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Wednesday 9 July 2003

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My scientific discovery

(Filed: 07/07/2003)

Margaret Drabble says that judging a science book prize has transformed her fiction

Like many women of my generation, I am innumerate and scientifically illiterate. The sciences, apart from biology, were not well taught in my school, and we specialised too early. This divisive tendency, always officially deplored, lingers on. But, during the past 15 years, important changes have taken place, not so much in schools as in publishing, and we have been offered a second chance.

Stephen Hawking's A Brief History of Time (1988) offers a useful marker, for this unexpected bestseller created more of a sensation even than James D Watson's The Double Helix (1968). Its success offered encouragement to scientists and editors alike, and convinced them that the public has an appetite for science books - even for hard-science books. The past decade has seen an exhilarating proliferation of works by writers such as Jared Diamond, James Gleick, Stephen Jay Gould, John Gribbin, Steve Jones, Steven Pinker, Matt Ridley, Brian Sykes, Edward O Wilson and Robert Winston, all in their different ways aimed at a broad readership. (And all male: the omission of Rosalind Franklin from the DNA story has been made good, but there are many gaps still to be filled.) This is an expanding and accelerating universe of popular science. Novelists have enthusiastically adopted the opportunities of this vision: David Lodge's Thinks... (2001) is an elegant example of a fiction that explores new insights into the unsolved problems of qualia and consciousness.

When I was invited to chair the judging panel of this year's Aventis Science Book Prize, I accepted at once. Here was the perfect opportunity to catch up on all that I had missed. I had, along with millions, read A Brief History when it first appeared and, being a stubborn reader, had persevered to the end, but I cannot claim to have understood more than one per cent of it - as one of the judges said this year, shaking his head over the cosmos, much of it might as well have been written in Russian, for all that I could make of it.

I did not know what to expect would come our way. Box after box arrived, on an astonishing variety of topics - books on space probes, diseases, neuroscience, mammoths, mathematics, oceanography, ammonites, weather systems, robots and computers piled themselves up in leaning towers in the studies of the five judges. But these were not the towers of Babel, written in incomprehensible tongues. Most of them were within the grasp of the common reader. Some of them were delightfully domestic. We learned about the science of dunking doughnuts and making gravy, and about Johnny Appleseed and the botany of the apple. A book on the cat had an excellent pie-chart of the average cat's activities, which confirms what we know from observation - that cats spend 85 per cent of their time doing nothing much, either resting lightly or sleeping deeply.

One of the books that we all admired was Counting Sheep, a book on sleep by Paul Martin. This is one of the most useful books I have ever read, and I can truly say that it changed my life. Martin managed to persuade me that my chronic insomnia was being exacerbated, not alleviated, by the concept of the whisky nightcap. The whisky nightcap does not put you to sleep; it keeps you awake. He put this so tactfully, so scientifically, so modestly, that I at once knew he was right, and followed his advice. (He says drinking at lunchtime

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Switzerland. get natural.

is fine, sleep-wise - a sleep moralist he is not.)

Martin is also good on dreams, the siesta, yawning, the problem of nodding off at the wheel, and the slumbering habits of President Reagan, who apparently was such a good sleeper that he had to be woken at nine o'clock on the morning of his inauguration. And Martin's information about the frequency of nocturnal erections is truly astonishing. It seemed to surprise the two men on the panel as much as the three women. Can what he claims be true? The world of sleep is more mysterious than we suspect.

Some of the books published under the heading of general science are not quite so accessible. Mathematics and cosmology cannot but present serious problems of communication. Simon Singh's *Fermat's Last Theorem* (1997) proudly describes itself as "The Number 1 Bestseller", and many have tried to emulate its gripping narrative. But this is not as easy as the successful writer makes it look.

We soon found ourselves accumulating a separate pile of books that were "hard but good", which we laid aside for special consideration. Here, the lay members of the panel (Matthew Parris, Kate Mosse and myself) were at first in the hands of the professors, Frances Ashcroft and Marcus du Sautoy, who were able to assess the credentials of the "hard but good" volumes. But it was then up to all of us to decide which were too hard.

We all had to struggle with one of our shortlisted books, *The Extravagant Universe* by Robert P Kirschner, which is the story of a team of astronomers working on supernovae to discover whether the universe is expanding, and if that expansion is accelerating. I loved this book. Kirschner writes with passion, humanity and generosity, and some of his images are glorious. He must, we decided, be a great teacher. But - and this is a serious qualification, not of him as a writer but of myself as a reader - I doubt if I would have tackled this had I not been asked to do so. I read it twice, with even more admiration the second time round, and agreed with Kate, who said it was the hardest book she had ever enjoyed. But would I have read it at all, had it not been on our list?

On the other hand, I also enjoyed one of the "hard" mathematical books that didn't quite make the shortlist. John Barrow's *The Constants of Nature* manages to make the modern search for a Theory of Everything dramatic and exciting. Although I couldn't follow some of the arguments, I was caught up in the intensity of the inquiry, and in its ultimate theological implications. And I am about to order his earlier volume on the concept of zero, called *The Book of Nothing*, because if he can't explain it to me, nobody can. The more you read, the more you begin to understand. So maybe there is no such thing as "too hard". There is only, alas, "too lazy".

Three more of the books on our shortlist dealt with mathematics, but they were aimed at a more broadly popular readership: Mark Buchanan explores network theory, and Gerd Gigerenzer teaches us how to assess and interpret probabilities and natural frequencies. Gigerenzer's *Reckoning with Risk* has a useful glossary, which the innumerate can consult whenever they forget the difference between the mean and the median, or suspect that a lawyer is employing the "prosecutor's fallacy" - anyone about to do jury service should read this book.

Stephen Webb in *Where Is Everybody?* strays further from earthly matters into realms familiar to many who never think of reading a "hard" science book. It is based on the famous paradox of physicist Enrico Fermi: if the universe is as old as we think, and as vast as we think, where are all the aliens? Can we really be alone? This is an ingenious and serious attempt to bridge the gap between readers of fact and fiction, and his tempting quotations from Isaac Asimov, Arthur C Clarke, Stephen Baxter and Robert Heinlein make non-science-fiction readers keen to explore their worlds. Unfortunately, this isn't as easy to do as one might hope -

Fred Hoyle's *The Black Cloud* doesn't seem to be in print and other key titles aren't readily available. But fans of *Star Trek* (such as my husband) will be pleased to see it treated with respect.

The winner this year was Chris McManus's *Right Hand, Left Hand*, a fascinating investigation of asymmetry, destined to become a popular classic and an ideal gift for all your left-handed friends. But the most controversial book on the list was *The Blank Slate* by the Canadian-born Steven Pinker. This is the only book that I had read already, and re-reading it filled me with a familiar sense of excitement and turmoil. This book brilliantly represents a large area of smouldering unrest in the world of science and sociology. In Part V of Pinker's large, gripping and combative volume, he discusses five "Hot Buttons" - politics, violence, gender, child-rearing and the arts - and "hot" is the right word for them. It is the heat of the debate that scorches. The language throughout this book is aflame.

Many of Pinker's adversaries also use highly inflammatory language, so it is not surprising that he responds in blazing and at times hyperbolic prose. He gives full play to the ferocious and scurrilous attacks to which Edward O Wilson and the whole subject of sociobiology have in the past been subjected, and he gives as good as they got. Confrontation is the game. One has to remind oneself that Richard Dawkins is so confrontational because some of his opponents are so much worse. The creationists are not known for reason and civility, but most of us never read them. Evolution is still a battleground, but the pacific reader becomes exhausted by the incessant imagery of warfare, employed by victors and vanquished alike. Extreme views arouse extreme responses. The universe, as cosmologists tell us, is a violent place, so violent that myriads of stars are yelping with pain in their death throes as we mow our lawns. These writers share the pain.

I have been asked if reading all this science will affect my fiction, and the answer is yes. Some of these ideas have already infiltrated my work-in-progress and I may have to weed them all out again. In my recent novel, *The Peppered Moth*, I took my title and central metaphor from one of the more captivating stories of biology, a Northern tale of natural selection and industrial melanism. It is a story that is resisted and deeply hated by creationists. I also (with the help of Brian Sykes) invented a subplot about maternal heredity and mitochondrial DNA. And I invented a charismatic geneticist, a man of fire and wire and sinew, whose grey hair bounds upwards from his brow in exuberant curls.

At this stage I hadn't read any Pinker, or even seen his photograph. I was thinking of somebody quite different, in another line of business altogether. Next time, perhaps, a red-haired cosmologist, obsessed by the loneliness of life on our planet, will walk into my plot.

Margaret Drabble's *The Peppered Moth* is published by Penguin at £6.99 (pbk)

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