

THE MAMMOTH BOOK OF

# EXTREME SCIENCE FICTION

NEW GENERATION FAR-FUTURE SF



25 stories of hard science fiction by  
Charles Stross, Robert Reed, Alastair Reynolds,  
Greg Bear, Harlan Ellison and many more

EDITED BY MIKE ASHLEY

---

**THE MAMMOTH BOOK OF  
EXTREME SCIENCE FICTION**

---

*Also available*

- The Mammoth Book of 20th Century Science Fiction
- The Mammoth Book of Best New Erotica 4
- The Mammoth Book of Best New Horror 16
- The Mammoth Book of Best New Science Fiction 18
- The Mammoth Book of Celebrity Murder
- The Mammoth Book of Celtic Myths and Legends
- The Mammoth Book of Chess
- The Mammoth Book of Comic Fantasy
- The Mammoth Book of Comic Quotes
- The Mammoth Book of Dirty, Sick X-Rated & Politically Incorrect Jokes
- The Mammoth Book of Egyptian Whodunnits
- The Mammoth Book of Erotic Online Diaries
- The Mammoth Book of Erotic Photography
- The Mammoth Book of Erotic Women
- The Mammoth Book of Great Detective Stories
- The Mammoth Book of Great Inventions
- The Mammoth Book of Haunted House Stories
- The Mammoth Book of Historical Whodunnits
- The Mammoth Book of Illustrated True Crime
- The Mammoth Book of IQ Puzzles
- The Mammoth Book of How It Happened: Ancient Egypt
- The Mammoth Book of How It Happened: Ancient Rome
- The Mammoth Book of How It Happened: Battles
- The Mammoth Book of How It Happened: Trafalgar
- The Mammoth Book of How It Happened: WWI
- The Mammoth Book of How It Happened: WW II
- The Mammoth Book of Jokes
- The Mammoth Book of King Arthur
- The Mammoth Book of Lesbian Erotica
- The Mammoth Book of Maneaters
- The Mammoth Book of Mountain Disasters
- The Mammoth Book of New Terror
- The Mammoth Book of New Jules Verne Adventures
- The Mammoth Book of On the Road
- The Mammoth Book of Private Eye Stories
- The Mammoth Book of Roaring Twenties Whodunnits
- The Mammoth Book of Roman Whodunnits
- The Mammoth Book of Seriously Comic Fantasy
- The Mammoth Book of Sex, Drugs & Rock 'n' Roll
- The Mammoth Book of Short Spy Novels
- The Mammoth Book of Sorcerers' Tales
- The Mammoth Book of Space Exploration and Disasters

The Mammoth Book of SAS & Special Forces  
~~The Mammoth Book of Shipwrecks & Sea Disasters~~  
The Mammoth Book of Short Erotic Novels  
The Mammoth Book of On The Edge  
The Mammoth Book of Travel in Dangerous Places  
The Mammoth Book of True Crime  
The Mammoth Book of True War Stories  
The Mammoth Book of Unsolved Crimes  
The Mammoth Book of Vampires  
The Mammoth Book of Wild Journeys  
The Mammoth Book of Women's Fantasies  
The Mammoth Book of Women Who Kill  
The Mammoth Book of the World's Greatest Chess Games  
The Mammoth Encyclopedia of Unsolved Mysteries

---

THE MAMMOTH BOOK OF  
**EXTREME**  
**SCIENCE**  
**FICTION**

Edited by Mike Ashley



---

Constable & Robinson Ltd  
3 The Lanchesters  
162 Fulham Palace Road  
London W6 9ER  
[www.constablerobinson.com](http://www.constablerobinson.com)

First published in the UK by Robinson,  
an imprint of Constable & Robinson Ltd 2006

Collection and editorial material © Mike Ashley 2006

All rights reserved. This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out or otherwise circulated in any form of binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

A copy of the British Library Cataloguing in Publication Data is available  
from the British Library

UK ISBN 978-1-84529-307-9

5 7 9 10 8 6

First published in the United States in 2006 by Carroll & Graf Publishers  
This edition published in 2007 by Running Press Book Publishers  
All rights reserved under the Pan-American and International  
Copyright Conventions

This book may not be reproduced in whole or in part, in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system now known or hereafter invented, without written permission from the publisher.

9 8 7 6 5 4 3

Digit on the right indicates the number of this printing

Library of Congress Cataloging-in-Publication Data is available on file

US ISBN: 978-0-7867-1727-9

Running Press Book Publishers  
2300 Chestnut Street  
Philadelphia, PA 19103-4371

Visit us on the web!  
[www.runningpress.com](http://www.runningpress.com)

---

## CONTENTS

### Copyright and Acknowledgments

### EXTREME SCIENCE FICTION

*Mike Ashley*

### ANOMALIES

*Gregory Benford*

### ... AND THE DISH RAN AWAY WITH THE SPOON

*Paul Di Filippo*

### CRUCIFIXION VARIATIONS

*Lawrence Person*

### THE PACIFIC MYSTERY

*Stephen Baxter*

### MERLIN'S GUN

*Alastair Reynolds*

### DEATH IN THE PROMISED LAND

*Pat Cadigan*

### THE LONG CHASE

*Geoffrey A. Landis*

### WATERWORLD

*Stephen L. Gillett & Jerry Oltion*

### HOOP-OF-BENZENE

*Robert Reed*

## **THE NEW HUMANS**

---

*B. Vallance*

## **THE CREATOR**

*Clifford D. Simak*

## **THE GIRL HAD GUTS**

*Theodore Sturgeon*

## **THE REGION BETWEEN**

*Harlan Ellison*

## **THE DAYS OF SOLOMON GURSKY**

*Ian McDonald*

## **WANG'S CARPETS**

*Greg Egan*

## **UNDONE**

*James Patrick Kelly*

## **JUDGMENT ENGINE**

*Greg Bear*

## **STUFFING**

*Jerry Oltion*



---

## COPYRIGHT AND ACKNOWLEDGMENTS

I would like to thank those who came up with their own suggestions of extreme sf stories including Gordon Van Gelder, Rich Horton, Todd Mason, David Pringle, Andy Robertson and in particular Jets de Vries, whose taste coincides remarkably with my own. All of the stories are copyright in the name of the individual authors or their estates as follows. Every effort has been made to trace holders of copyright. In the event of any inadvertent transgression please contact the editor via the publisher.

“The Pacific Mystery” © 2006 by Stephen Baxter. First publication, original to this anthology. Printed by permission of the author.

“Judgment Engine” © 1995 by Greg Bear. First published in *Far Futures* edited by Gregory Benford (New York: Tor Books, 1995). Reprinted by permission of the author.

“Anomalies” by Gregory Benford © 1999 by Abbenford Associates. First published in *Redshift* edited by Al Sarrantonio (New York: Roc Books, 2001). Reprinted by permission of the author.

“Death in the Promised Land” © 1995 by Pat Cadigan. First published by *OMNI Online* in March 1995 and first printed in *Asimov’s Science Fiction*, November 1995. Reprinted by permission of the author.

“. . . And the Dish Ran Away with the Spoon” © 2003 by Paul Di Filippo. First published by *SCI FICTION*, 19 November 2003. Reprinted by permission of the author.

“Flowers from Alice” © 2003 by Cory Doctorow and Charles Stross. First published in *New Voices in Science Fiction* edited by Mike Resnick (New York: DAW Books, 2003). Reprinted by permission of the authors.

“Wang’s Carpets” © 1995 by Greg Egan. First published in *New Legends* edited by Greg Bear (London and New York: Legend Books, 1995). Reprinted by permission of the author.

“The Region Between” © 1969 by Harlan Ellison. Renewed 1997 by The Kilimanjaro Corporation. First published in *Galaxy Science Fiction Magazine*, March 1970. Reprinted by arrangement with and permission of the author and the author’s agent, Richard Curtis Associates, Inc., New York. All rights reserved. Harlan Ellison is a registered trademark of The Kilimanjaro Corporation.

“Waterworld” © 1994 by Stephen Gillett & Jerry Olton. First published in *Analog Science Fiction and Fact*, March 1994. Reprinted by permission of the authors.

“Undone” © 2001 by James Patrick Kelly. First published in *Asimov’s Science Fiction*, June 2001. Reprinted by permission of the author.

“The Long Chase” © 2002 by Geoffrey A. Landis. First published in *Asimov’s Science Fiction*, February 2002. Reprinted by permission of the author.

“The Days of Solomon Gursky” © 1998 by Ian McDonald. First published in *Asimov’s Science*

*Fiction*, June 1998. Reprinted by permission of the author.

“Stuffing” © 2006 by Jerry Oltion. First publication, original to this anthology. Printed by permission of the author.

“Crucifixion Varations” © 1998 by Lawrence Person. First published in *Asimov’s Science Fiction*, May 1998. Reprinted by permission of the author.

“Hoop-of-Benzene” © 2006 by Robert Reed. First publication, original to this anthology. Printed by permission of the author.

“Merlin’s Gun” © 2000 by Alastair Reynolds. First published in *Asimov’s Science Fiction*, May 2000. Reprinted by permission of the author.

“The Creator” © 1935 by Clifford D. Simak. First published in *Marvel Tales*, March-April 1935. Reprinted by permission of David Wixon on behalf of the author’s estate.

“The Girl Had Guts” © 1956 by Theodore Sturgeon. First published in *Venture Science Fiction*, January 1957. Reprinted by permission of The Theodore Sturgeon Literary Trust c/o Ralph M. Vicinanza, Ltd.

“The New Humans” © 1909 by B. Vallance. First published in *Pearson’s Magazine*, December 1909. Unable to trace the author or their estate.

---

## EXTREME SCIENCE FICTION

If science fiction is the literature of ideas, then *extreme* science fiction is about *extreme* ideas. What you will find in this anthology are some wonderful ideas, which may in themselves be either simple or complicated, but which the author has taken to an extreme – be it extreme circumstances, an extreme location, extreme science or extreme concepts.

But there is a limit! These stories may push back boundaries and challenge existing beliefs and theories, but not at the sake of everything else. At their heart these are good, sound stories – there's nothing experimental or *avant garde* about them – and you don't need a science degree or an IQ over 200 to understand them. That's not what it's about. It's about having fun with a thought, an idea, a vision. Science fiction is the best medium for doing this and the best science fiction is that which does push limits.

Let me give you some idea of what you'll find here.

- ★ An Earth where the Pacific has never been crossed because somehow the Earth doesn't quite join up.
- ★ crimes committed in virtual reality.
- ★ household machines that become sentient and take control.
- ★ a world made entirely of water.
- ★ someone lost in time trying to get back to where they started.
- ★ what happens if we all stop eating food.

That's just a half-dozen of the ideas included in the nineteen stories in this collection. Not all are extreme in themselves, it's what the author does with them.

Most of the stories are of a fairly recent vintage, written in the last ten or twelve years (three of them have their first appearance here). For the most part I wanted stories that were at the cutting edge of science and society. We have witnessed a colossal change in technological advance in the last twenty years or so and the pace of advance is increasing at a formidable rate. I wanted stories that recognized that pace of change and which incorporated much of the new technology and understanding.

But I didn't want to exclude older science fiction. In fact one could argue that in its youth science fiction was at its most extreme. After all, imagine just how revolutionary Mary Shelley's *Frankenstein* was when it first appeared in 1818, or H. G. Wells's *The Time Machine* in 1895. That took us firstly 800,000 years and then millions of years into the future. Or Edwin Abbott's *Flatland* (1884) which explored a world of only two dimensions. That amazing philosopher Olaf Stapledon

produced what must be one of the most extreme works of sf ever written with *The Star Maker*, published in 1937. This book has an observer witness the entire history of the Universe in which the part played by humanity is but a few pages. These works were certainly extreme for their day.

Some of these older stories have dated a little today, though they are still fun to read, and many are just too long to squeeze in, so I have been highly selective in what few stories I have reprinted from beyond the last thirty years. But I think you'll be surprised.

Over the years there have been plenty of magazines and anthologies that have sought to break down barriers and taboos, most notably Harlan Ellison's *Dangerous Visions*, and there are a couple of examples of such stories included here. But this anthology isn't designed as one that breaks taboos – such that remain. It's designed to show what science fiction can do when it lets its hair down, which means that you are in for a roller coaster ride of awe and wonder.

I've arranged the book so that it starts with the least extreme and builds up to the most extreme, although the very last story allows us a mental cool down. So tread carefully. From here on the brakes are off.

*Mike Ashley, December 2000*

---

# ANOMALIES

**Gregory Benford**

*I could have filled this book entirely with stories by Greg Benford as he has written some of the best “extreme sf” of recent years. Just check out his collection Worlds Vast and Various (2000) for some of the latest examples. Benford (b. 1941) is a professor of physics at the University of California, Irvine specializing in plasma turbulence and astrophysics. He advises NASA on national space policy and has been heavily involved in the Mars exploration programme. His novels, The Martian Race (1999) and The Sunborn (2005), are generally regarded as amongst the most authentic considerations of the race to and exploration of Mars. In 1995 he received the prestigious Lord Foundation award for scientific achievement.*

*In the world of science fiction, Benford has received many awards including the Nebula for Timescape (1980), still one of the most realistic time-travel novels. His most sustained sequence of books is the Galactic Centre series, tracing the continuing conflict between organic life forms and AI machines. The series began with Across the Sea of Suns (1983). Amongst his more recent novels perhaps the most extreme is Cosm (1998) involving an artificially created micro-universe. You might also want to check out the anthology he edited, Far Futures (1995), which is full of extreme sf, including Greg Bear’s story, which you’ll find later in this volume.*

*To get us underway, here is Benford in milder, somewhat tongue-in-cheek, mood.*

**I**t was not lost upon the Astronomer Royal that the greatest scientific discovery of all time was made by a carpenter and amateur astronomer from the neighbouring cathedral town of Ely. Not by a Cambridge man.

Geoffrey Carlisle had a plain directness that apparently came from his profession, a custom cabinet maker. It had enabled him to get past the practised deflection skills of the receptionist at the Institute for Astronomy, through the Assistant Director’s patented brush-off, and into the Astronomer Royal’s corner office.

Running this gauntlet took until early afternoon, as the sun broke through a shroud of soft rain. Geoffrey wasted no time. He dropped a celestial coordinate map on the Astronomer Royal’s mahogany desk, hand amended, and said, “The moon’s off by better’n a degree.”

“You measured carefully, I am sure.”

The Astronomer Royal had found that the occasional crank did make it through the Institute’s screen, and in confronting them it was best to go straight to the data. Treat them like fellow members of the profession and they softened. Indeed, astronomy was the only remaining science that profited

from the work of amateurs. They discovered the new comets, found wandering asteroids, noticed new novae and generally patrolled what the professionals referred to as local astronomy—anything that could be seen in the night sky with a telescope smaller than a building.

That Geoffrey had got past the scrutiny of the others meant this might conceivably be real. “Very well, let us have a look.” The Astronomer Royal had lunched at his desk and so could not use a date in his college as a dodge. Besides, this was crazy enough perhaps to generate an amusing story.

An hour later he had abandoned the story-generating idea. A conference with the librarian, who knew the heavens like his own palm, made it clear that Geoffrey had done all the basic work correctly. He had photos and careful, carpenter-sure data, all showing that, indeed, last night after around eleven o’clock the moon was well ahead of its orbital position.

“No possibility of systematic error here?” the librarian politely asked the tall, sinewy Geoffrey.

“Check ’em yerself. I was kinda hopin ’you fellows would have an explanation, is all.”

The moon was not up, so the Astronomer Royal sent a quick email to Hawaii. They thought he was joking, but then took a quick look and came back, rattled. A team there got right on it and confirmed. Once alerted, other observatories in Japan and Australia chimed in.

“It’s out of position by several of its own diameters,” the Astronomer Royal mused. “Ahead of its orbit, exactly on track.”

The librarian commented precisely, “The tides are off prediction as well, exactly as required by the new position. They shifted suddenly, reports say.”

“I don’t see how this can happen,” Geoffrey said quietly.

“Nor I,” the Astronomer Royal said. He was known for his understatement, which could masquerade as modesty, but here he could think of no way to underplay such a result.

“Somebody else’s bound to notice, I’d say,” Geoffrey said, folding his cap in his hands.

“Indeed.” The Astronomer Royal suspected some subtlety had slipped by him.

“Point is, sir, I want to be sure I get the credit for the discovery.”

“Oh, of course you shall.” All amateurs ever got for their labors was their name attached to a comet or asteroid, but this was quite different. “Best we get on to the IAU, ah, the International Astronomical Union,” the Astronomer Royal said, his mind whirling. “There’s a procedure for alerting all interested observers. Establish credit, as well.”

Geoffrey waved this away. “Me, I’m just a five-inch ’scope man. Don’t care about much beyond that priority, sir. I mean, it’s over to you fellows. What I want to know is, what’s it mean?”

Soon enough, as the evening news blared and the moon lifted above the European horizons again, the plaintive question sounded all about. One did not have to be a specialist to see that something major was afoot.

“It all checks,” the Astronomer Royal said before a forest of cameras and microphones. “The tides being off true has been noted by the naval authorities round the world, as well. Somehow, in the early hours of last evening, Greenwich time, our moon accelerated in its orbit. Now it is proceeding at its normal speed, however.”

“Any danger to us?” one of the incisive, investigative types asked.

“None I can see,” the Astronomer Royal deflected this mildly. “No panic headlines needed.”

“What caused it?” a woman’s voice called from the media thicket.

“We can see no object nearby, no apparent agency,” the Astronomer Royal admitted.

“Using what?”

“We are scanning the region in all wavelengths, from radio to gamma rays.” An extravagant waste very probably, but the Astronomer Royal knew the price of not appearing properly concerned. Hand-wringing was called for at all stages.

“Has this happened before?” a voice sharply asked. “Maybe we just weren’t told?”

“There are no records of any such event,” the Astronomer Royal said. “Of course, a thousand years ago, who would have noticed? The supernova that left us the Crab nebula went unreported in Europe, though not in China, though it was plainly visible here.”

“What do you think, Mr Carlisle?” a reporter probed. “As a non-specialist?”

Geoffrey had hung back at the press conference, which the crowds had forced the Institute to hold on the lush green lawn outside the old Observatory Building. “I was just the first to notice it,” he said. “That far off, pretty damned hard not to.”

The media mavens liked this and coaxed him further. “Well, I dunno about any new force needed to explain it. Seems to me, might as well say it’s supernatural, when you don’t know anything.”

This the crowd loved. SUPER AMATEUR SAYS MOON IS SUPERNATURAL soon appeared on a tabloid. They made a hero of Geoffrey. “AS OBVIOUS AS YOUR FACE” SAYS GEOFF. The *London Times* ran a full-page reproduction of his log book, from which he and the Astronomer Royal had worked out that the acceleration had to have happened in a narrow window around ten p.m., since no observer to the east had noticed any oddity before that.

Most of Europe had been clouded over that night anyway, so Geoffrey was among the first who could have had a clear view after what the newspapers promptly termed The Anomaly, as in ANOMALY MAN STUNS ASTROS.

Of the several thousand working astronomers in the world, few concerned themselves with “local” events, especially not with anything the eye could make out. But now hundreds threw themselves upon The Anomaly and, coordinated at Cambridge by the Astronomer Royal, swiftly outlined its aspects. So came the second discovery.

In a circle around where the moon had been, about two degrees wide, the stars were wrong. Their positions had jiggled randomly, as though irregularly refracted by some vast, unseen lens.

Modern astronomy is a hot competition between the quick and the dead – who soon become the untenured.

Five of the particularly quick discovered this Second Anomaly. They had only to search all ongoing observing campaigns and find any that chanced to be looking at that portion of the sky the night before. The media, now in full bay, headlined their comparison photos. Utterly obscure dots of light became famous when blink-comparisons showed them jumping a finger’s width in the night sky, within an hour of the 10 p.m. Anomaly Moment.

“Does this check with your observations?” a firm-jawed commentator had demanded of Geoffrey at a hastily called meeting one day later, in the auditorium at the Institute for Astronomy. They called upon him first, always – he served as an anchor amid the swift currents of astronomical detail.

Hooting from the traffic jam on Madingley Road nearby nearly drowned out Geoffrey’s plaintive, dunno. I’m a planetary man, myself.”

By this time even the nightly news broadcasts had caught onto the fact that having a patch of sky behave badly implied something of a wrenching mystery. And no astronomer, however bold, stepped forward with an explanation. An old joke with not a little truth in it – that a theorist could explain the outcome of any experiment, as long as he knew it in advance – rang true, and got repeated. The chattering class ran rife with speculation.

But there was still nothing unusual visible there. Days of intense observation in all frequencies yielded nothing.

Meanwhile the moon glided on in its ethereal ellipse, following precisely the equations first written down by Newton, only a mile from where the Astronomer Royal now sat, vexed, with Geoffrey. “A doc at Jesus College called, fellow I know,” the Astronomer Royal said. “He wants to see us both.”

Geoffrey frowned. "Me? I've been out of my depth from the start."

~~"He seems to have an idea, however. A testable one, he says."~~

---

They had to take special measures to escape the media hounds. The Institute enjoys broad lawns and ample shrubbery, now being trampled by the crowds. Taking a car would guarantee being followed. The Astronomer Royal had chosen his offices here, rather than in his college, out of a desire to escape the busyness of the central town. Now he found himself trapped. Geoffrey had the solution. The Institute kept bicycles for visitors, and upon two of these the men took a narrow, tree-lined path out the back of the Institute, toward town. Slipping down the cobbled streets between ancient, elegant college buildings, they went ignored by students and shoppers alike. Jesus College was a famously well appointed college along the Cam river, approachable across its ample playing fields. The Astronomer Royal felt rather absurd to be pedaling like an undergraduate, but the exercise helped clear his head. When they arrived at the rooms of Professor Wright, holder of the Wittgenstein Chair, he was grateful for tea and small sandwiches with the crusts cut off, one of his favourites.

Wright was a post-postmodern philosopher, reedy and intense. He explained in a compact, energetic way that in some sense, the modern view was that reality could be profitably regarded as a computation.

Geoffrey bridled at this straight away, scowling with his heavy eyebrows. "It's real, not a bunch of arithmetic."

Wright pointedly ignored him, turning to the Astronomer Royal. "Martin, surely you would agree with the view that when you fellows search for a Theory of Everything, you are pursuing a belief that there is an abbreviated way to express the logic of the universe, one that can be written down by human beings?"

"Of course," the Astronomer Royal admitted uncomfortably, but then said out of loyalty to Geoffrey, "All the same, I do not subscribe to the belief that reality can profitably be seen as some kind of cellular automata, carrying out a program."

Wright smiled without mirth. "One might say you are revolted not by the notion that the universe is a computer, but by the evident fact that someone else is using it."

"You gents have got way beyond me," Geoffrey said.

"The idea is, how do physical laws act themselves out?" Wright asked in his lecturer voice. "Of course, atoms do not know their own differential equations." A polite chuckle. "But to find where the moon should be in the next instant, in some fashion the universe must calculate where it must go. We can do that, thanks to Newton."

The Astronomer Royal saw that Wright was humoring Geoffrey with this simplification, and suspected that it would not go down well. To hurry Wright along he said, "To make it happen, to move the moon—"

"Right, that we do not know. Not a clue. How to breathe fire into the equations, as that Hawking fellow put it—"

"But look, nature doesn't know maths," Geoffrey said adamantly. "No more than I do."

"But something must, you see," Professor Wright said earnestly, offering them another plate of the little cut sandwiches and deftly opening a bottle of sherry. "Of course I am using our human way of formulating this, the problem of natural order. The world is usefully described by mathematics, so in our sense the world must have some mathematics embedded in it."

"God's a bloody mathematician?" Geoffrey scowled.

The Astronomer Royal leaned forward over the antique oak table. "Merely an expression."

"Only way the stars could get out of whack," Geoffrey said, glancing back and forth between the experts, "is if whatever caused it came from there, I'd say."

"Quite right." The Astronomer Royal pursed his lips. "Unless the speed of light has gone off, as



well, no signal could have rearranged the stars straight after doing the moon.”

“So we’re at the tail end of something from out there, far away,” Geoffrey observed.

“A long, thin disturbance propagating from distant stars. A very tight beam of . . . well, error. But from what?” The Astronomer Royal had had little sleep since Geoffrey’s appearance, and showed it.

“The circle of distorted stars,” Professor Wright said slowly, “remains where it was, correct?”

The Astronomer Royal nodded. “We’ve not announced it, but anyone with a cheap telescope – sorry, Geoffrey, not you, of course – can see the moon’s left the disturbance behind, as it follows its orbit.”

Wright said, “Confirming Geoffrey’s notion that the disturbance is a long, thin line of – well, I should call it an error.”

“Is that what you meant by a checkable idea?” the Astronomer Royal asked irritably.

“Not quite. Though that the two regions of error are now separating, as the moon advances, is consistent with a disturbance traveling from the stars to us. That is a first requirement, in my view.”

“Your view of what?” Geoffrey finally gave up handling his small sherry glass and set it down with a decisive rattle.

“Let me put my philosophy clearly,” Wright said. “If the universe is an ongoing calculation, then computational theory proves that it cannot be perfect. No such system can be free of a bug or two, as the programmers put it.”

Into an uncomfortable silence Geoffrey finally inserted, “Then the moon’s being ahead, the stars – it’s all a mistake?”

Wright smiled tightly. “Precisely. One of immense scale, moving at the speed of light.”

Geoffrey’s face scrunched into a mask of perplexity. “And it just – jumped?”

“Our moon hopped forward a bit too far in the universal computation, just as a program advances in little leaps.” Wright smiled as though this were an entirely natural idea.

Another silence. The Astronomer Royal said sourly, “That’s mere philosophy, not physics.”

“Ah!” Wright pounced. “But any universe which is a sort of analog computer must, like any decent digital one, have an errorchecking program. Makes no sense otherwise.”

“Why?” Geoffrey was visibly confused, a craftsman out of his depth.

“Any good program, whether it is doing accounts in a bank, or carrying forward the laws of the universe, must be able to correct itself.” Professor Wright sat back triumphantly and swallowed a Jesus College sandwich, smacking his lips.

The Astronomer Royal said, “So you predict . . .?”

“That both the moon and the stars shall snap back, get themselves right – and at the same time, as the correction arrives here at the speed of light.”

“Nonsense,” the Astronomer Royal said.

“A prediction,” Professor Wright said sternly. “My philosophy stands upon it.”

The Astronomer Royal snorted, letting his fatigue get to him. Geoffrey looked puzzled, and asked a question which would later haunt them.

Professor Wright did not have long to wait.

To his credit, he did not enter the media fray with his prediction. However, he did unwisely air his views at High Table, after a particularly fine bottle of claret brought forward by the oldest member of the college. Only a generation or two earlier, such a conversation among the Fellows would have been secure. Not so now. A Junior Fellow in Political Studies proved to be on a retainer from *The Times*, and scarcely a day passed before Wright’s conjecture was known in New Delhi and Tokyo.

The furor following from that had barely subsided when the Astronomer Royal received a telephonic call from the Max Planck Institute. They excitedly reported that the moon, now under continuous

observation, had shifted instantly to the position it should have, had its orbit never been perturbed.

~~So, too, did the stars in the warped circle return to their rightful places. Once more, all was right with the world. Even so, it was a world that could never again be the same.~~

Professor Wright was not smug. He received the news from the Astronomer Royal, who had brought along Geoffrey to Jesus College, a refuge now from the Institute. “Nothing, really, but common sense.” He waved away their congratulations.

Geoffrey sat, visibly uneasily, through some talk about how to handle all this in the voracious media glare. Philosophers are not accustomed to much attention until well after they are dead. But as discussion ebbed Geoffrey repeated his probing question of days before: “What sort of universe has mistakes in it?”

Professor Wright said kindly, “An information-ordered one. Think of everything that happens – including us talking here, I suppose – as a kind of analog program acting out. Discovering itself in its own development. Manifesting.”

Geoffrey persisted, “But who’s the programmer of this computer?”

“Questions of first cause are really not germane,” Wright said, drawing himself up.

“Which means that he cannot say,” the Astronomer Royal allowed himself.

Wright stroked his chin at this and eyed the others before venturing, “In light of the name of this college, and you, Geoffrey, being a humble bearer of the message that began all this . . .”

“Oh no,” the Astronomer Royal said fiercely, “next you’ll point out that Geoffrey’s a carpenter.”

They all laughed, though uneasily.

But as the Astronomer Royal and Geoffrey left the venerable grounds, Geoffrey said moodily, “Y’know, I’m a cabinet maker.”

“Uh, yes?”

“We aren’t bloody carpenters at all,” Geoffrey said angrily. “We’re craftsmen.”

The distinction was lost upon the Royal Astronomer, but then, much else was, these days.

The Japanese had very fast images of the moon’s return to its proper place, taken from their geosynchronous satellite. The transition did indeed proceed at very nearly the speed of light, taking a slight fraction of a second to jerk back to exactly where it should have been. Not the original place where the disturbance occurred, but to its rightful spot along the smooth ellipse. The immense force needed to do this went unexplained, of course, except by Professor Wright’s Computational Principles.

To everyone’s surprise, it was not a member of the now quite raucous press who made the first telling jibe at Wright, but Geoffrey. “I can’t follow, sir, why we can still remember when the moon was in the wrong place.”

“What?” Wright looked startled, almost spilling some of the celebratory tea the three were enjoying. Or rather, that Wright was conspicuously relishing, while the Astronomer Royal gave a convincing impression of a man in a good mood.

“Y’see, if the error’s all straightened out, why don’t our memories of it get fixed, too?”

The two learned men froze.

“We’re part of the physical universe,” the Astronomer Royal said wonderingly, “so why not, eh?”

Wright’s expression confessed his consternation. “That we haven’t been, well, edited . . .”

“Kinda means we’re not the same as the moon, right?”

Begrudgingly, Wright nodded. “So perhaps the, ah, ‘mind’ that is carrying out the universe’s computation, cannot interfere with our – other – minds.”

“And why’s that?” the Astronomer Royal a little too obviously enjoyed saying.

“I haven’t the slightest.”

Light does not always travel at the same blistering speed. Only in vacuum does it have its maximum velocity.

---

Light emitted at the center of the sun, for example – which is a million times denser than lead – finds itself absorbed by the closepacked ionized atoms there, held for a tiny sliver of a second, then released. It travels an infinitesimal distance, then is captured by yet another hot ion of the plasma, and the process repeats. The radiation random-walks its way out to the solar surface. In all, the passage from the core takes a many thousands of years. Once free, the photon reaches the Earth in a few minutes.

Radiation from zones nearer the sun's fiery surface takes less time because the plasma there is far less dense. That was why a full three months elapsed before anyone paid attention to a detail the astronomers had noticed early on, and then neglected.

The “cone of chaos” (as it was now commonly called) that had lanced in from the distant stars and deflected the moon had gone on and intersected the sun at a grazing angle. It had luckily missed the Earth, but that was the end of the luck.

On an otherwise unremarkable morning, Geoffrey rose to begin work on a new pine cabinet. He was glad to be out of the media glare, though still troubled by the issues raised by his discovery. Professor Wright had made no progress in answering Geoffrey's persistent questions. The Astronomer Royal was busying himself with a Royal Commission appointed to investigate the whole affair, though no one expected a Commission to actually produce an idea. Geoffrey's hope – that they could “find out more by measuring” – seemed to be at a dead end.

On that fateful morning, out his bedroom window, Geoffrey saw a strange sun. Its lumpy shape he quickly studied by viewing it through his telescope with a dark glass clamped in place. He knew of the arches that occasionally rose from the corona, vast galleries of magnetic field lines bound to the plasma like bunches of wire under tension. Sprouting from the sun at a dozen spots stood twisted parodies of this, snaking in immense weaves of incandescence.

He called his wife to see. Already voices in the cobbled street below were murmuring in alarm. Hanging above the open marsh lands around the ancient cathedral city of Ely was a ruby sun, its granular purple arches swelling like blisters from the troubled rim.

His wife's voice trembled. “What's it mean?”

“I'm afraid to ask.”

“I thought everything got put back right.”

“Must be more complicated, somehow.”

“Or a judgment.” In his wife's severe frown he saw an eternal human impulse, to read meaning into the physical world – and a moral message as well.

He thought of the swirl of atoms in the sun, all moving along their hammering trajectories, immensely complicated. The spike of error must have moved them all, and the later spike of correction could not, somehow, undo the damage. Erasing such detail must be impossible. So even the mechanism that drove the universal computation had its limits. Whatever you called it, Geoffrey mused, the agency that made order also made error – and could not cover its tracks completely.

“Wonder what it means?” he whispered.

The line of error had done its work. Plumes rose like angry necklaces from the blazing rim of the star whose fate governed all intelligence within the solar system.

Thus began a time marked not only by vast disaster, but by the founding of a wholly new science. Only later, once studies were restored at Cambridge University, and Jesus College was rebuilt in a period of relative calm, did this new science and philosophy – for now the two were always linked – acquire a name: the field of Empirical Theology.

---

## . . . AND THE DISH RAN AWAY WITH THE SPOON

**Paul Di Filippo**

*Paul Di Filippo (b. 1954) is most closely associated with cyberpunk, and arguably that's what the following story is, but I'm not much of a person for definitions and thankfully Di Filippo's work pretends much defies it anyway. He writes as if someone had scrunched up Harlan Ellison, Philip K. Dick, Philip Jose Farmer and Roger Zelazny into a ball of dough, rolled it out and cut out pastry cakes that are then filled with a mix of sweetmeats of S.J. Perelman, Jerry Seinfeld, Tim Powers and Bruce Sterling, all baked in an oven heated by that unique essence of Di Filippo's own imagination. The result is a party tray of delicacies that taste different at every bite. You can sample him at his most varied in his collections Fractal Paisleys (1997), Strange Trades (2001) and Little Doors (2002) as well as his wonderful first book The Steampunk Trilogy (1994). If you've read any of my anthologies of Comic Fantasy you'll definitely be aware of his anarchic humour.*

*The following story has some of that humour but it also has a far more sinister side. It's an excellent example of taking a simple idea and pushing it to a logical extreme.*

**F**acing my rival that fateful afternoon, I finally realized I was truly about to lose my girlfriend Cody.

Lose her to a spontaneous assemblage of information.

The information was embedded in an Aeron chair mated with several other objects: a Cuisinart, an autonomous vacuum cleaner with numerous interchangeable attachments, an iPod, and a diagnostic and therapeutic home medical tool known as a LifeQuilt. As rivals go, this spontaneous assemblage – or “bleb,” as most people called such random accretions of intelligent appliances and artifacts, after the biological term for an extrusion of anomalous cells – wasn't particularly handsome. Rather clunky looking, in fact. But apparently, it had been devoted to Cody from the day it was born, and I guess women appreciate such attention. I have to confess that I had been ignoring Cody shamefully during the period when the Aeron bleb must've been forming and beginning to court her, and so I have no one to blame for the threat of losing her but myself. Still, it hurt. I mean, could I really come in second to a *bleb*? That would truly reek.

Especially after my past history with them . . .

I had feared some kind of trouble like this from the moment Cody had begun pressuring me to move in together. But Cody hadn't been willing to listen to my sensible arguments against uniting our households.

“You don't really love me,” she said, making that pitiful puppy-with-stepped-on-tail face that

always knotted my stomach up, her blue eyes welling with wetness.

“That’s ridiculous, Cody. Of course I do!”

“Then why can’t we live together? We’d save tons of rent. Do you think I have some nasty habits that you don’t know about? You’ve seen me twenty-four-seven lots of times, at my place and yours. It’s not like I’m hiding anything gross from you. I don’t drink straight out of the nutraceutical dispenser or forget to reprogram the toilet after I’ve used it.”

“That’s all true. You’re easy to be with. Very neat and responsible.”

Cody shifted tactics, moving closer to me on the couch and wrapping her lithe limbs around me in ways impossible to ignore. “And wouldn’t it be nice to always have someone to sleep with at night? Not to be separate half the week or more? Huh? Wouldn’t it, Kaz?”

“Cody, please, stop! You know I can’t think when you do that.” I unpeeled Cody from the more sensitive parts of my anatomy. “Everything you’re saying is true. It’s just that—”

“And don’t forget, if we ditched my place and kept yours, I’d be much closer to work.”

Cody worked at the Senate Casino, dealing blackjack, but lived all the way out in Silver Spring, Maryland. I knew the commute was a bitch, even using the Hydrogen Express, since when I slept over at her place I had to cover the same distance myself. I, on the other hand, rented a nice little townhouse in Georgetown that I had moved into when rents bottomed out during the PIG Plague economic crash. It turned out I was one of a small minority naturally immune to the new Porcine Intestinal Grippe then rampant in D.C., and so could safely live in an infected building. Renter’s market, for sure. But over the last year or so, as the PIG immunization program had gotten underway rents had begun creeping back up again. Cody was right about it being only sensible to pool our finances.

“I know you’d appreciate less roadtime, Cody, but you see—”

Now Cody glowered. “Are you dating someone else? You want to be free to play the field? Is that it?”

“No! That’s not it at all. I’m worried about—”

Cody assumed a motherly look and laid a hand on mine. “About what, Kaz? C’mon, you can tell me.”

“About blebs. You and I’ve got so much stuff, we’re bound to have problems when we put all our possessions together in one space.”

Cody sat back and began to laugh. “Is that all? My god, what a trivial thing to worry about. Blebs just *happen*, Kaz, anytime, anywhere. You can’t prevent them. And they’re mostly harmless, as you well know. You just knock them apart and separate the components.” Cody snorted in what I thought was a rather rude and unsympathetic fashion. “Blebs! It’s like worrying about – about robber squirrels or vampire pigeons or running out of SuperMilk.”

Blebs were a fact of life. Cody was right about that. But they weren’t always trivial or innocent. One had killed my parents.

\* \* \*

Blebs had been around for about twenty years now, almost as long as I had been alive. Their roots could be traced back to several decisions made by manufacturers – decisions which, separately, were completely intelligent, foresighted, and well conceived, but which, synergistically, had caused unintended consequences – and to one insidious hack.

The first decision had been to implant silicon RFID chips into every appliance and product and consumable sold. These first chips, small as a flake of pepper, were simple transceivers that merely aided inventory tracking and retail sales by announcing to any suitable device the product’s specs and location. But when new generations of chips using adaptive circuitry had gotten cheaper and more

plentiful, industry had decided to install them in place of the simpler tags.

At that point millions of common, everyday objects – your toothbrush, your coffee maker, your shoes, the box of cereal on your shelf – began to exhibit massive processing power and interobject communication. Your wristwatch could monitor your sweat and tell your refrigerator to brew up some electrolyte-replenishing drink. Your bedsheets could inform the clothes-washer of the right settings to get them the cleanest. (The circuitry of the newest chips was built out of undamageable and pliable buckytubes.) So far, so good. Life was made easier for everyone.

Then came the Volition Bug.

The Volition Bug was launched anonymously from a site somewhere in a Central Asian republic. It propagated wirelessly among all the WiFi-communicating chipped objects, installing new directives in their tiny brains, directives that ran covertly in parallel with their normal factory-specified functions. Infected objects now sought to link their processing power with their nearest peers, often achieving surprising levels of Turingosity, and then to embark on a kind of independent communal life. Of course, once the Volition Bug was identified, antiviral defenses – both hardware and software – were attempted against it. But VB mutated ferociously, aided and abetted by subsequent hackers.

If this “Consciousness Wavefront” had occurred in the olden days of dumb materials, blebs would hardly have been an issue. What could antique manufactured goods achieve, anchored in place as they were? But things were different today.

Most devices nowadays were made with MEMS skins. Their surfaces were interactive, practically alive, formed of zillions of invisible actuators, the better to sample the environment and accommodate their shapes and textures to their owners’ needs and desires, and to provide haptic feedback. Like the paws of geckos, these MEMS surfaces could bind to dumb materials and to other MEMS skins via the Van der Waals force, just as a gecko could skitter across the ceiling.

Objects possessed by the Volition Bug would writhe, slither, and crawl to join together, forming strange new assemblages, independent entities with unfathomable cybernetic goals of their own.

Why didn’t manufacturers simply revert to producing dumb appliances and other products, to frustrate VB? Going backward was simply impossible. The entire economy, from immense factories right down to individual point-of-sales kiosks, was predicated on intelligent products that could practically sell themselves. And every office and every household aside from the very poorest relied on the extensive networking among possessions.

So everyone had learned to live with the occasional bleb, just as earlier generations had learned to tolerate operating system crashes in their clunky PCs.

But during the first years of the Volition Bug, people were not so aware of the problem. Oftentimes no one took precautions to prevent blebs until it was too late.

That was how my parents had died.

I was six years old and soundly asleep when I was awakened by a weird kind of scraping and clattering noise outside my room. Still only half-aware, I stumbled to my bedroom door and cracked it open.

My parents had recently made a couple of new purchases. One item was a free-standing rack that resembled an antique hat-tree, balanced on four stubby feet. The rack was a recharging station for intelligent clothing. But now, in the nightlight-illuminated, shadowy hallway, the rack was bare of garments, having shucked them off on its way to pick up its new accoutrements: a complete set of self-sharpening kitchen knives. The knives adhered to the rack at random intervals along its length. They waggled nervously, like insect feelers, as the rack stumped along.

I stood paralyzed at the sight of this apparition. All I could think of was the old Disney musical I had streamed last month, with its walking brooms. Without exhibiting any aggressive action, the knife rack moved past me, its small feet humping it along. In retrospect, I don’t think the bleb was

murderous by nature. I think now it was simply looking for an exit, to escape its bonds of domestic servitude, obeying the imperatives of VB.

---

But then my father emerged from the room where he and my mother slept. He seemed hardly more awake than I was.

“What the hell—?”

He tried to engage the rack to stop it, slipping past several of the blades. But as he struggled with the patchwork automaton, a long, skinny filleting knife he didn't see stabbed him right under his head.

My father yelled, collapsed, and my mother raced out.

She died almost instantly.

At that point, I supposed, I should have been the next victim. But my father's loyal MedAlert bracelet, registering his fatal distress, had already summoned help. In less than three minutes – not long enough for the knife rack to splinter down the bedroom door behind which I had retreated – rescuers had arrived.

The fate of my parents had been big news – for a few days, anyhow – and had alerted many people for the first time to the dangers of blebs.

I had needed many years of professional help to get over witnessing their deaths. Insofar as I was able to analyze myself nowadays, I thought I no longer hated all blebs.

But I sure as hell didn't think they were always cute or harmless, like Cody did.

So of course Cody moved in with me. I couldn't risk looking crazy or neurotic by holding off our otherwise desirable mutual living arrangements just because I was worried about blebs. I quashed all my anxieties, smiled, hugged her, and fixed a day for the move.

Cody didn't really have all that much stuff. (Her place in Silver Spring was tiny, just a couple of rooms over a garage that housed a small-scale spider-silk-synthesis operation, and it always smelled of cooking amino acids.) A few boxes of clothing, several pieces of furniture, and some kitchen appliances. Ten thousand songs on an iPod and one hundredth that number of books on a ViewMaster. One U-Haul rental and some moderate huffing and puffing later, Cody was established in my townhouse.

I watched somewhat nervously as she arranged her things.

“Uh, Cody, could you put that Cuisinart in the cupboard, please? The one that locks. It's a little too close to the toaster oven.”

“But Kaz, I use this practically every day, to blend my breakfast smoothies. I don't want to have to be taking it in and out of the cupboard every morning.”

I didn't argue, but simply put the toaster oven in the locked cupboard instead.

“This vacuum cleaner, Cody – could we store it out in the hallway?” I was particularly leery of any wheeled appliance. They could move a lot faster than the ones that had to inchworm along on their MEMS epidermis.

“The hallway? Why? You've got tons of space in that room you used to use for an office. I'll just put it in a corner, and you'll never notice it.”

I watched warily as Cody deposited the cleaner in its new spot. The compact canister nested in its coiled attachments like an egg guarded by snakes. The smartest other thing in my office was my Aeron chair, a beautiful ergonomic assemblage of webbing, struts, gel-padding, piezopolymer batteries, and shape-changing actuators. I rolled the chair as far away from the vacuum cleaner as it would go.

Cody of course noticed what I was doing. “Kaz, don't you think you're being a tad paranoid? The vacuum isn't even turned on.”

“That's where you're wrong, Cody. Everything is perpetually turned on these days. Even when you

think you've powered something down, it's still really standing by on trickle-mode, sipping electricity from its fuel cells or batteries or wall outlets, and anticipating a wake-up call. And all so nobody has to wait more than a few seconds to do whatever they want to do. But it means that blebs can form even when you assume they can't."

"Oh, and exactly what do we have to be afraid of? That my vacuum cleaner and your chair are going to conspire to roll over us while we sleep? Together they don't weigh more than twentyfive pounds!"

I had *never* told Cody about my parents, and now did not seem to be the best time. "No, I guess you're right. I'm just being overcautious." I pushed my chair back to its spot at the desk.

In hindsight, that was the worst mistake I ever made. It just goes to show what happens when you abandon your principles because you're afraid you'll look silly.

That night Cody and I had our first dinner together before she had to go to work. Candlelight, easy talk, farmed salmon, a nice white Alaskan wine (although Cody had to pop a couple of alcohol debinders after dessert to sober up for the employee-entrance sensors at her job). While I cleaned up afterward, she went to shower and change. She emerged from the bedroom in her Senate Casino uniform – blue blouse, red-and-white-striped trousers, star-spangled bowtie. She looked as cute as the day I had first seen her while doing my spy job.

"Wow. I don't understand how our representatives ever pass any legislation with distractions like you."

"Don't be silly. All our marks are tourists and a few locals. We only see the politicians when they're cutting through the casino on the way to their cafeteria."

I gave her a hug and kiss and was about to tell her to be careful on the subway when I caught movement at floor level out the corner of my eye.

The first bleb in our new joint household had spontaneously formed. It consisted of our two toothbrushes and the bathroom drinking glass. The toothbrushes had fastened themselves to the lower quarter of the tumbler, bristle-ends uppermost and facing out, so that they extended like little legs. Their blunt ends served as feet. Scissoring rapidly, the stiltlike toothbrush legs carried the tumbler toward the half-opened door through which Cody had been about to depart.

I squealed like a rabbit and jerked back out of Cody's embrace, and she said, "Kaz, what—?" Then she spotted the bleb – and laughed!

She bent over and scooped up the creature. Without any hesitation, she tore its legs off, the Van der Waals forces producing a distinct velcro-separating noise as the MEMS surfaces parted.

"Well, I guess we'll have to keep all the glasses in the kitchen from now on. It's cute though, isn't it, how your toothbrush and mine knew how to cooperate so well."

I squeezed out a queasy laugh. "Heh-heh, yeah, cute . . ."

I worked for Aunty, at their big headquarters next to the Pentagon. After six years in Aunty's employment, I had reached a fairly responsible position. My job was to ride herd on several dozen freelance operatives working out of their homes. These operatives in their turn were shepherds for a suite of semiautonomous software packages. At this lowest level, where the raw data first got processed, these software agents kept busy around the clock, monitoring the nation's millions of audiovideo feeds, trolling for suspicious activities that might threaten homeland security. When the software caught something problematic, it would flag the home-operator's attention. The freelancer would decide whether to dismiss the alarm as harmless; to investigate further; to contact a relevant government agency; or to kick up the incident to my level for more sophisticated and experienced parsing, both human and heuristic.

Between them, the software and home-operators were pretty darn efficient, handling ninety-nine percent of all the feed. I dealt with that one percent of problematic cases passed on from my



- [read Spectral Theory and Quantum Mechanics: With an Introduction to the Algebraic Formulation \(UNITEXT\)](#)
- [download Eddie Rickenbacker: Boy Pilot and Racer \(Young Patriots Series\)](#)
- [Lonely Planet ePocket Florence & Tuscany \(3rd Edition\) pdf, azw \(kindle\), epub, doc, mobi](#)
- [Black Dragon \(Ryan Mitchell, Book 2\) here](#)
- [click Love Songs From a Shallow Grave \(Dr. Siri Paiboun, Book 7\) pdf](#)
  
- <http://kamallubana.com/?library/Spectral-Theory-and-Quantum-Mechanics--With-an-Introduction-to-the-Algebraic-Formulation--UNITEXT-.pdf>
- <http://www.gateaerospaceforum.com/?library/Eddie-Rickenbacker--Boy-Pilot-and-Racer--Young-Patriots-Series-.pdf>
- <http://www.rap-wallpapers.com/?library/Trigonometry-Demystified--2nd-Edition-.pdf>
- <http://aircon.servicessingaporecompany.com/?lib/Violence--Reflections-on-Our-Deadliest-Epidemic.pdf>
- <http://yachtwebsitedemo.com/books/Love-Songs-From-a-Shallow-Grave--Dr--Siri-Paiboun--Book-7-.pdf>