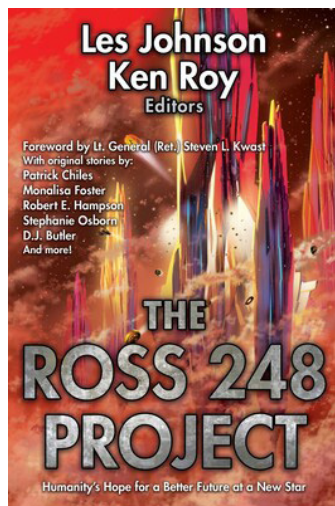


BOOK REVIEW: *The Ross 248 Project*

edited by Les Johnson & Ken Roy
Baen Books, 2023

Patrick Mahon

Principium, and i4is in general, has always taken science fiction seriously. Much of it, both “outer space” and “inner space”, is relevant to both technical and human concerns which arise from interstellar travel and communication. So an anthology based on a common thread edited by two long-established experts in interstellar related subjects naturally drew the attention of Principium Deputy Editor Patrick Mahon. He opens his review by introducing them.



As Principium readers will be well aware, the team at the Initiative for Interstellar Studies spends a lot of time focused on researching the scientific and engineering challenges of interstellar exploration. However, many of us also find inspiration in artistic responses to the desire to reach for the stars. One such response is the science fiction anthology *The Ross 248 Project*, edited by Les Johnson and Ken Roy, which the American SF publisher Baen Books issued in 2023.

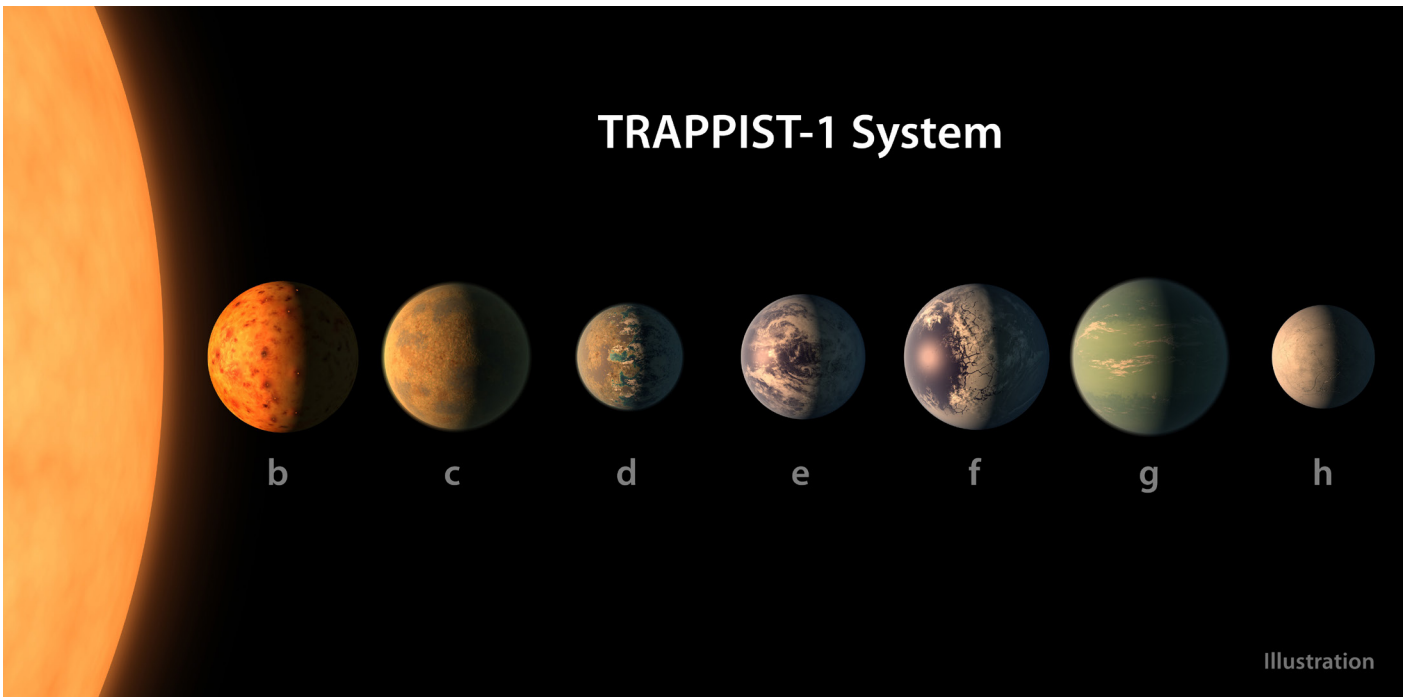
Les Johnson's name will, I'm sure, be familiar to many of you. He's a NASA engineer who has done a lot of work on solar sailing, and he's also an author of numerous books, both non-fiction and fiction. I reviewed his non-fiction book about interstellar exploration, *A Traveler's Guide to the Stars*, in issue 45 of Principium (May 2024, i4is.org/principium-45/).

The name of his co-editor, Ken Roy, may be slightly less familiar, but he's a recently retired American professional engineer who has also published multiple research papers on terraforming and space colonisation. So both editors definitely know what they're talking about.

The anthology contains twelve pieces, in addition to the front matter and the appendices. Ten of them are science fiction short stories, one is a semi-factual alternate history of the past, present and possible future role of the military in space, and the last is an essay on terraforming.

This is a so-called 'shared world' SF anthology, which means that all the stories take place within the same story setting. That setting was developed by Johnson and Roy at the start of the project, and shared with the anthology's authors to ensure a level of consistency between the stories. The editors have helpfully given a summary of it in the book's introduction, with more details provided in three appendices.

I'm sure Principium readers will be interested in these details, to see how realistic the assumptions are. In brief, humanity launches several starships towards Ross 248, a (genuine) red dwarf star which is 10.3 light years from Earth. This destination was chosen as it is relatively close to Earth, and the star is a red dwarf, a type which is statistically more likely to have exoplanets in the habitable zone. Although no such exoplanets have been detected around Ross 248 to date, this doesn't mean there aren't any, since they are on the edge of what current technology can detect.



Illustration

This artist's concept shows what the TRAPPIST-1 planetary system may look like, based on available data about the planets' diameters, masses and distances from the host star. The system has been revealed through observations from NASA's Spitzer Space Telescope and the ground-based TRAPPIST (TRANSiting Planets and Planetesimals Small Telescope) telescope, as well as other ground-based observatories. The system was named for the TRAPPIST telescope.

The seven planets of TRAPPIST-1 are all Earth-sized and terrestrial, according to research published in 2017 in the journal *Nature*. TRAPPIST-1 is an ultra-cool dwarf star in the constellation Aquarius, and its planets orbit very close to it.

They are likely all tidally locked, meaning the same face of the planet is always pointed at the star, as the same side of our moon is always pointed at Earth. This creates a perpetual night side and perpetual day side on each planet.

TRAPPIST-1b and c receive the most light from the star and would be the warmest. TRAPPIST-1e, f and g all orbit in the habitable zone, the area where liquid water is most likely to be detected. But any of the planets could potentially harbor liquid water, depending on their compositions.

In the imagined planets shown here, TRAPPIST-1b is shown as a larger analogue to Jupiter's moon Io. TRAPPIST-1d is depicted with a narrow band of water near the terminator, the divide between a hot, dry day and an ice-covered night side. TRAPPIST-1e and TRAPPIST-1f are both shown covered in water, but with progressively larger ice caps on the night side. TRAPPIST-1g is portrayed with an atmosphere like Neptune's, although it is still a rocky world. TRAPPIST-1h, the farthest from the star, would be the coldest. It is portrayed here as an icy world, similar to Jupiter's moon Europa, but the least is known about it.

Credit (image and caption): NASA/JPL-Caltech/R Hurt, T Pyle (IPAC)

The editors have made the creative assumption that Ross 248 has multiple exoplanets orbiting it, in a system resembling the 7 exoplanets discovered by NASA to be orbiting the red dwarf Trappist-1 in 2017. Using propulsion technology based on the Alcubierre warp drive, three large starships travel from our solar system, at one-tenth of the speed of light, taking around 110 years to reach their destination. The use of an Alcubierre drive definitely puts the assumed technology into the speculative end of things, but they have been completely open and honest about this, explaining the rationale for their choice in Appendix III to the book. Brownie points for that.



Warp Drive in action from Warp Field Mechanics 101 Dr Harold "Sonny" White ntrs.nasa.gov/api/citations/20110015936/downloads/20110015936.pdf The quotation at the top "second star to the right, and straight on till morning." is in the 1953 Disney version of J M Barrie's play, Peter Pan. The original omitted "star". The connection here is the final line of the film Star Trek 6, where it is Captain Kirk's order to the helm at the end of the film

After a brief foreword and introduction, the anthology opens with 'Garden of Serpents', by Patrick Chiles. This is set in the year 2583 AD - which is renumbered as 0 AA ('After Arrival') - which is when the fleet of ships arrive in the Ross 248 system. A detachment of troops from the Space Patrol ship *Guardian E* are transported down to the surface of the fourth exoplanet in the system. This has been named 'Eden', as it has an oxygen-containing atmosphere and a living biosphere, so the hope is that it will be relatively easy to colonise. The soldiers' mission is to construct research stations for the use of the scientists who will follow them down. However, the alien flora and fauna on the surface of Eden view the troops as unwelcome contaminants of their environment, and react accordingly. Chaos ensues!

I had mixed views about the opening piece. Although this action-focused military-SF story provides a dramatic start to the book, pulling the reader in, it also sets an unwelcome tone, for me at least. The soldiers are to be followed down by research scientists, we are told. Yet when they encounter herds of animals that resemble half-scale Tyrannosaurus Rexes, we hear that the soldiers 'had to kill hundreds of the monsters before they learned to leave us alone'. No attempt at distraction or deterrence. No consultation with the research scientists, who might want to study these large alien creatures. Just shoot first and ask questions later. Although this story is set over 550 years into our future, it would appear that we've learned nothing in that time.

Next up is 'And A Child Shall Lead Them', by Stephanie Osborn. Set one year after 'Garden of Serpents', this story introduces us to two new species who have travelled from our solar system to Ross 248. The first are the Cerites: tall and thin humanoids who have evolved from the humans who settled the main belt asteroid Ceres in order to mine it. The Cerites have deliberately genetically engineered themselves to be more resilient to the low gravity, high radiation environment in the asteroid belt. The second species are sentient AIs.

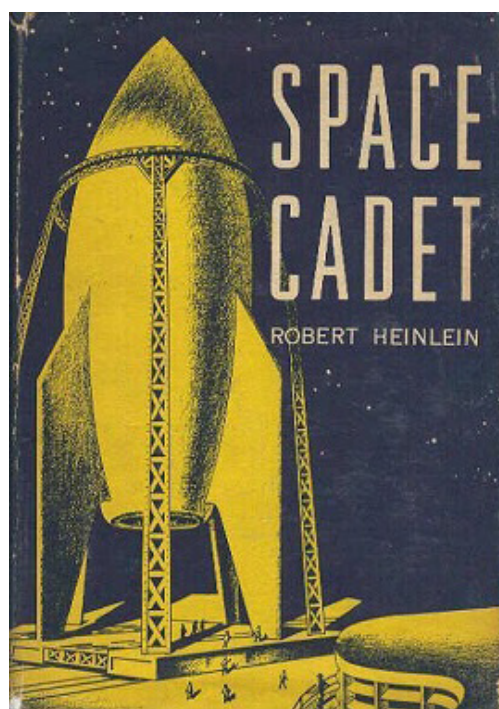
A mixed crew of Cerites and sentient AIs travelled from Earth in a second starship, *Ceres' Chariot*. This has gone into orbit around Liber, an airless moon of the seventh exoplanet in the Ross 248 system.

When a young but precociously intelligent female Cerite called Arinna realises that the red dwarf at the centre of the system is a flare star, which is just emerging from a century-long period of quiescence, she warns the adults. While most of them assess her data, recognise that she's correct, and agree on emergency actions to minimise the radiation risks they will face when the red dwarf flares, not all do.

The Cerite commanding *Ceres' Chariot*, Captain C'Bakab, is unimpressed by warnings from what he sees as a frightened young girl, and orders his crew to maintain their current orbit, putting the ship at huge risk if they are in direct line of sight of the star when it flares. C'Bakab's Executive Officer, a sentient AI whose formal name is 34-of-Foxtrot, but who is known as Harry, is left in a quandary. Should he obey the direct orders of his Cerite commanding officer? Or, having used his advanced AI brain to confirm that Arinna's warnings are accurate, should Harry take evasive action while the Captain is off shift and asleep, and deal with the personal risk of a court-martial, and the wider risk of conflict between Cerites and sentient AIs, later on?

I'm glad to say that 'And A Child Shall Lead Them' put my concerns about the first story to bed. Here we encounter two new races, each very different from each other and from 'ordinary' humans, yet they are (mostly) able to work together successfully. Most importantly, the story is about the use of science to make important predictions about the future, and to take rational action based on those predictions. This is the type of future for space exploration that I want, personally.

The third piece in the anthology is not a story, but an alternate history of the Space Patrol, a utopian military organisation which featured in 'Garden of Serpents', and whose wider role is to guarantee a peaceful future for humanity in space. Drawing on such sources as Thomas Hobbes' *Leviathan* (1651), HG Wells' 1914 novel *The World Set Free*, and Robert A Heinlein's 1948 juvenile novel *Space Cadet*, as well as the actual history of US military and nuclear activities in air and space, up to the creation of the US Space Force in late 2019, Brent Ziarnick produces a fascinating and thought-provoking essay which asks some very pertinent questions about how humanity might be able to secure a peaceful future in space when we're still so bad at avoiding armed conflict here on Earth.



First Edition cover of Robert A Heinlein's 1948 juvenile novel *Space Cadet*.
Source: Wikipedia

◀ Next up is 'Somebody's World', by Laura Montgomery, a practicing US space lawyer. Three years on from 'And A Child Shall Lead Them', the third starship to travel to the Ross 248 system, *Copernicus*, has diverted from its original target of Eden, which has been declared off-limits for colonisation following the events of 'Garden of Serpents'. It is now in orbit around Liber and while surveying the 7th planet in the system, which the moon Liber orbits around, they see artificial features, suggesting that the planet was once inhabited by intelligent beings.

When they fly down to the surface and explore, they find what seem to be buildings which show evidence of having contained equipment that has been taken away. This raises a huge legal question: have the planet and its moon been abandoned by its former alien residents, in which case the humans and sentient AIs on the *Copernicus* can colonise it, and mine the planet's resources as they would like to? Or is the legal position that the planet and moon still belong to the absent aliens, like ships lost at sea under the laws of salvage, so that mining will have to be prohibited? What initially sounds like rather arcane legal niceties has huge implications for the success of the entire mission to Ross 248, which Laura Montgomery dramatises very effectively.

My only reservation about this story, as a non-lawyer, is that the range of legal options considered by the lawyers in the story seem pretty limited. Given that they have no information about the nature of the intelligent aliens that appear to have left the planet, but may return in future, it seems odd to assume that legal principles developed in the modern, capitalist societies of Europe and America are the only possibilities. It would have been nice, for example, to see some reference made to the recent legal disputes between indigenous peoples in Australia and New Zealand and their governments, to see an alternate model for exploring these legal questions which does not assume that both parties share a common philosophy about capitalism and land rights.

The father and son team of Daniel M Hoyt and E Marshall Hoyt set their story, 'Kraken Rising', some 60 years after arrival at Ross 248. All the 'normal', non-Cerite humans are still living on board the orbiting starship *Copernicus*, or down in a rather cramped sub-section of 'Toe Hold', the mostly Cerite base on Liber, the moon of the seventh planet which featured in 'And A Child Shall Lead Them'. Neither solution is particularly attractive, but the poor living conditions in Toe Hold have led to the rise of an anticolonial movement which is becoming increasingly radicalised and violent.

In response, the leaders of the human faction have been exploring the possibilities for terraforming the third planet in the system, a water world known informally as Poseidon's World.

Sabrina and Adam are scientists who have been friends for decades. They are both on the research team on Poseidon's World, whose five-year mission is to gather the data that will enable a decision on whether it is suitable for terraforming, or not. But while Sabrina is a disciplined and methodical environmental scientist, Adam is a disorganised genius who has a track record of coming up with brilliant ideas, half of which work perfectly, while the other half's results vary between disappointing and disastrous. When Sabrina is tasked with investigating a series of increasingly violent storms that have suddenly started popping up all over the planet, she reluctantly concludes that Adam may be responsible for them. But she's been sending him her data, which shows that they are a direct threat to successful terraforming. Surely Adam isn't in league with the anticolonials?

I loved this story. It's an almost perfect mix of engaging characters, a fascinating science-based plot, and a dramatic setting. For entirely understandable reasons, many space-based SF stories default to one of two settings: rocky alien planet, or spaceship interior. It's refreshing to have a story set on a water world, particularly when it is depicted in as visceral and exciting a way as is the case here.

Following on neatly from the Hoyts' story, space journalist Matthew Williams has contributed 'Terraforming Planets Under a Red Sun', a non-fiction article about the opportunities and challenges of terraforming planets, whether within our own solar system or elsewhere. This is a detailed and engaging essay by a science writer who clearly knows his stuff, and will I'm sure be of great interest to all readers of Principium.



'Dim Carcosa', by DJ Butler, is set just four years after the previous story. In it, we meet Prashanth Satyadeva, a former member of the Space Patrol who retired on medical grounds. He now lives down on Toe Hold and just about makes a living as a private detective. When he is contacted by a woman called Victoria Tan, who is rich enough to still be living on the starship *Copernicus*, he can suddenly see a brighter future for himself. Tan wants him to find her 21-year old daughter, Chao-xing, a fashion model who has been missing for 2 days. He starts looking, but every clue he finds points uselessly at a surreal 19th century short story about the 'Dim Carcosa' of the title. Can he solve the case before he goes mad?

I must admit, I'm still confused by this piece, despite having read it multiple times. Even so, the framing as a noir private detective story sets it apart from the rest of the anthology, and I enjoyed the style and energy a great deal, even if I didn't understand the plot fully.

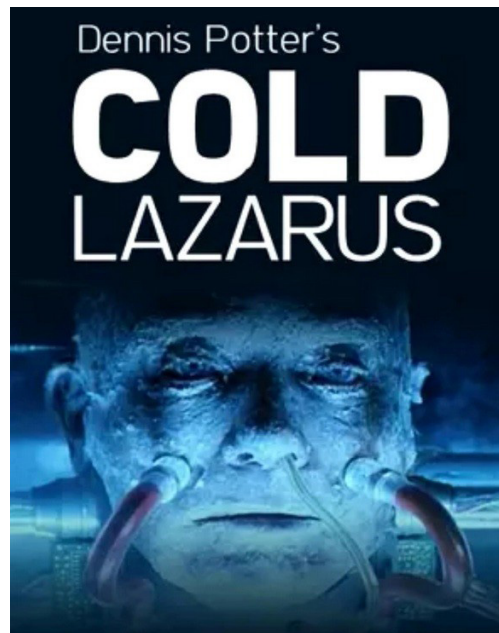
Robert E Hampson's 'Echoes of a Beating Heart' is set nearly two decades after 'Dim Carcosa', in the year 83 AA. 'Davey' is an adolescent sentient AI, growing up with human parents who are doing scientific research on Eden, the biologically active world we first met in 'Garden of Serpents'. Experience has demonstrated that sentient AIs that are to work successfully alongside humans or Cerites need to go through something similar to a human childhood, in order to develop their own personality and purpose.

There aren't any other adolescents on Eden, and Davey gets increasingly lonely as time goes on. That is, until the research group's current doctor goes back up to the orbiting starship *Copernicus*, his term in the field over. His replacement is a human husband-and-wife team who bring their sixteen year old daughter, Betsy, with them. Davey and Betsy become friends, so when Betsy decides that she wants to explore the area surrounding their hab-domes, he goes with her. Almost inevitably, this gets them into serious trouble... This is a multi-layered story, packing several distinct ideas into a limited number of pages, and I thought it was extremely effective. I loved the concept of sentient AIs going through a human-like adolescence in order to socialise them and enable them to develop their own individual sense of purpose. And the friendship between Davey, an AI, and Betsy, a human teenager, had enough ups and downs to feel authentic.

One thing in this story did disturb me, though. In a historical interlude, early in the story, we're told that soon after the discovery of Eden and its vibrant biosphere, 'a heated debate arose' between those who wanted to kill off all the native lifeforms and then terraform Eden, and those who wanted to protect the existing biota. Thankfully the argument was eventually settled in favour of planetary protection. But the story implies that this decision was entirely within the gift of the arriving colonists. It seems inconceivable to me that the possibility of such a scenario would not have been foreseen by those planning the mission, back on Earth, and that a set of mission rules would not have been created ahead of launch, prohibiting the willful destruction of entire living ecosystems found at the destination. Surely one of the main reasons for exploration of other star systems would be to study any alien lifeforms that we encountered, not simply to wipe them out in order to make colonisation easier. There are rather uncomfortable echoes here of the history of the Western colonisation of the Americas and Australasia, and the fate of those who already lived there.

In an interesting departure, the next story is set back in our own solar system. Monalisa Foster's '1-of-Antonia' takes place 3 years after 'Echoes of a Beating Heart', and is set on Pluto. The dwarf planet is owned and operated by the Sentient AI Network (SAIN), and amongst other things, SAIN runs virtual reality systems and a cryogenics industry there. Wealthy geriatrics can travel to Pluto, spend their last years enjoying themselves in VR, and then have their body frozen at the point of death, in the hope of a future cure being found.

When Aidan Samuels' wife is diagnosed with a terminal illness, the two of them head to Pluto to spend their last months together. But once his wife dies, Samuels refuses to come out of the VR environment, where he is consumed by grief. When his employers demand that he's pulled out, as he's needed to resolve a boardroom dispute, the sentient AI 1-of-Antonia, nicknamed Suri, is sent into his VR simulation to talk him around. But when a man just wants to be left alone to mourn the love of his life, how on Earth does an AI, no matter how sentient, persuade him that the cares of the real world are more important?



A distinctly pessimistic view of cryonics, Dennis Potter's *Cold Lazarus* 1996 TV play released two year's after Potter's death from pancreatic and liver cancer.
Source: IMDB

Despite this story initially appearing to have no connection to interstellar exploration or the Ross 248 star system, I found it fascinating and enjoyable. The central idea, of a sentient AI having to find a way to engage with a human who is entirely driven by his emotional state, is intriguing, and well handled. And there's a dry sense of humour running throughout the entire tale, ensuring it never becomes maudlin. Later in the piece, a connection to Ross 248 is made, and it works very well, without seeming to be shoehorned in.

JL Curtis' story, 'MTBF (Mean Time Between Failures)', takes place on Nordheim, the 5th planet in the Ross 248 system, some 23 years later, in the year 106 AA. Nordheim has almost Earth-normal gravity, so has been prioritised for human settlement, given the overcrowding elsewhere.

Sergeant Niklas Berndt of the Space Patrol is promoted to Lieutenant and sent, with his AI buddy 60-of-Sigrid, nicknamed Bear, to set up a new branch of the central bank that is run by the Patrol in New Hope City, the latest human settlement to be constructed on the planet. Nik and Bear have spent their last few years investigating criminal activity, and it quickly becomes apparent that their posting to Nordheim has little to do with bank management. Someone, or *something*, is sabotaging the construction of the new city, and it's their job to find out who and how, and then put a stop to it. But the deeper they dig, the larger seems to be the potential conspiracy. Will they be able to stop it?

This is a well-written, highly enjoyable story which has some extremely interesting points to make. In a universe where almost all communications are overheard by one or more sentient AIs, all of whom are in constant contact with each other via SAIN, the Sentient AI Network, how do you run a criminal investigation if one of your suspects is an AI? Equally, given that it's almost impossible for an AI to 'go off the rails', why would someone (presumably human) try to frame an AI for the crime? And finally, and most seriously, what should the appropriate penalty be for a crime that threatens the future of the colonisation project?

The penultimate story, 'A Field of Play', by K S Daniels, takes us back in both time and space to Pluto in the year 2440 AD, some 143 years prior to the first ships arriving at Ross 248. The sentient AI 6-of-Chandra, nicknamed Yato, is a designer of virtual reality games for humans. To fulfill his role better, he spends his time trying to get inside the mind of his human customers, trying to 'be' as human as he can be. This makes him rather idiosyncratic, and is a constant source of irritation to his much more logical 'older brother' 5-of-Chandra, nicknamed Noburu.

When both brothers are summoned by their AI 'mother' Chandra, Yato is initially annoyed to be asked to stop work on his current project. However, when Chandra tells him that his intuition for how humans think is needed on an urgent new project, he's flattered.

Chandra wants the two of them to work together on producing a long-term extrapolation of the future of humanity, for a client called Torajiro Ito, a rich Japanese engineer with a terminal illness. The problem is, their early predictions are almost uniformly negative. Are they doing something wrong, or are humans and Cerites genuinely doomed?

◀ It's interesting to note that the author's biography says she grew up reading the works of Isaac Asimov, amongst others. It shows, because the kind of long-term predictions which Yato and Noburu work on in this story are somewhat reminiscent of Hari Seldon's science of psychohistory, as seen in Asimov's 'Foundation' series. A nice tip of the cap to golden-age SF.

This story works well as a means of explaining why the Ross 248 Project came about. I enjoyed it a great deal.

The final story in the anthology, prior to the various appendices, is called 'Not Too Tired', and it was co-written by the editors, Les Johnson and Ken Roy. It takes place in the year 3291 AD, or 708 AA, a considerable period into the future of the Ross 248 system. Things are going well for the humans, the Cerites and the sentient AIs. However, not everyone is happy with that, as the now-Director of the entire Ross 248 Project, 5-of-Chandra (or Noburu, as he was nicknamed 850 years earlier, as seen in the previous story) finds out one day.

A brave young Cerite called C'Maria, who volunteered to infiltrate the violent anti-colonisation movement a year earlier, sends him an encrypted message. In it, she tells him that she has been identified as a government agent and taken prisoner, and will be killed unless 5-of-Chandra agrees to meet with Anticol's leader. It's obviously a trap, but he agrees to go anyway, after taking the precaution of moving himself into a heavily shielded, armoured and armed humanoid shell.

But when 5-of-Chandra does finally meet the leader of Anticol, the man's arrogance, and the extent of his plans to destabilise everything that's been achieved over the previous seven centuries, makes the AI start to wonder just how deeply embedded the conspirators are within the forces running the Ross 248 system. More importantly, is it too late to stop them?

'Not Too Tired' turns out to be an excellent way to end a wonderful anthology. It includes references to several of the previous stories, all the way back to the second one, 'And a Child Shall Lead Them', which was set one year after the ships arrived at Ross 248, just over 700 years earlier. It also tackles some really big issues, including terrorism, genetic enhancement, slavery, free will, and the human desire for money and power. It turns out that Les Johnson and Ken Roy aren't just a good pair of editors. They are talented co-authors too.

Taken as a whole, *The Ross 248 Project* is an impressive achievement. The inclusion of three different 'races' (humans, Cerites and sentient AIs) is a major strength, providing several different lenses through which to view the colonisation experience.

Characterisation is almost uniformly strong, with varied casts of complex characters who enable the reader to feel genuine empathy when things aren't going well. The stories include a wide range of settings which are vividly described, helping to bring this varied stellar system to life and forcing the characters to confront very different challenges. And the plots explore a wide range of the issues that might arise if such an ambitious mission were to be attempted.

If I were forced to voice a criticism of the anthology, it would be the overwhelming focus on the Ross 248 system purely as a location for human colonisation, rather than as a stellar system of inherent scientific value and interest. In most of the stories, the aim is to change whichever planet or moon it's set on, so that it's more suitable for the colonists. Seen from an entirely practical engineering mindset, this makes total sense. But having spent over a century travelling over ten light years to get there, virtually no-one seems remotely interested in the star system itself, as a place to study, to explore, or to engage with on its own terms. And least of all to do biological or ecological research on Eden, the habitable planet featured in the first story, 'Garden of Serpents'. Indeed, in that story, as I mentioned earlier, the response to finding advanced alien lifeforms is not to study them, but to 'kill hundreds of the monsters' until they learn to stay away.

It would have been nice to read just one story that was focused less on colonisation, and more on scientific exploration of the first extrasolar star system to be visited by humanity. However, that's not the focus of this anthology.

Putting that criticism to one side, *The Ross 248 Project* is a wonderfully rich anthology of pieces which provides much food for thought to those of us who are interested in considering what it might be like to explore a new star system many light years from home. I thoroughly enjoyed reading it, and I'd recommend it to anyone who is interested in interstellar exploration.