



Issue 30, August 2013

Odysse

The e-Magazine of the British Interplanetary Society

Return to Barsoom

"I opened my eyes upon a strange and weird landscape. I knew that I was on Mars...I found myself lying prone upon a bed of yellowish, moss-like vegetation which stretched around me in all directions for interminable miles...Here and there were slight outcroppings of quartz-bearing rock which glistened in the sunlight..."

"And the sight which met my eyes was that of a slender, girlish figure...Her face was oval and beautiful in the extreme, her every feature was finely chiseled and exquisite, her eyes were large and lustrous and her head surmounted by a mass of coal black, waving hair, caught loosely into a strange yet becoming coiffure. Her skin was of a light reddish copper colour, against which the crimson glow of her cheeks and the ruby of her beautifully molded lips shone with an enhancing effect."

(John Carter arrives on Mars and, later, catches sight of Dejah Thoris for the first time).

A Princess of Mars
Edgar Rice Burroughs

From its outset *Odysse* has championed the work of SF artists, celebrating book cover art and magazine features. The contents of our virtual art gallery will be familiar by now to our regular readers, especially in connection with the work of Bruce Pennington, which we return to again



BIS Member Stephen Baxter and co-author Terry Pratchett open the door to alternative universes in their latest novel.

in this month's issue with one of Bruce's most celebrated paintings. Prepare to tread once more the ochre coloured sands of Mars as we follow in the footsteps of Tars Tarkis and Dejah Thoris.

Given that we are fond of leaving familiar terrestrial markers far behind at every opportunity, it is often impossible to travel through the pages of *Odysse* without a spacesuit. So last month's piece by Brett Gooden was a timely reminder of how important this item of space traveling equipment is. If you are considering divesting yourself of this second skin, we strongly advise you to keep your spacesuit on for this issue as we search the universe for evidence of ETIs in our *Radical Vectors* column. You have been warned: visors down and helmets firmly locked in place to comply with all safety protocols!

If art galleries aren't your thing and you prefer the printed page, then feel free to browse through the latest addition to the BIS library as we review *The Long Earth* by Terry Pratchett and Stephen Baxter. Don't forget that the e-magazine is only part of the *Odysse* portfolio. The other half of the *Odysse* universe can be found on the BIS website, which is home to many of our essays (see page 4 for the latest additions to this collection). For die hard *Odysse* fans, which we hope all of our readers are, there's also the gallery section on the same website: www.bis-space.com/gallery

Lastly, the next time you are rummaging around in your attic or garage please remember our call for donations to the BIS library. We are keen to expand our collection of SF magazines and divesting yourself of any unwanted clutter may earn you points on the domestic front!

Mark Stewart, FBIS
BIS Honorary Archival Librarian/Editor (*Odysse*)
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Radical Vectors: "Life, the universe and everything..."

Whenever we imagine extraterrestrial life, we usually link it in some way to the development of life on Earth. After all, it's the only example we've got. This concept underlies an intriguing book *Beyond the Stars: Our Origins and the Search for Life in the Universe* by Paolo Saraceno, published by World Scientific in 2012.

Dr Saraceno, of the Institute for Astrophysics and Space Planetology in Italy, covers several scientific fields to discuss the origins of the universe and the Earth, how life has evolved here, and the search for extraterrestrial life. Unsurprisingly, given the wide range of subjects, he doesn't go into great detail, but it's excellent as an intelligent overview written clearly for the layman. The occasional indication that it's been translated from the original Italian doesn't interrupt the flow.

Fermi Paradox

Inevitably, the narrative raises the subject of the Fermi Paradox, though it's not something the author considers in detail. Back in 1950, the physicist Enrico Fermi raised the question of why, if the universe is so vast and the potential for intelligent, space-faring life so great, there is no evidence whatsoever for such life. In other words, where is everybody? It's a good question and one that remains unresolved despite the best efforts of SETI.

There are many suggested explanations, ranging from hard science to the wildest science fiction. Perhaps superior civilizations just aren't interested in us. They might have a means of space travel or communication so far beyond our comprehension that we can't even recognise them. They may be keeping us in isolation until humanity grows up enough to join a galactic club (usually dependent on us demonstrating an understanding of the benefits of peace, love and mutual tolerance – in which case they



"Life will find a way": Panspermia in microcosm: Richard Attenborough examines the possibilities contained within a miniature universe made of amber in "Jurassic Park."

could be waiting a very, very long time for humanity to join). Even so, we'd expect at least one Kardashev Type III civilization, using the power of an entire galaxy – which should be easily visible to us – to have arisen in the universe's 13.7 billion year history. But it hasn't.

I won't go through all the possible solutions here – there are some excellent books on the subject (such as Stephen Webb's *If the Universe is Teeming with Aliens – Where is Everybody?*) which deal with the subject much better. However, I'm a great believer in the principle of Ockham's Razor – in essence, always opt for the simplest solution consistent with the facts. And this suggests, as Webb himself concludes, that the simple answer to "where is everybody" is that there's no-one there.

I suspect that's not strictly true. Given the truly enormous scale of the universe, the possibility of other intelligent life-forms seems likely; but they could be so rare that the human race stands a good chance of never meeting them. And there could be excellent reasons for this.

Exoplanets

The Drake Equation, first formulated by Frank Drake in 1961, tries to provide a basis for estimating the frequency of advanced civilizations occurring in the universe. It consists of several terms including the likelihood of life starting on a biologically suitable planet, and of intelligence evolving once life has started. I recall meetings in the 1960s and 1970s where the enthusiasm to maximize the results was unbounded. Since we had one undoubted example of where life and intelligence had arisen on a planet (the Earth), it was felt that both factors should be given a probability close to one, in other words near certainty! You couldn't help feeling that there was a lot of wishful thinking behind that.

Exoplanets are indeed common. In his book, Dr Saraceno suggests that stars without planets are unlikely since they form from disks of material which also create planets, and current research confirms that many, perhaps most, stars have planets. Indeed, although Dr Saraceno wrote that planets are unlikely to exist in double-star systems because of perturbations to their orbits, subsequent evidence indicates that our closest double-star system (Alpha Centauri) includes at least one planet. There's no shortage of planets, then, but that doesn't mean that habitable surfaces are common (nor does Dr Saraceno suggest they are), or that life will necessarily arise on them.

Obviously life did arise on Earth. Evolutionary biologists such as Richard Dawkins rightly get annoyed at suggestions that evolution by natural selection occurs by chance. It's not chance but a steady process by which the best adapted forms survive by inheriting characteristics arising from mutation. But that couldn't have been the basis for the very beginning of life when, presumably, the first self-replicating molecules arose. That would indeed seem to have been pure chance, and may actually have been extremely unlikely. It



The android David contemplates the spread of life throughout the universe in "Prometheus."

also occurred fairly early, in geological terms, after the Earth formed around four and a half billion years ago – it's not too difficult to envisage a scenario where it's so unlikely that it doesn't occur at all before the Sun reaches the end of its life and the opportunity vanishes forever!

In his book, Dr Saraceno recognises that the origin of life on Earth was an unlikely event, and how "quickly" it occurred, but nevertheless concludes that, since it developed so soon after the conditions were right, the process must have been extremely efficient and therefore life should be relatively common in the universe. The obvious paradox, which indeed he acknowledges, is that no-one has yet managed to reproduce this in the laboratory.

One way around this problem as suggested by the author is through what's known as deterministic chemistry – where one type of molecule forms, another necessarily develops, and so on until macromolecules form as the basis of life. Frankly, I'd like to see rather more evidence of determinism in chemistry before accepting this as more than a theory.

Panspermia

Another solution raised in the book is panspermia – life developed elsewhere in the universe and then travelled to the Earth (and everywhere else). I well remember this from Fred Hoyle and Chandra Wickramasinghe's 1978 book *Lifecloud*. It was treated with extreme scepticism then, and still is now. In any event, it only puts back the unlikely event of life's origin to another time and place.

Even if life forms, there's a strong suggestion that the transition to eukaryotic cells (complex cells with a separate nucleus, organelles and so on) was improbable. The further unlikely move to multicellular life which occurred just over 500 million years ago merely adds to the probable rarity of advanced life-forms. If you think that the Cambrian explosion was inevitable, read



All aboard the Solar Express: Sheila Kanani's guided tours of the solar system are fast becoming a regular highlight of our lecture programme.

Andrew Parker's book *In the Blink of an Eye: the cause of the most dramatic event in the history of life*. Dr Saraceno doesn't suggest anything very unlikely in the development of eukaryotic cells, though he acknowledges the extraordinary nature of the Cambrian explosion.

Overall, he concludes that life is probably fairly common in the universe and hence the search for it is worthwhile. In such a search, he focuses quite heavily on detecting oxygen in a gaseous state in an exoplanet's atmosphere (which can, after all, be measured at a distance) as indicating the presence of life since, in the absence of photosynthesis (or something like it) to produce oxygen continuously, it would soon disappear. We need to be cautious here – recent research has suggested that oxygen could occur in significant quantities in atmospheres due to X-ray and ultraviolet radiation breaking down carbon dioxide. Also, in her recent BIS lecture on *Planetary Moons*, Dr Sheila Kanani explained how ultraviolet radiation from the Sun interacted with particles in the vicinity of Saturn's moon Dione to create its thin oxygen atmosphere. Let's not be too hopeful that

gaseous oxygen, by itself, indicates life.

Then there's intelligence, which Dr Saraceno doesn't discuss since it's not his purpose. We're biased – because we're intelligent we think it must be the peak of evolution, but that may be questionable. We shouldn't assume it was inevitable – it may just be a freak occurrence. In his book *How the Mind Works*, the psychologist Steven Pinker warns against the fallacy that evolution was bound to produce intelligence. And, although evolution can't operate with knowledge of the future, we can also question the long-term evolutionary advantage of the higher intelligence shown by the human race.

There's little dispute about the value of the basic tool-using intelligence of our primate cousins. In 2005, gorillas in a Congolese forest were seen using sticks to test the depth of muddy water when crossing a swamp. Those gorillas should avoid falling into deep water and drowning, and will survive to have baby gorillas who may, in turn, learn to use sticks in the same way – a behavioural skill of great value for the future of gorillas. But if we're entirely objective about higher intelligence (which may equate to the "extelligence" described by Jack Cohen in his 2012 BIS lecture *Is There Anybody There?*), you wonder whether the ability to wreck the planet's ecology, consume limited resources at increasing speed, over-populate our environment, and devise methods of potentially destroying the whole of humanity, is really of long-term advantage. We're hopefully not at that stage yet, but it doesn't take much imagination to see how we might be.

Intelligent life may be a rarity in the universe – humanity might well be the sole example. BIS Members who believe in widespread intelligent life in the universe will find support from Dr Saraceno's excellent book, but perhaps I'm just a bit more cautious.

Richard Hayes, FBIS
Assistant Editor (Odyssey)

Regional News – BIS North Needs Your Help!

Turning the clock back a year, the BIS had a great inaugural meeting in York for its Northern group. The meeting began with a live feed of a rocket launch and moved through a diverse range of topics and talks that were very well received by the audience. Alas, since then and despite the efforts of a number of Members progress has been slow; so now is the time to restart the BIS in the North of England for 2013 and beyond.

This article is a request to stand up and be counted. Our intent is to establish a mailing list of interested parties on both sides of the Pennines and stage our second meeting on the 5th October as part of World Space Week. We plan to hold this year's meeting at the Hilton Hotel in York, an excellent location overlooking both Clifford's Tower and York

Castle Museum. All being well we also plan to hold the third meeting in the Manchester/Liverpool area if possible in the spring of 2014. York, of course, offers a very diverse range of alternative attractions for family Members and friends who might not be space buffs.

If you are a "mover and shaker" in the BIS, a Member who would like to attend, or if you would like to be kept informed of progress, then please drop us a line at bisnorth@bis-space.com expressing your interest. Our meetings are intended to interest both people within the BIS and the public at large to encourage the uninitiated to join the Society.

Mike Hall and John Prewer

The State of the Culture A One Day Symposium on Iain M. Banks's Utopia

Presentations and discussions in tribute to Iain M. Banks (1954-2013) featuring award-winning SF author Ken MacLeod.

When: 11 September 2013, 9.30am - 5.30pm
Where: Brunel University
Cost: £15 (including lunch and refreshments)
Contact: For payment information and further details, please register interest with joseph.norman@brunel.ac.uk

Search for 'The State of the Culture' on Facebook

In conjunction with the Brunel University Faeries and Flying Saucers SF and Fantasy research cluster, and the Brunel Centre for Contemporary Writing.



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Pastel Panoramas: the artwork of Bruce Pennington

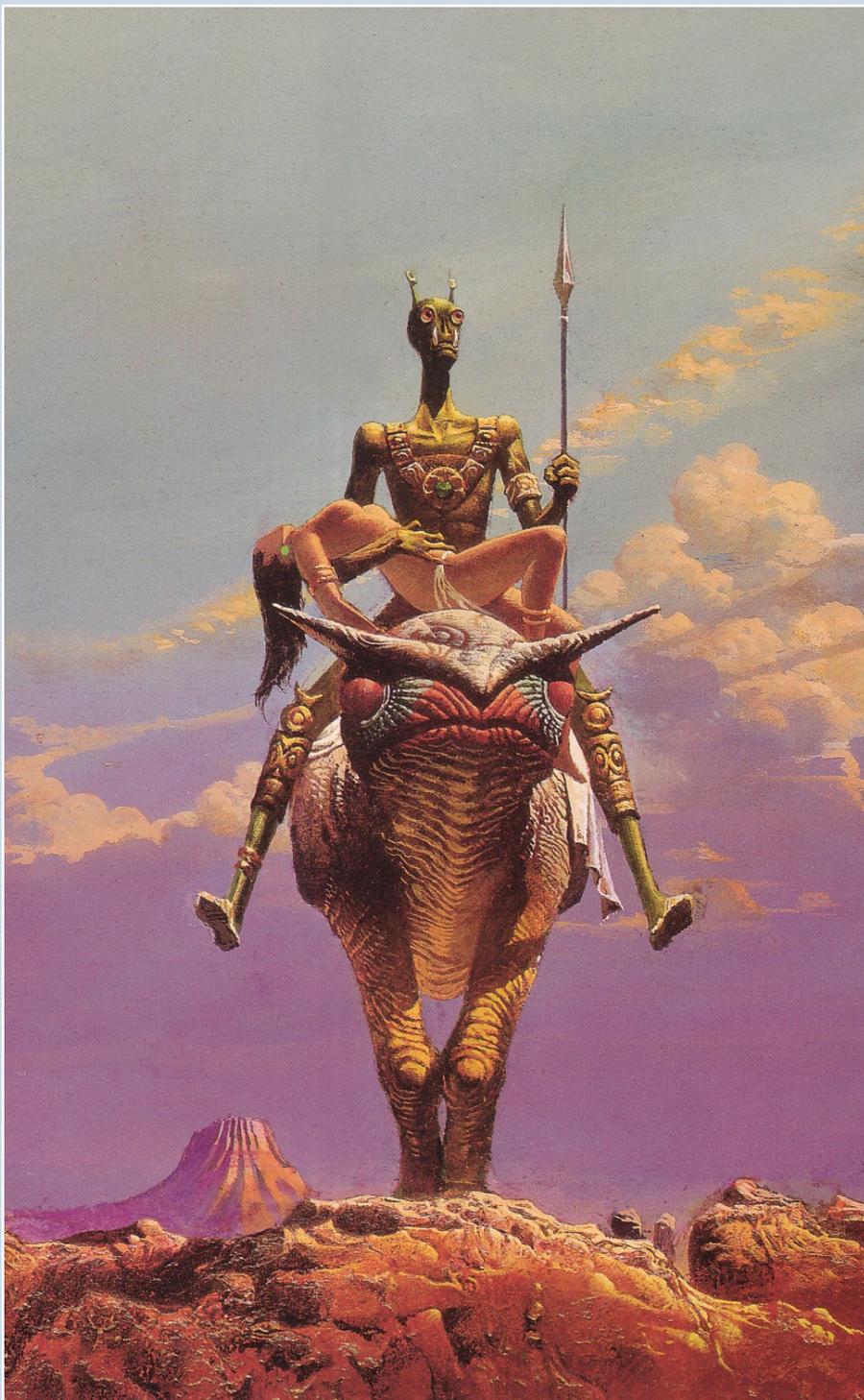
A Princess of Mars is surely one of Bruce's most remarkable paintings. We have covered it before in an earlier edition of *Odyssey* but the image is so memorable I make no excuses for revisiting it here.

As we observed in *Odyssey* 12 (February 2012), there is something undeniably authentic about the image of Tars Tarkas cradling Dejah Thoris – the Martian Helen of Troy – in his arms. Just as in George Stevens's *Shane*, where the director appears to have travelled back in time to film his story, so gritty and believable are his location shots (who can forget the mud soaked street in which the diminutive Elisha Cooke Jr. is

gunned down by Jack Wilson, the callous killer so perfectly portrayed by Jack Palance), so Pennington appears to have travelled to Barsoom to paint his subjects. The pastel colours, the alien landscape, the eye for detail which provides so much for the reader to gaze at – a passion for detail which Burroughs himself would surely have approved of – and it has to be said the erotic appeal of a recumbent and vulnerable Dejah Thoris, all contribute to the composition.

If you would like to read the full review, please let me know and I will be happy to send this to you as a stand-alone PDF.

The Editor



The Feedback Loop

Many thanks, Mark, for sending us the June edition of *Odyssey* with the article on Reg Turnill and a mention of the FAS. Really appreciate it. I thoroughly enjoyed reading this edition, especially the news that Ursula Le Guin is in line to receive the Arthur C. Clarke Award for Imagination. I also enjoyed the discussion on the transporter – quite right: *Star Trek* would not have been the same without it!

Best wishes

Sue Brelade

Chair of the Folkestone Arts Society
www.folkestoneartsociety.co.uk

Greetings, Mark!

Thanks for the latest *Odyssey* (June 2013). I was particularly intrigued by the article on page 3. I remember Bob Shaw's "slow glass" and the article demonstrates the value of science fiction. Products of an author's imagination can inspire uses for new technology a generation later by putting a scientist working at the "cutting edge" on familiar ground – they read about the concept when it was just a writer's fancy and have already thought about what can be done with it.

Regards

Philip Turner (Stockport)

Hi Mark

First of all, congratulations on *Odyssey*. The roots of the BIS lie with people for whom the subject of space travel was pure fantasy. Their fantasies became reality, and while of course the BIS needs to be a professional organisation acting as a focal point for the commercial and scientific organisations that are involved with "space", for far too long it excluded the "fans and enthusiasts" – those people who (like the founders of the Society) may have an interest in science fiction and a passion for the future of space exploration. *Odyssey* caters for that group of members and long may it do so; keep up the good work.

On the subject of science fiction, many thanks for the article on *Men into Space*. I'm one of those who remember the series being transmitted on the BBC and it was one of the catalysts for my lifelong interest in the subject of space exploration. It was very different from pretty much anything that had gone before (and probably afterwards) in that it attempted to predict the way that space exploration would go based on real science, and by extrapolating the technology which already existed.

I'll definitely be going online to see if I can get the DVD's of the series.

Alan Marlow (Milton Keynes)

The Odyssey Essay File

New to the BIS website:

- **[The Lonely Universe, Part Seven: Are ETIs Just Around the Corner?](#)**
- **[The Lonely Universe, Part Eight: Humanity Ignored](#)**

New to the BIS Bookshelf

The Long Earth by Terry Pratchett and Stephen Baxter

Reviewed by John Silvester, FBIS

If you need a blank canvas to enable your imagination to roam freely, unencumbered by the modern world, then one way to deal with this is to create a pristine new dimension. H.G. Wells did this with *The Time Machine*, effectively giving himself the whole of Earth's future to play with. Terry Pratchett and Stephen Baxter, in their new novel *The Long Earth*, have done what Wells did, but have gone one step further. They have engaged with the multiverse concept; their novel envisages a series of adjacent worlds that are like the Earth, but devoid of human beings. There are similarities to *The Time Machine* in that a device is needed to access these worlds. Science drove the Victorian Age, so inevitably Wells's time machine reflected that.

Compare this with the method of travel to the *The Long Earth*. The "stepper" used for accessing it is a box containing a few electronic parts and a potato (there is a full diagram included in the book). It effectively gives you access to "untold Earths. More Earths than could be counted...all you had to do was walk sideways into them, one after the next, an unending chain."

The story begins briefly with Private Percy Blakeney on the Western Front in 1917, but quickly moves onto 2015 and the transEarth Institute. Thereafter it mainly concerns the adventures of two characters, Joshua Valienté and Lobsang, as they journey through the fantastic worlds of the *The Long Earth*. If you have enjoyed the unique fantasies of these two authors separately, I'm sure their joint effort will serve you equally well. More co-authored stories are planned for the future, I believe.



A Big Thank You...

...to physicist and space communicator Dr Melanie Windridge for her recent lecture on the Northern Lights, which covered the darker side of space weather, solar storms, and the reminiscences of the early polar explorers on the ethereal aurorae.

A video of Melanie's talk is now available to Members at: <http://www.bis-space.com/members-area/members-videos/members-lecture-videos-2013>

More on Melanie, including her book *Star Chambers: the Race for Fusion Power*, can be found here:

<http://www.melaniwindridge.co.uk/Welcome.html>



Pocket Spacecraft – Mission to the Moon!

The BIS Technical Committee are delighted to announce our support and involvement in Pocket Spacecraft, a Kickstarter project with the exciting goal of putting spacecraft on Earth's moon!

Mission briefing

We have developed a very low cost, open source, open access, mass space exploration system that anyone can use, and we need your help to send your very own Pocket Spacecraft, and thousands of others, on a first-of-its-kind expedition to the Moon.

Smaller than a CD and as thin as a piece of paper, some Pocket Spacecraft will be released into space to flutter to the ground to demonstrate landing on a planet with an atmosphere (the Earth). The CubeSat will then set off to the Moon where, when it arrives many months later, the rest of the Pocket Spacecraft will be released, photographed and then land on the Moon to complete the mission.

This audacious project captures the spirit of the BIS by turning imagination into reality with a radical use of existing and new technologies.

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Kickstart the personal space age by sending your own personalised spacecraft to the moon!

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****NEW** Free British Interplanetary Society membership for all backers - click here or see FAQ for more details!**

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By joining the growing numbers of BIS members that have already invested in Pocket Spacecraft you will have the option to work with the team to develop customised software for your spacecraft, or simply benefit from the expertise within the BIS. The BIS will also arrange regular meetings, workshops and events during the mission, benefiting from special access to the Pocket Spacecraft team.

Append BIS to your name on Kickstarter to link your pledge to the British Interplanetary Society.

Don't miss your chance to invest in this unique opportunity and land your own spacecraft on the Moon – it is a Kickstarter crowd funded project, and as such time for investment and involvement is strictly limited.

Full information and the chance to pledge your support is on the Kickstarter website:

<http://www.kickstarter.com/projects/1677943140/send-your-own-pocket-spacecraft-on-a-mission-to-th>

Andrew Vaudin