parts and confirmed these ideas into possible, logical concepts, while ensuring self-consistency of all parts. While applying scientific criteria during this solitary research, I insisted on obeying physical laws for all my proposed hypotheses. It has for me been a ten year long and steep learning curve in cosmology.

Having achieved a degree of probability of logical certitude in my concepts (while always keeping in mind that "science is provisional and never certain", James Lovelock, *The Revenge Of Gaia*, Penguin Books, 2007, p 206), I now offer my still speculative cosmological concepts to scientific astronomers for consideration for scientific acceptance. But in the process, scientists may need to move their rigid boundaries, perhaps a little in the direction of cosmological speculation, in order for science itself to benefit from a valuable contribution that cosmologists may have to offer to the "meeting of the minds", so to speak, for the benefit of all.

Foresight?

I would like to quote the following: "Perhaps some day we will find that our current and apparently complete understanding of the universe is seriously wanting." (Laurence M. Krauss and Robert J. Scherrer, *The End of Cosmology?*, Scientific American, February 2008, p 5) And to reiterate Tim Dean (see earlier section): "Physics may need 'a fresh perspective on things'. New answers to all those enigmas may come from a theoretician and are likely to be as challenging as they are enlightening", and also the statements from Peter Woit and Paul Steinhardt (see previous section) which assert that there is an urgent need for new theories, both in particle physics

and in cosmology. I posit that this paper is making a relevant contribution to that effect and I submit that the objective stated in the Introduction, that the name 'black hole' is a misnomer – with all the ramifications thereof – has been achieved with my descriptions and reasons.

I propose

I therefore propose that the primordial cosmic and galactic cores are massive, incompressible and irreducible solid bodies with significant cosmic dimensions and with ultra-high, but not infinite or near-infinite levels of pressures, densities and temperatures, which emit ultra-high gravitational force that is generated within the cores themselves and extends well beyond the boundaries of these core bodies. It should be noted, that the change of name from *black hole* to *galactic core* in no way effects the manifested strength of the generated gravity and in effect reaffirms the concept of the very high level of this gravity. I further submit that it is time to dispense with the *misnomer* and to re-name all *black holes* as *black cores*. Admittedly, the name *black hole* has publicity and public relations value for cosmological and astronomical conferences, scientific papers, media articles and press releases, but the name 'black hole' is no longer appropriate.

If the sum total of the aforesaid issues involving black holes is acceptable as valid by the cosmological community, then, apart from the size, mass and perimeter of galactic cores, most of the concepts of black holes, including their illustrations, may be seen to be redundant and may need to be discarded and replaced. I further propose that the terminology employed to describe the properties of these solid cores should reflect this new understanding of these cores.

But what then?

A serious problem, however, remains. If black holes are not holes and if the cosmos is finite in size and infinite in age and is thus cyclic, what does the future hold for the standard cosmological model? I submit that the underlying concepts and theories of the standard cosmological model, the SCM, like the underlying concepts and theories of black holes, are so seriously questionable, that the SCM may also require serious reconsideration and new theories may need to be developed for the entire standard cosmological model.

It may then also be time to develop a new comprehensive cosmic history. Even a tentative, speculative cosmological evolution and history is really badly needed, if for no other reason than to pull all the currently considered valid cosmological strings together and to see the new cosmological model as an integrated and complete concept rather than as a mere anthology of disparate concepts, and the cosmos itself as whole entity and not just as a very limited observed 'universe'.

Implications of new concepts of black holes

I am well aware of the momentous implications of these proposed new radical ideas. The SCM has a long, tortuous, but nevertheless honourable and cherished history and has become deeply embedded in our perception of the world around us. Letting go of this theory may have far reaching repercussions and many cosmologists may not be willing to take this fateful step.

Not being aware of these fundamental issues may perhaps justify continued acceptance of the SCM as it stands. But becoming aware of these issues, however, may well remove any justification for the continuation of the apparently unquestioned acceptance of the current SCM. This therefore demands an alternative, but viable cosmological model, which, in fact, is already in preparation.

I am also well aware, that 'one swallow does not make a summer.' And neither does this paper in itself justify a re-evaluation of the entire standard cosmological model, the SCM. This paper, however, may alert the reader to the disturbing realization, that 'all is not well in the State of Rome'. This paper, in effect, is the forerunner of several papers, which, together, form a comprehensive challenge to the SCM, and which are the main components of a book to that effect. These preliminary sub-theories and the eventual book may, however, provide the impetus to re-assess and, potentially, to replace the current standard cosmological model.

Other challenged sub-theories

The veracity of several other sub-theories which lead to, or form part of the SCM is also suspect. They will be addressed in separate essays under the following titles:

- 'The excentric universe', which addresses the position of the *observable* universe relative to the putative geocosmic centre of the surrounding *unobservable* universe. This concept has significant implications for cosmologist's concepts of cosmic expansion and the interpretations of redshift measurements of distant galaxies.
- 'The paradox of the simultaneities'. This paper addresses the paradox of the simultaneous origins and destinations of the three vast, but entirely discrete cosmic entities of luminous matter, dark matter and the cosmic microwave background radiation, (CMB), but which do not interact with each other, except with gravity.
- 'The average cosmic density and the observational horizon limitations', together with their implications for the estimation of the *cosmic* size.
- 'The cosmic beginning and *creatio ex nihilo*' and their associated dilemmas.
- The 'shapes' of gravity and of the quark, why and how virtual particles are formed and the link between the four natural forces of strong, weak, electromagnetic and gravitational forces.
- And others.

I have identified more than two dozen additional cosmological issues that could be challenged for their scientific veracity, but fewer than ten of the major issues will be addressed in due course, some in separate papers and all in a book that is currently in preparation.

In summary

I have carefully evaluated the minutia, as well as some broader issues involving the primordial and galactic black holes, and by implication the issues involving the speculative big bang origin of the cosmos, and found their veracity to be seriously compromised, to the point of outright rejecting their validity. I commend an alternative cosmological model, which though equally speculative, may avoid at least some of the perceived anomalies of black holes and the current SCM, for consideration by the reader.

Postscript

Although I retain the copyright of the contents of this paper, others are free to reproduce its contents without requiring permission, but are required to acknowledge me as its author.

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Prime Focus Article Submission

Deadline for article submissions for the June edition of Prime Focus is

Monday 8th June 2009

All Articles can be submitted via email editor@macastro.org.au

Or via snail mail to the MAS Postal address

As you may all be aware this is my last edition of Prime Focus – Geoff Young will take over as Editor next month. A big thankyou to all who have assisted me with contributions in my time as Editor. Remember Prime Focus is your publication – ***it is what you make it*** – so please take the time and contribute.

Geoff I hope you enjoy putting Prime Focus together as much as I have – Good Luck

Thanks everyone

Kate Ross