



REVIEWS

Edited by Kate Arneman

INTERVIEW

RICHARD SMITH Documentary film-maker and science communicator

RICHARD SMITH IS NOT one to blow his own horn, but his body of work – including the documentaries *Crude: The Incredible Journey of Oil* and the award-winning *Voyage to the Planets* series – speaks for him. He’s a veteran of ABC TV science and has directed and produced a range of documentaries for British and U.S. channels as well. After many years behind the camera, Richard will be stepping into living rooms across the nation as presenter of the spectacular *Australia: A Time Traveller’s Guide* series, set to premiere on ABC1 on Sunday nights in March. Kate Arneman caught up with him to talk about his most recent production.

KA: When I watched *Australia: A Time Traveller’s Guide*, I assumed you must be a geologist. I was quite surprised to later discover that your PhD is in marine biology.

RS: That’s right. I used to specialise in what most people would consider a fairly obscure group of marine polychaete worms, and in fact I specialised in the eyeballs of this obscure group of polychaete worms. It was really interesting stuff, but I found I was one of the few people in the world who actually found it so!

We’ve got 4.6 billion years to squeeze into 200 minutes of television. If you do the mathematics on it, it’s pretty scary.

At what point did you decide to shift your career path from science research to science communication?

I never decided I didn’t want to be a marine biologist. An opportunity came up to do some training in television. There was a call for graduates to enter the ABC and so I managed to get in on a training scheme.

You’ve been in science communication over several decades now. What changes have you seen in the way science is conveyed?

The technology’s certainly changed, so you’re able to do a lot of things now that you could only dream about, say, two decades ago. Now if you



Left: A computer simulation of an ancient aquatic environment. Above: Richard Smith feels the thrill of translating almost four billion years of geological history onto the small screen in his new documentary, out in March.



want to talk about a black hole you can generate one on a computer that at least goes part way to looking like a big ball of nothingness. Certainly with a program like this one you’re able now to bring some of those landscapes of the past to life. Storytelling is still the absolute key.

What’s at the heart of the story for *Australia: A Time Traveller’s Guide*?

What we’re trying to do is tell the story of the planet and we’re

just using the Australian continent as our window or our vehicle to be able to do that. Australia is really the perfect subject for that. It’s an island, so it’s [geographically] defined, and it has some of the oldest bits of the planet, it has some of the newest bits of the planet, geologically speaking – big geological structures forming today, such as the Great Barrier Reef.

It’s that full spectrum – when you look at the key moments in the evolution of the planet, a lot of those were recorded in some way here. And because it’s a big old red flat continent, a lot of those things are relatively easy to see – they haven’t been destroyed by massive periods of

glaciation, they haven’t been destroyed by various other forces. What we’ve tried to do in this series is put the great Australian road trip into a chronological context. I consider this to be our story, our Australian story, told by us for a change.

That’s an ambitious undertaking!

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You started filming in August 2010 – what was the experience of shooting this like?

We effectively had to shoot most of it in spring and summer of 2010, which was probably the worst [time] to shoot a program on Australia that you could imagine. It was almost impossible to find any red landscapes because everywhere was green.

It was a matter of racing to cross creeks and rivers before they cut us off as the flood waters rose behind us. We’ve had endless hiccups and headaches with the shooting because of that; just completely atypical weather everywhere we went.

You can become a little blasé when you film a lot of these things, but being able to travel the country and go to some of these places that you’ve always thought about and just to be able to wander and appreciate these landscapes, it’s a really moving thing. To realise that it would have looked a bit different – but not a lot different – and to be able to transport yourself so easily and so quickly through such a vast scope of time is a great thrill. If a little bit of that thrill has made it onto the screen, then I’ll be happy.

NON-FICTION

TIME TRAVEL AND WARP DRIVES: A SCIENTIFIC GUIDE TO SHORTCUTS THROUGH TIME AND SPACE

by Allen Everett and Thomas Roman,
The University of Chicago Press (2011),
distributed by Footprint Books, \$43.95

THIS EXPLORATION of the science around time travel and warp drives is timely, given the ongoing did-they-didn't-they controversy surrounding neutrinos travelling faster than the speed of light. The concept of travelling faster than the speed of light – something of a *faux pas* if you like to obey the fundamental laws of the universe as we know them – is a recurring theme in this book; if you can beat light, you can travel backwards in time.



The authors are well placed as guides to exotic phenomena including wormholes, warp bubbles and parallel worlds. With decades of physics teaching between them, their explanations are succinct and enhanced by clear diagrams. Mathematics is impressively sparse throughout the main body of the book given the subject matter, though appendices expanding on the concepts in the chapters provide a

little more 'meat' for those who are interested.

This is not a light read, but it's ideal for science fiction fans who want to know just how (un)likely time travel is, and rewarding to those interested in accessible explanations of tricky concepts such as special relativity. – *Jude Dinely*

SCIENCE FICTION

THE ISLANDERS

by Christopher Priest, Gollancz, \$32.99

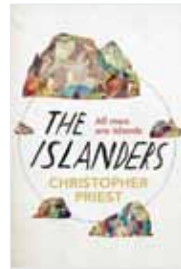
THE DREAM ARCHIPELAGO is a recurring motif in the work of Christopher Priest. *The Islanders* at first appears to be a catalogue of the history, currency and tourist spots of the 50 islands that make up the archipelago, from The Island of the Winds (Aay) to Dark Green (Yannet). Many resemble islands from our own world, but there are the occasional quirks, such as the island that has been turned into a musical instrument, to remind you that you're not in Kansas anymore.

As you continue to read *The Islanders* a variety of plots begin to emerge, as Priest uses people's stories and their life events to represent some of the islands. In a foreword written by the character Chaster Kammeston – who might be dead, by the way – he warns that since the book is in alphabetical order, the order will be 'irrelevant'

for anyone reading it as a travel guide or a work of reference.

This can make it challenging to follow an individual plot – a case in point is the murder of Akal Drester Commissah, supposedly at the hands of Kerith Sington, a native of Cheoner. Since the islands are visited in alphabetical order, this account appears early on in the book, but as other islands are visited, more details of this murder emerge. I did have to go back to the islands I had already 'visited' several times as new clues appeared for each plot and revise what I had previously thought.

It's not a traditional science fiction novel in any sense, but it's a great read. Chaster also states that the book "is a typical island enterprise: it is incomplete, a bit muddled and it wants to be liked." It succeeded. – *Laura Boness*



WHAT'S HOT

NON-FICTION

1. The Magic of Reality

by Richard Dawkins, Bantam/
Random House, \$39.95

2. Cycles of Time

by Roger Penrose, Bantam/
Random House, \$19.95

3. Extreme Cosmos

by Bryan Gaensler, NewSouth,
\$29.95

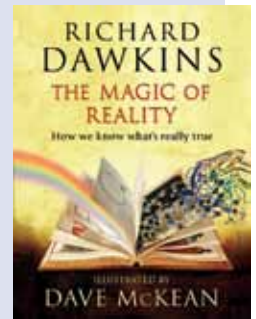
4. A More Perfect Heaven

by Dava Sobel, Bloomsbury, \$35

5. The Best Australian Science

Writing 2011

edited by
Stephen
Pincok,
NewSouth,
\$29.95



List supplied
by Abbey's
Bookshop, 131
York St, Sydney.
abbey.com.au

SCIENCE FICTION

1. Reamde

by Neal Stephenson, Atlantic,
\$35

2. Moxyland

by Lauren Beukes, Angry Robot,
\$17.95

3. Terminal World

by Alistair Reynolds, Gollancz,
\$22.99

4. Equations of Life

by Simon Morden, Orbit, \$19.99

5. Cryoburn

by Lois McMaster Bujold, Baen,
\$17.95

List supplied
Fantastic Planet,
Shop 8, Shafto
Lane, Perth
fantasticplanet.net.au



COSMOS LOVES

♥ **FINDING THE HIGGS BOSON** – or not finding the Higgs boson. Or at least finding out there really is a Higgs boson to find. Probably.

♥ **VISITS FROM MATILDA**, an orphaned baby flying fox. Her mum was electrocuted on power lines and one of our associates is a wildlife carer. We just have to be careful our office mascot, Gypsy, doesn't eat her.

♥ **OUR FABULOUS** team of interns with their eclectic backgrounds, enthusiasm and personalities. *Cosmos* wouldn't be the same without them!

♥ **THE ONGOING OFFICE** debate about 'male' vs 'female' humour. As author Christopher Hitchens says, "Men will laugh at almost anything, often precisely because it is – or they are – extremely stupid. Women aren't like that."



Matilda the baby flying fox won over our editors.

BECKY CREW



BOOKMARK

Nessa Carey is a virologist whose career has straddled academia and the biotech industry. Formerly a senior lecturer at Imperial College School of Medicine in London, she is now director of exploratory research at CellCentric. Her debut book, *The Epigenetics Revolution*, explores the emerging field pushing the frontiers of biology.

Which book(s) are you currently reading?

South with Scott (1921) by Edward Evans;
The Long Firm (1999) by Jake Arnott

Which three books have been most influential in your life?

My Family and Other Animals (1956) by Gerald Durrell

I grew up in London and was the only child I knew who was fascinated by insects and the natural world. This book reassured me that I wasn't alone.

Jane Eyre by Charlotte Bronte (1847)

The minute I finished reading *Jane Eyre* for the first time at age 15, I turned back to page one and read it all the way through again. Jane is still my favourite heroine, especially when she stakes her claim for equality with Mr Rochester.

Affluenza (2007) by Oliver James

I chose this book because it helped me jump off the consumerist treadmill and I've been much happier since.

Which book do you want to read next?

The Diversity of Life (1999)
by E.O. Wilson

I love writers who can both see and communicate the beauty of science, and no one does it better than him.

NON-FICTION

FROM DYING STARS TO THE BIRTH OF LIFE: THE NEW SCIENCE OF ASTROBIOLOGY AND THE SEARCH FOR LIFE IN THE UNIVERSE

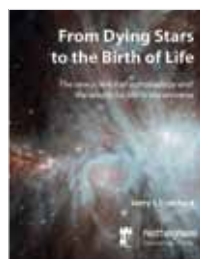
By Jerry L. Cranford, Nottingham University Press (2011), \$39.95

GIVEN THAT THE universe has around 100 billion galaxies, each with 100 billion stars, and that up to half of those stars have planetary systems, the question is not whether extraterrestrial life exists, but rather how soon we will find it, suggests retired neuroscientist and self-proclaimed "amateur astronomer" Jerry Cranford. Part introduction to cosmological, geological and evolutionary history, part exploration of groundbreaking astronomical research and part speculation about flying saucer sightings, Cranford's first astrobiology book summarises - in refreshingly approachable terms - the evidence that humans are not alone in the universe.

Cranford exhaustively compiles the major discoveries of the past half-century that have made the search for extraterrestrial life possible. Thanks to developments like the transit method, which detects the orbit of a planet by determining how much light it blocks out light from its home star, astronomers have identified hundreds of exoplanets: planets that are outside our Solar System.

While the broad scope of Cranford's work makes the topic seem unfocussed, he writes with a child-like alacrity that inspires awe in the possibility of life far, far away. We probably will find other life, he concludes, but it may require a lot of looking.

- Jennifer DeBerardinis



DVD

FORECAST FOR DISASTER: THE WEATHER BEHIND BLACK SATURDAY/ LA NIÑA STRIKES

directed by Sharon McGrath, The Weather Channel (2011), \$24.95

Forecast for Disaster is a chilling look at weather at its deadliest. The two-part documentary looks at the weather behind the Black Saturday fires in Victoria.

More than 170 people died and 7,000 were left homeless after the devastating fires ripped across Victoria in February 2009.

The documentary uses first-hand accounts, expert opinions and shocking footage to give an explanation of why the Black Saturday fires wasn't just one of the most damaging natural disasters in Australia, but were also anticipated by meteorologists.

Experts from the Weather Channel explain the conditions that led up to the deadly firestorm in a way that even someone with the most basic grasp of weather patterns (like me) will be able to understand and find interesting.

This admittedly long documentary is not for the faint-hearted, but weather fanatics, or anyone interested in one of Australia's most startling natural disasters will find this documentary interesting, moving and educational. - Jenna Hanson



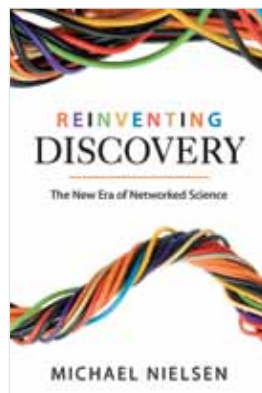
NON-FICTION

REINVENTING DISCOVERY: THE NEW ERA OF NETWORKED SCIENCE

by Michael Nielsen, Princeton University Press (2011) distributed by Footprint Books, \$37.95

IT'S A COMMON BELIEF that the Internet is making us dumber. Michael Nielsen, author of *Reinventing Discovery*, argues that it actually has the ability to make us smarter, if we only know how to utilise it correctly. Through social networking, individuals - who might not have otherwise found each other - can contribute to projects bigger than one person could achieve on their own. Many citizen scientist efforts work on this principle.

Take, for example, a charity that needed someone to build solar-powered wireless routers



that would run for long periods of time. They used InnoCentive Challenge - an online forum - to advertise their needs, with \$20,000 as a reward. According to Nielsen, the challenge was downloaded 400 times and 27 solutions were submitted. One solution fit the bill perfectly, and it is likely that, without InnoCentive's online forum, the charity and the solution would not have found one another.

Nielsen gives several examples much like this, before launching into the challenges associated with publicly posting your scientific experiments and how to overcome these. *Reinventing Discovery* is an essential read for anyone wanting to take advantage of knowledge and networking available online.

- Georgia Leaker



NON-FICTION

LOOKING FOR A FEW GOOD MALES: FEMALE CHOICE IN EVOLUTIONARY BIOLOGY

by Erika Lorraine Milam, *The Johns Hopkins University Press* (2010) distributed by Footprint Books, \$41.95

DARWIN'S REVOLUTIONARY notion of natural selection – that animals develop characteristics for reproduction rather than survival of the individual – ensured that 'fitness' came to infer bountiful offspring rather than one's own survival. But the theory shed little light on female choice.

Male behaviour affecting female behaviour and the way human and animal preferences follow evolution can be seen as a continuum, which Erika Lorraine Milam tracks all the way from Darwin to modern-day sociobiologists.

Milam examines the problem of female 'choice' in history, such as whether insects meaningfully choose their partners, and hailing the 1970s rediscovery of the science of female choice due to biological and social advances – such as molecular biology and second-wave feminism – as a major scientific advance. Smatterings of zoological research throughout clarify Milam's tale.

Covering everything from female French population geneticists examining the rare-male effect by studying fruit flies to the way populations split and change within themselves due to female choice, *Looking for a Few Good Males* is an essential read for anyone interested in the rigorous treatment of evolutionary sexual behaviour and its implications. – *Mara Flannery*



NON-FICTION

STEVE JOBS

by Walter Isaacson, *Little Brown* (2011), \$45

THERE'S METHOD IN Steve Jobs's creative madness, and this handsome and thoroughly researched biography provides a wonderful insight into the process that made the Apple co-founder such a giant in computers.

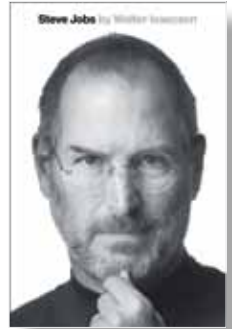
Jobs, who died in October 2011, was clearly brilliant – but also impetuous, intense, verbally brutal and known to possess a 'reality distortion field' that could beguile everyone around him. The author, Walter Isaacson – former managing editor of *Time* magazine who also penned the excellent *Benjamin Franklin: An American Life* – helps the reader understand how Jobs did this, and how it was absolutely necessary if he was to make his engineers and designers do what seemed impossible.

What's surprising is just how much chance and happenstance led to some of his greatest innovations, and how sometimes random incidents triggered technology tsunamis that changed the computing and digital worlds that are so much a part of 21st-century life, and how much uncertainty there is at the dawn of each new technological idea. Even the best and most powerful of these ideas seem, at the outset, risky and unlikely – and are only a success in hindsight.

What's clear, though, is that Jobs' singular obsession with creating "insanely great products," his ability to focus his company intensely on a small number of good products, his love of the intersection of the humanities and technology, and his vision of integrated architecture has been an enormous success. I found myself impressed, sometimes appalled, but always fascinated reading about the life of this most unusual and brilliant innovator.

Isaacson had repeated access to Jobs, and interviewed him at length over three years – so this is, technically, an authorised biography. However, Jobs had no control over what Isaacson wrote nor who he spoke to – and he did not get to read it before his death: he tells Isaacson in one of his last interviews that it would probably have made him angry.

I think yes and no. Jobs was clearly a complicated genius, who will be remembered for his ideas and his innovations rather than his humanity. But Isaacson has done a deft job of bringing a deep, warts-and-all insight into an intriguing powerhouse of ideas, and it will probably stand as the definitive portrait. – *Wilson da Silva*



NON-FICTION

FROZEN IN TIME: PREHISTORIC LIFE IN ANTARCTICA

by Jeffrey D. Stilwell and John A. Long, *CSIRO Publishing* (2011), \$69.95

ANTARCTICA WASN'T always a vast barren land of ice and snow. It has undergone more extreme environmental changes than any other continent on Earth, write Jeffrey Stilwell and

John Long in their exploration of Antarctica's geological and evolutionary history. As landmasses shifted, "Antarctica has gone from paradise to polar ice in just a few million years of time, a geological blink of an eye." In fact, the continent's polar climate did not develop until the Early Pleistocene, which began approximately 2.5 million years ago as shifting plate tectonics altered the circulation of ocean currents.

With complementary specialties – Stilwell's in ancient Earth environments and Long's in the early evolution of Australian and Antarctic fish – the authors combine their expertise to link the geological history of Antarctica to the organisms that inhabited the land through an exhaustive review of the fossil record. Though it can be overly technical in its treatment of geological time, this book provides an everything-you-ever-wanted-to-know guide to the prehistory of Antarctica. Most compelling are the stunning photographs of the Antarctic landscape and the remarkable archaeological finds that have allowed researchers to investigate the evolution of life there. – *Jennifer DeBerardinis*



TECH: APP

DINOSAURS: THE AMERICAN MUSEUM OF NATURAL HISTORY COLLECTIONS

Compatible with iPhone, iPod touch and iPad, free from iTunes.

DIG INTO THIS app and your inner palaeontologist will thank you. Bringing the archives of The American Museum of Natural History to your iPad, this virtual tour is almost as good as the real-deal meander through the floors of the museum. When reading about dinosaurs becomes ancient history, transport yourself more than 65 million years back in time by scrolling around a mosaic of almost 1,000 photos of the museum's current dinosaur collection and renderings, as well as awesome in-action photos of digs worldwide from the past century. Tapping the info button flips each photo and gives you a brief description of where the fossil was found and which lucky scientist uncovered it. Dino profiles are also available to describe why the weird-looking *Dilophosaurus* was such a good predator, for example. Looking forward to using this app on a rainy afternoon indoors.

– *Mara Flannery*

