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Fafnir is a Gold Open Access international peer-reviewed journal. Send submissions to our editors in chief at submissions@finfar.org. Book reviews, dissertation reviews, and related queries should be sent to reviews@finfar.org.

We publish academic work on science-fiction and fantasy (SFF) literature, audiovisual art, games, and fan culture. Interdisciplinary perspectives are encouraged. In addition to peer-reviewed academic articles, *Fafnir* invites texts ranging from short overviews, essays, interviews, conference reports, and opinion pieces as well as academic reviews for books and dissertations on any suitable SFF subject. Our journal provides an international forum for scholarly discussions on science fiction and fantasy, including current debates within the field.

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Editorial 2/2017

Bodhisattva Chattopadhyay, Aino-Kaisa Koistinen & Jyrki Korpua

We are pleased to announce Issue 2/2017 of *Fafnir – Nordic Journal of Science Fiction and Fantasy Research*. This issue consists of a new prefatory section, a guest article, and three research articles, a study on the economics of resource scarcity in science fiction texts, an article on Justin Cronin's apocalyptic novel *The Passage*, and an article that highlights the Finnish Reaalifantasia movement. We also have book reviews of *Science Fiction and Futurism* by Ace G. Pilkington and *Terraforming* by Chris Pak.

This is a time of exciting developments at *Fafnir*. With this issue we are happy to announce a new regular prefatory section for our journal. In this section, distinguished scholars in the field of science fiction and fantasy will discuss ideas and concepts central to their own work. We introduce this section in the hope that the journal will not only be an exciting place for the publication of cutting edge research in these fields, but also inspire new ways of thinking with and through genre literature. We start in this issue with Merja Polvinen, the head of the *Fafnir* Editorial Board, who discusses the concept of “estrangement” central to theorization of science fiction, its origins in the work of the Russian theorist Viktor Shklovsky, and the continuing relevance of this concept in her work - as well as for the forthcoming academic track at the 2017 Worldcon in Helsinki.

We also have a special guest article in this issue: an article on the Science Fiction Collection at the Science Library, University of Oslo, the largest public collection of science fiction in the Nordic region. Line Nybakk Akerholt, Tone Charlotte Gadmar & Kyrre Traavik Låberg, all librarians in charge of managing the collection, present a brief history of the collection, its purpose, current state of development, as well as past, current and future projects.

The guest article is followed by three research articles. Maria Lindgren Leavenworth and Van Leavenworth in their article “Fragmented Fiction: Storyworld Construction and the Quest for Meaning in Justin Cronin's *The Passage*” explore how readers' and characters' experience of reconstructing the storyworld of the novel seem to parallel each other, but ultimately lead in different distinct directions as the characters operate within one kind of temporality (pre- or post-apocalyptic), while the readers' reconstruction requires constant negotiation of the multiple temporalities, especially the pre-apocalyptic cultural memory in the post-apocalyptic terrain of the events in the novel.

Jesper Stage's “Not long before the end? SF and the economics of resource scarcity” looks at scarcity stories written during the commodity boom in the 1970s and 2006-2014. Stage surveys a large number of texts to show how SF produced more recently has a more realistic approach to social factors influencing resource scarcity, as opposed to technoscientific explanations in the previous phase.

Finally, Minttu Ollikainen's article “Dreams and Themes in the texts of the ‘Reaalifantasia’ group” looks at a contemporary movement in Finnish science fiction and fantasy, focusing on two novels from the framework of “unnatural narratology.” Ollikainen's discussion of this movement

will be of particular interest to researchers interested in different ways of conceptualizing genre in the global SFF space, especially in those cases where genre boundaries are more fluid.

With this issue we also welcome our new sub-editor, Hedda Susanne Molland, from the Centre for Development and the Environment, University of Oslo, and Research Assistant at the “Synchronizing the World” project at the same university. Hedda received her BA in the History of Ideas and is currently writing her MA on the meeting of climate research with public discourse and science communication. She also has previous editorial experience with the ideahistory journal *Molo*. We also wish to take this opportunity to thank our previous sub-editor (*locum*), Tanja Välisalo, for her help with the publication of the last two issues of *Fafnir*.

The next *Fafnir* issue 3/2017 will be a themed issue on “reception, audience/s and fandom studies”. More information and the CFP can be found here: <http://journal.finfar.org/call-for-papers-fafnir-32017/>. We would also like to welcome submissions of research articles, overviews of science fiction and fantasy research projects around the world, interviews, and academic book reviews and review essays, for our regular issues.

Remember to join *Fafnir*’s Facebook group: <https://www.facebook.com/groups/fafnirjournal>

Best regards,

Bodhisattva Chattopadhyay, Aino-Kaisa Koistinen & Jyrki Korpua

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Estrangement

Merja Polvinen

Biography: Dr Merja Polvinen is a senior lecturer in English philology and docent in comparative literature at the University of Helsinki. She is a former board member of FINFAR and Chair of the Advisory Board of *Fafnir*, as well as a steering group member in the network Cognitive Futures in the Arts and Humanities. Her dissertation *Reading the Texture of Reality: Chaos Theory, Literature and the Humanist Perspective* came out in 2008, and more recent publications include articles on cognitive approaches to science fiction and self-reflection e.g. in *Interdisciplinary Literary Studies* and the recent volumes *The Cognitive Humanities* (Palgrave), and *Cognitive Literary Science* (Oxford UP). This August, she is in charge of the Academic Track at Worldcon 75 in Helsinki.

Don't Be a Stranger!

There was a fair amount of vindication in my voice when taking up the issue of science fiction and literary scholarship at an interdisciplinary symposium at the University of York recently. The event had been called together under the theme of "Narrative in Question", and all of us invitees had been asked to query old assumptions about what narrative is and how it functions within culture. The previous evening I had -- yet again -- been faced with some colleagues who tell me they do not ever read SF, and then having to push them into asking themselves why not.

Such conversations most often end with both of us agreeing that there are qualities to SF writing that have, at some point in these scholars' careers, turned them off the genre altogether. These qualities almost always include clunky prose, the two-dimensionality of characters, and thematic set-ups that they find simply uninteresting.

But when I ask them about estrangement or the sense of wonder, my colleagues tend to fall into two groups. First are those that simply find those effects off-putting. But then there are those that have not really given much thought to estrangement at all, but once it is raised as a theoretical question, they want to find out more. And it is those people that save my evening.

At York, I was giving a paper on Catherynne Valente's "Silently and Very Fast", and I was delighted to see how many faces in the audience lit up rather than closed down as I was speaking. Valente is, of course, a writer who could never be accused of creating two-dimensional characters or clunky prose, so my work was made that much easier by the quality text examples I was showing on the slides. But beyond the excellence of this one writer, the thing that caught my audience's interest was the concept of estrangement.

Be Stranger!

Viktor Shklovsky's 1917 essay, "Art as Technique" -- which has also been translated as "Art as Device" -- marked a moment in Russian Formalism where interest in art was about as far from traditional mimetic or realist views as can be. The idea that the purpose of art is not to reflect reality but to make it strange has been a staple of science fiction theory ever since, but along with other varieties of formalism and surrealism, the concept has not fared so well in the world of literary scholarship at large.

But there seems to be a shift happening; at least I can see one happening within my own field of cognitive literary studies. Here, scholars are increasingly turning their attention towards narratives that push our normal human cognition in interesting directions, and it is with this interest that the "out there" narratives of speculative fiction seem to be forming a match.

For a long time, cognitive literary studies was mainly interested in studying the ways in which literature engaged our real-world cognitive systems, for example the ways in which we visualise fictional worlds or empathise with fictional characters. Much less attention was given to the possibilities that fictional narrative offers for making our minds do stuff *other* than what they normally do.

But this is now changing, and along with that increased interest in the ways in which fiction can make our minds do weird things is an opening up both to the concept of estrangement and to the SF genre that is so at home with it.

How Things Got Strange for Me

I started my work towards a PhD in English literature back in 1998, and as I think is the case with many people, an individual piece of literature played a major role in my choosing a research topic. I had written my MA thesis on reactions against poststructuralism in British literature, and one of the works I studied in it was Tom Stoppard's *Arcadia*. This play thematises chaos theory -- a cluster of mathematical concepts and methods that drew on the essential unpredictability of complex systems, and which caught the popular imagination in the 90s. For my PhD, then, I decided to dig deeper into how and why the chaos boom also took hold in the humanities during that decade. Over the years (I certainly did not hurry with it...) the book became my introduction to the field of literature and science, to how and why artists and humanities' scholars are drawn to things like particle physics and fluid dynamics, and what happens to the concepts of science when they migrate out of their original contexts.

As I was learning about chaos theory, I also ended up dipping in and out of books within fields like philosophy of mind and consciousness studies, and I became aware of work that drew on the cognitive sciences in an attempt to figure out how and why we read fiction. As I also happened to find colleagues in Helsinki who were interested in theories of literary representation, we wrote up a research proposal and won funding for a project titled *Rethinking Mimesis*, where my postdoctoral work involved cognitive approaches to specifically non-mimetic techniques.

All the way through my PhD I did not really tackle SF novels in my research, even though I've always been a fan, and never stopped reading the genre. I do not think this was a particularly conscious choice to avoid any possible stigma related to the study of popular genres, but apart from a few SF books making brief appearances in the PhD, I had not come across SF texts that would have engaged either my first topic (chaos theory) or my second one (cognitive science) on a formal as well as thematic level, and it was *forms* of representation that I was particularly keen on.

But then suitable texts started cropping up, first in my teaching, and then in my research. I wrote one piece on the formal techniques China Miéville uses to estrange our sense of fictional

spaces in *The City & The City*, another on Christopher Priest's playing with illusion-based theories of fiction and stage magic in *The Prestige*, as well as that paper presented at York on Valente, metaphor and theories of enactive cognition, which will be coming out later in 2018. In all these papers I was able to feed my interest in not just the representations offered in SF texts, but in the formal elements through which those representations are made present in readers' experience, and how that experience affects our relationship with everyday reality.

Which leads me back to Shklovsky, the Russian Formalists and the situation today. The cognitive approaches to literature have over the years evolved into ever more complex forms, and have developed methodological tools and concepts that are able to deal with more weirdness than the original, realism-oriented and computational versions that arose from neuroscience and artificial intelligence studies. Along the way, I realised how useful they could be for the study of literary forms that do not aim to reproduce reality for readers, but rather to push us to experience something different. SF and estrangement started looking like more and more useful partners for the cognitive approaches in my attempt to think about fiction and about its role in human lives.

The Biggest and the Strangest

It was a bit of a stroke of luck, then, that when Helsinki won the bidding for the 2017 Worldcon event (www.worldcon75.com), and together with friends and colleagues in FINFAR I was given the job of running the academic programme track at the convention, I realised that this year would be the centenary of Shklovsky's original essay, and that we could draft our Call for Papers around the theme of estrangement in SF. With that CFP we received many more proposals than we could fit within a full programme for the five days, and as I write this in June, the programme is looking very exciting both for anyone interested in the effects of SF, whether scholar or not, and for me personally. So you will see me sitting there in as many sessions as I can and making furious notes for future work!

And it also happens that these Shklovsky-centenary activities will extend beyond SF circles, since colleagues within cognitive literary studies were also taken with the idea, and now at the European Narratology Network's annual conference in September 2017 there will also be a special panel on "Estrangement at 100: Shklovsky and Narratology Today" with papers by myself, Karin Kukkonen (University of Oslo) and Stefan Iversen (Aarhus University): <http://www.enn5.cz/basic-information/introduction>.

So my York experience of finding interest among mainstream scholars towards some of the central forms and effects of SF was not by any means unique, and I have found that SF papers are being very well received in mainstream literary scholarship events. Authors such as Valente and Miéville, or Ted Chiang and Jeff VanderMeer are praised at Oxford and MIT and UC Santa Barbara, and their particular ways of using imagination and language to put their audiences face to face with the strange and the unsettling is being recognised as an interesting new angle into the originally formalist debates about art making the stone stony.



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Science fiction at the Science Library, University of Oslo: how to actively use an SF collection as a sandbox for science

Line Nybakk Akerholt, Tone Charlotte Gadmar & Kyrre Traavik Låberg

Abstract: The University of Oslo Science Library holds a large collection of SF literature. The collection is only 5 years old, but has a rapid growth due to donations. This article describes why the Science Library as an academic institution needs a collection of SF, the nature of the collection, how we use the collection in innovations, and how we want the collection to evolve in the future. Important aspects of the development includes focus on public outreach projects, both to our scientific colleagues and to the greater public. This also means new ways to view library metadata and user-generated metadata.

Keywords: Science Fiction Collection, Science Library, Interdisciplinarity, Science, Public Outreach, Science Communication

Biography: Line Nybakk Akerholt is a senior librarian at the Science Library at the University of Oslo, and finished her Master's Degree in Library and Information Science in 2008. She is currently responsible for the astronomy and astrophysics collections, and is always on the lookout for new topics to explore and new tools for the library.

Tone Charlotte Gadmar works as a senior academic subject librarian at the Science Library at the University of Oslo. She finished her degree as Dr. Scient. in environmental chemistry (UiO, 2005) and is responsible for the subject of chemistry at the Science Library. Focus and interests within the context of science fiction are reception, cataloguing, and organization of newly received material, and user contact, interaction and accessibility of the collection.

Kyrre Traavik Låberg works as the Head Engineer and programmer at the Science Library at the University of Oslo, and has a Master's Degree in Evolutionary Psychology from the Department of Biosciences at the University of Oslo, 2007. Main activities at the library consist of developing software and code to help users and coworkers better utilize library's resources. Programming languages include PHP, JavaScript and MySQL.



Image 1. The Science Fiction collection at the Science Library of Oslo (Simen Kjellin, 2017).

The University of Oslo Science Library turned 5 years in March 2017 after the merging of 10 small department libraries. The new joined Science Library also gave birth to our SF collection. A startup workshop revealed that a quintet of the librarians had a common interest in SF, and we already had a tiny collection of SF movies from the former Astrophysics Library. From that starting point, the SF collection has grown faster than any other collection in the Science Library due to our open-minded donation and acquisition policies. The SF collection has become an important social and academic factor in our public outreach strategies, and furthermore it functions as a test base for developments, innovations and co-worker training.

Positive leadership and willingness to take on small risks is important when it comes to starting a journey like this. As we will describe, it is not common for an academic library to take in a collection of literature of light recreational fiction - and as we discovered - a possible larger donation of an SF collection from an important author had been turned down at an earlier point.

The relationship between science and SF

SF is unfortunately probably one of the least acknowledged genres in academia. It might be one of the more underestimated fictional literature genres in society, considered mainly to be of light entertainment value and not to be taken very seriously. Few academic libraries can offer a dedicated and indexed collection of SF; if so, it is primarily in the context of a narrow literature genre for the particularly interested. If studied or used, focus is usually on the literary value and analysis of the material. Hence, the genre of SF has in an academic context traditionally been associated with,

administered and studied alongside other fictional literature genres, and therefore been placed in the humanities sections of the library.

A sandbox of the mind?

What is the motivation behind a large SF collection placed in the context of a science library? One could argue that a science library should focus solely on real science and factual literature, and that fiction holds no real value in this context. At the Science Library at the University of Oslo, we think otherwise. With the placement of a large, dedicated SF collection in the context of a modern science library, we would instead like to embrace and celebrate the close relationship between science and SF. Many with a background in science are attracted to the genre and are avid readers of SF, and many great authors of SF actually have a technical or scientific background. In essence, focus and thematic content of SF is intimately linked back to science and its motivation, development and value in society up through history and through the eyes of different cultural facets.

Every academic discipline is conducted within a context, and SF is especially important for the support and broader interest in the technical and scientific disciplines. It is the true and unlimited genre of “What if”. If we look back through human history of knowledge about our environment and technologic development, every new discovery or invention have begun as a vision of the possible realization of something new. The genre of SF has been a faithful travelling companion in the front line - in fact most often preceding the actual scientific development by several decades or more. It is a pioneer in that the genre “boldly goes where no one has gone before”. Before the research, development and utilization of new science, is the vision of the impossible being made possible: a “sandbox of the mind”.

Expanding the context of science

SF does not only provide a great environment for the proposal and discussion around the new technology or science itself, it also supplies a very valuable context for the implications and social meta-disciplines surrounding new development. Within the genre, we find a very valuable discourse of philosophy and ethics, or impact on society of new technological change, long before its realization. And we meet a bold, broadminded, curious and many-cultured perspective on nature and environment - and in the center of it all this eternal, pivotal question: “What is it to be Human under these conditions?”. At the Science Library, we feel that it is important to stimulate and cater for this debate surrounding the actual scientific disciplines.

Science holds as an academic discipline this wonderful dualism in its core, being both very rational and precise in nature, as well as being extremely creative and bold. A scientist has to be both strict and imaginative at the same time to make new hypotheses or design new technology. To verify new hypotheses, the scientist classically establishes a set of controlled premises and fixed conditions (e.g. a laboratory experiment), and then lets the scenario play out while being observed and experienced. Quite often scenarios or hypotheses are tested multiple times with variations in conditions; conditions that may be controlled and designed to deviate very much from what normally would be experienced under natural conditions. Thus science gains knowledge about nature and environment that lies outside our natural observed experience. SF as a genre operates very much along the same premises: a scenario can be designed and defined to fit the desired observation point. Technology, natural conditions and surrounding context, can be proposed without other restrictions of what is dictated by the purpose of the story, and the scenario is then, in the voice of the author, allowed to play out with the purpose of generating new experience by the observer. Thus SF creates a very nice literary parallel to the work in a science laboratory; a form

and methodology most scientists would find familiar. SF is not restricted by what is likely, realistic or even possible, only what is imaginable. Sometimes it is not even a motivation to sketch up the pathways of the future. When complex and difficult questions on society and human nature are up for debate, SF can play a great host for the debate, providing a safe and neutral environment. Sometimes it is liberating for humankind to observe itself “from a safe distance” and in a setting of the unfamiliar, where the familiar stands out clearer and more significantly.

The SF collection as platform for activities in an academic Science Library

Having a large SF collection located in an academic science library creates a lot of opportunities for various activities. It is a great source for inspiration and creativity, and can be used in combination with actual science to create a broader horizon. Science fiction has much more to offer than space travel and robots. Within the genre we will also find great lines of discussion on everything from communication and cybernetics, to climate change, resource management and synthetic biology. Thematically the genre offers extreme variation, and we have not yet come across a topic within actual science where we could not match with relevant counterparts from the SF collection. We have over the last years arranged a number of smaller and larger exhibitions of science and SF literature on the same topic side by side, or illustrated popular contemporary works of SF with the real science associated with the theme. One recent example is an exhibition on the series ‘Hunger Games’ by Suzanne Collins (books and films), where it felt absolutely natural to display it along with books on the physics of archery, chemistry of pyrotechnics, songbirds of the world, textile material science and of course sustainable food supply of the world.

SF within the context of a science library also creates a great bridge between different public audiences. Readers from a non-scientific background that may not usually consider themselves interested in science or natural users of a science library, might suddenly find for themselves a portal into science, and be encouraged to seek further information on nature and scientific topics. Vice versa, readers with primarily scientific background are encouraged to broaden their personal and academic horizon into the humanities, philosophy, society and art. We believe this to be a very good, relaxed and unthreatening common-ground “camp fire” for the two cultures in academia to meet, greet and explore topics of common interest from different angles.

The University Library of the University of Oslo is an open public academic library. It means that we do not only cater for academics, researchers and students, but also to the general public, young and old. Everyone with a public library card can borrow books from the collections, the SF collection included. Having the policy that the books should be read and enjoyed as much as possible by as great an audience as we can reach, means that we have a very low threshold for taking various selections of books from the SF collection out on tour for external events and occasions. We have some smaller “easy to move” bookshelves and have designed our own ‘Traveling Library’ to visit fairs and events of a SF or related scope that wants a visit from the collection. We then pick out relevant literature for the occasion and in collaboration with the hosts of the event. Our online library system allows us to register library cards and lend out books directly on the event, which is a great advantage as we can reach a larger audience – who normally do not visit academic libraries. With our open philosophy, we are not overly worried or overprotective of the books. We want them to be read and enjoyed by new readers, and we have not lost more than twelve books, which must be considered to be a very low loss number for such a large and open collection in a public library. We as library staff also gain from these experiences, as the contact with various readers inspires new thoughts on how to use and promote SF. Among the places we have been on themes events with our Traveling Library are ‘The House of Literature’ (Litteraturhuset) and ‘Oslo House of Artists’ (Kunsternes Hus), Maker Faire Oslo, and a large

LAN event called ‘The Gathering’ in Hamar. We have also had several radio opportunities to talk about SF, science and the collection.

Description of the SF collection

As of writing, June 2017, The Science Fiction collection at the Science Library has somewhat more than 8000 items, with about 7800 books and 200 movies and TV-series. It consists mainly of free donations from organizations and individuals, rather than traditional purchases - out of all the books in the collection, only around 200 acquisitions have been financed by the library, so it's true to say that this collection is not just *for the people*, but *of the people*. This is quite unusual for library collections - most collections are established by the libraries themselves through a top-down process; and although many donated collections are curated by various libraries, how many collections have dozens of donors? The collection is still growing, and if it continues to grow at the rate it has these four years, which is about 1700 items per year, we should reach 10 000 by autumn next year.

Who are our contributors?

As we landed on the decision to create an SF collection within our newly merged science library, we also realized that some possibly very good collections already existed close to campus, but that these collections needed a better system for management to reach their true potential. After reaching quick, common agreements with potential contributors, we acquired enough books to make the collection a reality.

There are two main contributors to the collection, making up almost half of the items - the largest being *Aniara*, contributing around 2000 books, and the second being *Johannes Berg Memorial Fund*, around 1800 books; the rest are contributions from individuals ranging from a dozen books to several hundred.

Aniara, Oslo students' Science Fiction Association, originally founded by Jon Bing and Oddvar Foss in 1965, is named after the poem by the Swedish Nobel laureate Harry Martinson. We still have quite a large backlog from the *Aniara* collection that has not yet been processed, notably magazines like *Analog* and *Fantasy and Science Fiction*, and some literature about SF. We also have several fanzines that we are planning to catalogue.

The Johannes Berg Memorial Fund is a fund dedicated to the memory of Johannes Berg, an avid collector, enthusiast, organizer, founder, and a central figure in the Norwegian SF and fantasy scene. We were lucky enough to acquire large parts of the Fund's collection of SF books, and at the same time contribute monetarily to the Fund.

In addition to these two organizations, the majority of the remaining donations came from around ten people giving more than hundred books each; they collectively donated around 3300 books. The rest, around 700 books, came from smaller donations and the self-purchased books by the Science Library itself.

The donors are on average people in their 50s to 70s, and this is somewhat reflected in the contents of the collection. It is maybe not surprising that the majority of the books in our collection are written in the seventies, when the donors were in their teens to late twenties approximately. But of course, it might also reveal a preference for the books written in those decades. There are probably many different reasons why the individuals give away their SF books to us - and we don't systematically ask why - but a reason they often mention is lack of space, sometimes in conjunction with moving to a new place.

The contents of the collection



Image 2. A representative sample of our collection (Simen Kjellin, 2017).

The collection is quite varied, and consists of works by around 4000 authors and 1000 publishers in seven different languages. There are some authors that are highly represented with many titles, and by far the majority language is English. This is interesting to note since almost all of the donors are Norwegian. This is likely due to the lack of Norwegian translations of SF and that there are more SF books written in English than any other language, but also perhaps a preference for reading in English. Out of the 8000 items, we have 6255 in English, 336 in Norwegian, 30 in Danish, 10 in Swedish, 3 in German and 1 in Russian and 1 in Catalan.

When we look at the authors, the ones that are considered classic SF authors are among the ones represented with most titles, such as Asimov, Heinlein and Clarke:

Table 1: Top ten popular authors of the collection with regards to number of items:

Author	Number of items
Asimov, Isaac	306
Niven, Larry	258
Anderson, Poul	238
Silverberg, Robert	198
Pohl, Frederik	168
Heinlein, Robert A	162
Clarke, Arthur C	159
Vance, Jack	133
Dick, Philip K	123
Bradbury, Ray	121

With so many donations from private collections, it is maybe not surprising that we have many duplicate titles. About one quarter of the collection is duplicates. Therefore, an alternative, but maybe even more telling way of listing popular authors is by how many of their titles were donated by at least *two* contributors. When we list authors this way, we get a somewhat different list:

Table 2. Top ten popular authors of the collection, ordered by absolute number of duplicate titles.

Authors with most duplicates	Number of duplicate titles	Average duplicates per title
Niven, Larry	194	0.75
Asimov, Isaac	169	0.55
Heinlein, Robert A	112	0.69
Anderson, Poul	110	0.46
Clarke, Arthur C	89	0.59
Vance, Jack	85	0.63
Silverberg, Robert	82	0.41
Pohl, Frederik	77	0.46
Dickson, Gordon R	73	0.61
Herbert, Frank	71	0.74

Here we can see that compared to table 1, the list changed order somewhat, and among the top ten we now have two new authors, Gordon R. Dickson and Frank Herbert - and Ray Bradbury and Philip K. Dick are not on this list. With regards to *average* duplicates per title, we see that for Larry Niven, only one out of four books does not have a duplicate. Of course, the picture is more complicated because we have many titles that have several duplicates. One title has as many as eight duplicates. The current record is held by Larry Niven's short story collection *The Flight of the Horse*.

Table 3. Titles illustrating some of the collection's duplicates.

Title	Author	Duplicates
The Flight of the Horse	Larry Niven	8
The Illustrated Man	Ray Bradbury	7
Rogue Ship	A. E. van Vogt	6
Podkayne of Mars	Robert A. Heinlein	5
Dune	Frank Herbert	4

Duplicates are really a blessing for the collection - they make sure that the more popular titles almost always are available. We have storage capacity for duplicates, so they do not take up unnecessary space in the main collection shelves.

As we speculated in the previous section, because of the age groups of the donors the majority of titles are from the seventies, with the eighties and sixties respectively following suit (see table 4).



Image 3. Three titles, *Fahrenheit 451*, *Foundation's Edge* and *The Flight of the Horse*, in all their duplicated beauty (Simen Kjellin, Trude Westby, 2017).

Table 4. Collection by publication year.

Years	Number of titles
<1940	18
1940-1949	30
1950-1959	338
1960-1969	870
1970-1979	2084
1980-1989	1461
1990-1999	814
2000-2010	435
2010-	164

Meta-literature about SF

The majority of the books in the collection is fiction, but we also have non-fiction in the form of encyclopedias, literature studies, social commentaries, philosophy or science in SF, graphic design, readers-/viewers guides and funny or creative books to particular series or “verses”. These works both help our users make their way around the SF universe and understand more about the genre, but they also directly help students. It has for instance been useful for many students in the humanities that have SF topics in their semester assignments or Master Degrees. For this purpose we have separated this meta-literature from the main collection and given it its own shelf labelled “About science fiction”.

Table 5. Some great SF authors in the collection, ordered by title per timespan

Author	Titles*				
	1940-1950	1960	1970	1980	1990-
Anderson, Poul	3	17	29	18	8
Asimov, Isaac	4	9	20	16	11
Bradbury, Ray	1	4	6	5	2
Cherryh, Carolyn Janice			5	16	9
Clarke, Arthur C	7	7	14	4	5
Dick, Philip K	1	2	32	13	8
Heinlein, Robert A	15	8	15	6	4
LeGuin, Ursula		3	11	6	4
McCaffrey, Anne		3	7	1	8
Merril, Judith	1	1	3		
Niven, Larry		2	12	10	12
Norton, Andre Alice	7	13	7	3	5
Pohl, Frederik	3	7	8	11	10
Silverberg, Robert		16	23	9	14
Vance, Jack	3	11	23	8	8
Willis, Connie				1	3
Σ	45	103	215	127	111

*Note that these are titles that were produced by the authors alone, and not in collaboration with others.

Accessibility and meeting the public

The collection itself is open to the public and has its own room in the Science Library. This room also serves as a “breathing space” for students and has a PlayStation, 3D-printer and couches for some well-deserved slouching. Aniara, the students’ SF association and our top donor, fittingly has its meetings in the neighboring room to the collection.

As mentioned in the previous section, the collection is often out and about. We bring along our little festival library when we go to different events. Perhaps the event at Oslo House of Artists was the most unusual and inspiring for us. We collaborated with Only Connect Festival of Sound that made a musical celebration of the work of J.G. Ballard.

Inside the House of Artists, we stationed our pop-up-library just outside the concert room, and as the guests came out in the intermissions, they would bring their wine, discuss the music, and browse our collection of Ballard and other related SF. There was a varied mix of people there, and we did not know how they would react to our little library. To our pleasant surprise, our presence was so appreciated that we lent out 20 books - around a third of all the books we brought to the event! We believe that the main reason so many people borrowed books that evening (except wine, music, high spirits and great literature), was the ease at which people could both borrow and return books. To borrow a book, they would only need to scan it with an RFID-reader connected to the touch screen computer, and then enter their telephone number. To return a book, they could hand it over to *any* library in Norway, and it would be sent back to us.

As stated before, the collection is open to the public, but also to interlibrary loans, so the books have been sent to many cities in Norway and indeed to other countries like Sweden, England and Germany. High schools, governmental departments and prison libraries have ordered books from us.

The SF collection as test base for library development - ongoing and future projects

Housing a special collection like the Science Fiction collection also means opportunities for technical development and innovations in the library. Many students in our scope - the sciences - have a deep knowledge about SF and this makes the collection a great tool for collaboration with our primary user groups. In our case, the SF collection is a defined holding in our library database which makes it easy to use as a test case in different projects.

In theory, there are few limitations to how the SF collection can be used. Two rules to follow are:

- 1) The items of the collection must be searchable through the library's online public access catalogue (opac)
- 2) All items must be available for loan (if not vulnerable, damaged or valuable).

But as we switched to a new opac (ExLibris primo) in 2014 and a new library database in 2015 (ExLibris Alma), we experienced some limitations in promoting the collection's content and in the speed at which we could enter new items into the database. That made us "think out of the box" and look for new opportunities regarding visualization and indexing. As we already had started collaboration with our university's interaction design course INF2260 for developing new services based on the User experience methodology (UX), it was easy to also add ideas related to the SF collection to the pool of possible projects.

For students at our university - mostly students of informatics, doing projects on a special collection that is both well-defined and easy to use in public outreach is interesting. For the library this means that we have several opportunities each semester to discuss the development of the collection with our primary users, and that we often have the opportunity to have projects connected to new technology with the collection as a core element.

For the librarians at the Science Library, the SF collection has been a collection that we have been able to treat with ease and creativity. We have made a temporary decision that, to make the acquisition process speedier, this collection is treated easier regarding the otherwise strict cataloguing rules. This decision has also been a great opportunity for us to help persons gain new competences, and to introduce them to the library sector.

The Visual Navigation Project

In collaboration with the Visual Navigation project at the University Library of Oslo, Yaron Okun, a student at the Department of Informatics, conducted a Master Degree on how to use a touch table to induce curiosity for both SF and the science of SF.



Image 4. Visualisation of the SF collection on a touch table

A selection of books and DVDs from the Science Fiction collection was hand-picked for the purpose of Yaron Okun's Master Degree, but we are still in the process of including larger sections of the collection into the project. The plan is to have this touch table located next to the collection to better introduce users to the it. The interesting aspect of this approach to accessing our catalogue is the contrast to the typical search interface of modern library front-end systems. The point of the touch table is to browse the collection rather than search for a specific item, and along the way get more entertaining information on each item than you would ordinarily get through standard library search interfaces. For example, the user can see video interviews with authors or trailers to movies and so on.

The cover scanning project

To better visualize our collection with new computer based services, we discovered at an early point the need to use visual components. In SF literature, the imagery on book covers is rich, colorful and perfect for public outreach. Many of these front pages can be found online via different services, such as the Google Books API, but there are also many that cannot be found. Many titles simply don't exist in the service database or they lack ISBNs which are required by the service. There can be thousands of front pages that we can't acquire online, or that have too poor quality. So what can be done? Our solution is the "front page box", which is rather home-made; it is constructed from an upside-down IKEA plastic storage box with a high resolution web-camera mounted in the "ceiling". By placing books on a RFID-reader inside the box, the cover is photographed automatically, and along with other metadata (like sleeve description), it is sent to the library servers after a librarian checks the quality of both image and metadata. To process our collection with the "front page box", we have engaged our student-helpers working in the library reception

Ideas for new projects

User-/interaction design projects involving students and the ongoing visualization project, and the touch table. Hopefully we will be able to gain more metadata than we obtain in our catalogue already.

Keyword-indexing – A project collaboration with the Library- and information studies at Oslo and Akershus University College of Applied Sciences.

Community and reviews - we want to establish a community which can review and comment (and add metadata) on the books in our collection. The aim is to make this as open as possible, so it will be possible to exchange the reviews and metadata with other services as Goodreads, etc. We are very excited about this, because it will hopefully add a much needed social dimension to the collection; and if it could unite and inspire the SF community in Norway, the Nordic countries, and abroad, it would be fantastic.

Funding - resources - open invitation

As previously mentioned the further development of the collection and projects related to it, is limited to monetary and personnel resources. To evolve from a voluntary project based on interest, our scarce “free” work hours, free time and donations, we need to find sources for a steadier course into the future. Therefore we have issued an open invitation “*The science of the Science Fiction collection*”. If the reader should be interested in doing projects with us or on the collection alone, please contact with the authors. We are always on the lookout for new projects, partners and collaborators in our aim to use and develop the collection as wide and long as possible. The latter is especially important in times with downsizing of library budgets - supporters from the outside will be necessary to maintain “internal goodwill”.

Conclusions and visions for the future of the collection

The Science Fiction Collection at the Science Library of the University of Oslo may be a very new collection and may still be much smaller than more well established collections internationally, but it has been growing at a very rapid rate thanks to the enthusiastic community surrounding it. The collection is in a rapid and constant development, not only with regard to number of items and organizations, but also in use and applications. Much material is still waiting to be fully incorporated and catalogued, including a large number of magazines and fanzines, and we expect the collection to hit its 10 000 and 12 000-item mark within the next two years. Parallel with the collection growing, we continue the work with organization and development possibility for user-interaction in dialogue with the user community surrounding the collection. We also want to continue to inspire both our colleagues at the University Library and the greater public both through activity in the library facility, and will continue attending external events. Hopefully, we will experience that the ideas tested on this collection could be reused on others, and that the user engagement will have a contagion effect that inspires to develop collections and services together with the librarians. And we do aim for the bold ambition to be one of the best and most user-friendly SF collections in Europe.



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Fragmented Fiction: Storyworld Construction and the Quest for Meaning in Justin Cronin's *The Passage*

Maria Lindgren Leavenworth and Van Leavenworth

Abstract: This article examines Justin Cronin's post-apocalyptic novel *The Passage* (2010), with emphasis on how literal and figurative forms of fragmentation and shifts between temporalities can affect the reader's storyworld construction. Working from the assumption that expectations connected to genre are a pivotal part of the reader's storyworld creation, the novel's temporal settings, the pre-apocalyptic Time Before and the post-apocalyptic Time After, are analyzed with particular attention paid to the ontological distance between readers and characters produced by fragmentation and temporal shifts, to the collapse and reconstitution of cultural knowledge, and to how various text types contribute to a destabilization of narrative authority. The reader's quest for meaning, collating information from various sources and temporalities to reconstruct or keep track of events, is mirrored by the characters' world building in the post-apocalypse as they (re)assemble information and cultural knowledge. The storyworld evoked in the mind of the reader, expanding with new details and events, thus finds a concrete parallel in the characters' (re)construction of the world. Since the latter process is collaborative, with characters having to pool resources to both survive and make sense of the world, and the former occurs within an individual meaning-making process, the organization of the novel occasions a sense of isolation in the reader, mirroring the overarching theme of the narrative.

Keywords: post-apocalyptic fiction, storyworld construction, immersion, *The Passage*.

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Justin Cronin's *The Passage* (2010), the first novel in a trilogy, depicts a post-apocalyptic US plagued by a virus which turns victims into vampire-like beings, and which is spread by twelve initial test-subjects with super-human strength and abilities. By killing or turning their victims, the creatures forcefully decimate the nation's population and the spreading contagion cuts the US off from the rest of the world and isolates surviving groups of humans. The novel is divided into eleven books, the first two engaged with the before, during and shortly after the apocalyptic moment, the remaining nine focused on a struggling post-apocalyptic community almost a hundred years later. Interspersed sections in several of the books, as well as a postscript, also move the narrative perspective to a distant future in which the apocalypse and its aftermath, as chronicled in diaries or evinced through recovered artefacts, are studied.¹

The transitions between these temporalities structure *and* rupture readers' knowledge and create an ontological distance to the main characters. The reader of the novel is privy to the nature of the threat and the context in which it appears, imaginatively relocates to the post-apocalyptic setting in which rules of existence are estranging and in which cultural knowledge has been lost or suppressed, and needs to take into account that some form of life remains a millennium into the future. The reader's storyworld construction thus requires engagement with what David Herman refers to as the "complexities in the design of the blueprint" that the novel constitutes (*Basic Elements of Narrative* 107) and that evokes in the mind of a reader "mental models of the situations and events being recounted—of who did what to and with whom, when, where, why, and in what manner" (106, 107). To examine potential complications in the engagement with the novel, we take as one starting point Herman's contention that readers of a fictional text are required to relocate to the storyworld in question "if they are to interpret referring expressions . . . and deictic expressions . . . —mapping them onto the world evoked by the text rather than the world(s) that the text producer and text interpreter occupy when producing or decoding these textual signs" (113). To make sense of events and characterizations and to navigate the narrative thus require readers' immersion in the world evoked. However, in a later work, Herman draws attention to particularly challenging texts that are designed in such a way that they inhibit or even actively derail attempts to build a definitive storyworld—attempts in which, however, those texts also paradoxically invite interpreters to engage" (*Storytelling and the Sciences of Mind* 147). The numerous complexities of Cronin's novel and the potential invitations and inhibitions these extend to the reader work in tandem with a thematic and structurally salient fragmentation.

The Passage is not an extreme type of "non- or antinarrative" which actively prohibits storyworld construction (*Storytelling and the Sciences of Mind* 147), but both encourages immersion in the storyworld and emphasizes its ongoing process of construction. In this manner it aligns with Merja Polvinen's claims about works of self-reflexive fiction which "build a reader position which assumes readers to be able to maintain . . . two states of mind at the same time—one experiencing the presence of a fictional space, characters and events, and another acutely aware of their imaginarity" (20). Polvinen demonstrates this through an analysis of China Miéville's *The City & The City*, a work of speculative fiction that, similar to *The Passage*, imagines a world developed yet highly distinct from real-world referents.

Working from the assumption that expectations connected to genre are a pivotal part of the reader's storyworld creation, we examine the novel's temporal settings, the Time Before and the Time After, with particular attention paid to the ontological distance between readers and characters, to the collapse and reconstitution of cultural knowledge, specifically as regards vampires, and to how various text types contribute to a destabilization of narrative authority. The reader's quest for

¹ The second installment in the trilogy, *The Twelve*, was published in 2012 and *City of Mirrors* in May 2016. The former evokes an expanded storyworld with a similar focus on the Time Before and the Time After, and the latter contains lengthy sections set a millennium into the future. Here, we contend that individual novels in a series can be regarded as discrete blueprints for the reader's storyworld construction.

meaning, collating information from various sources and temporalities to reconstruct or keep track of events, is mirrored by the characters' world building in the post-apocalypse as they (re)assemble information and cultural knowledge in order to be able to combat the threat. The storyworld evoked in the mind of the reader, expanding with new details and events, thus finds a parallel in the characters' (re)construction of the world. Since the latter process is collaborative, with characters having to pool resources to both survive and make sense of the world, and the former occurs within an individual meaning-making process, the organization of the novel occasions a sense of isolation in the reader, suited to the overarching themes of the narrative. The different forms of fragmentation thus frustrate attempts to create complete cohesion, but simultaneously invite both characters and readers to build the world anew.

The Time Before

Eschatological fictions constitute an opportunity for authors and readers to engage with questions of identity and meaning in the shadow of the end. Frank Kermode establishes that (post)apocalyptic stories and imagery routinely follow real-world social and technological change and “underlie our ways of making sense of the world from where we stand, in the midst” (29). What concretely occasions the apocalypse in Cronin's novel is a scientific discovery that bats in the Bolivian jungles carry a virus that can temporarily cure serious illnesses and leave individuals rejuvenated through a re-boot of the thymus gland. The genetic discovery is corrupted by military involvement and leads to an experiment, Project NOAH, in which twelve prisoners on death row are injected with the virus in the attempt to create superhumanly strong and fast soldiers. The promise tendered by the genetic discovery in *The Passage* is in this way complicated by contemporary concerns likely shared by both characters and readers regarding genome alterations and fast-spreading biological or computer infections, and is turned into catastrophe when the vampire-like beings break out of the Colorado test facility they are in to wreak havoc on the world.

Two epigraphs on one level emphasize the work as a construction and on another level prepare readers for the diegetic impending doom. The first, appearing before the entire narrative starts, presents Shakespeare's 64th sonnet, with the exception of the last two lines, which has been described as “catalogu[ing] instances of inevitable destruction so as to provide a consolation for death” (Stockard, note 17, 480). The second epigraph, prefacing the first book, is a quotation from Katherine Anne Porter's “Pale Horse, Pale Rider” (1936) which, forging a thematic similarity with *The Passage*, revolves around a plague (the influenza pandemic of 1918). The quoted section includes the phrases “[t]he road to death is a long march beset with all evils” and “no covering of the eyes shuts out the landscape of disaster; nor the sight of crimes committed there,” thus emphasizing horror and inevitable destruction (Cronin 1).² In his seminal study of the paratext, Gérard Genette argues that the epigraph, quite literally on the threshold to be crossed on the way into the text, is a “mute gesture whose interpretation is left up to the reader” and thus naturally out of reach for the characters (156). In the context of storyworld construction, readers' interpretations of the epigraphs may thus imbue the text with additional meaning: the epigraphs supply information which sets up a context of destruction, while being inaccessible to the characters about to face it.

Setting the novel apart from many other post-apocalyptic fictions, Cronin carefully outlines what in later sections of the novel comes to be known as the Time Before. Although imaginatively returning to the past that determines their present, the man and boy in Cormac McCarthy's *The Road* (2010), for example, are introduced as traversing an already destroyed landscape, Robert Neville in Richard Matheson's *I Am Legend* (1954) is trapped in his isolation at the very start of the novel, and six hundred years have passed since the nuclear apocalypse in Walter M. Miller's *A*

² All formatting corresponds to the original.

Canticle for Leibowitz (1960). Mary Manjikian argues that “a sense of unease” is produced “in the contemporary reader” by the device utilized by authors like these “in which a future point is identified and then contemporary events are reread as history by an omniscient narrator who already knows how the story turns out” (220). Events more or less contemporaneous with the reader are in the post-apocalyptic narratives revealed as “regressive” rather than “progressive” and as a consequence, he or she may be “‘lost’ in the narrative” (220-221).

While facilitating aspects of the reader’s world-building, Cronin’s narrative strategy of delineating events leading up to the apocalyptic moment, the moment itself, and its immediate aftermath, may result in a different sense of being lost, because the depicted world is only slightly removed from the reader’s present. Following J. R. R. Tolkien, Mark J. P. Wolf describes storyworlds as secondary worlds that imaginatively derive from the Primary World in which authors and readers exist (24). The degree of “‘secondariness’ of a story’s world” is contingent on to what extent “new combinations of existing concepts . . . replace or reset the Primary World defaults” (24, 25). Events in the first two books in *The Passage* are indicated to play out around 2014, four years after the publication of the novel, and its contemporary reader is faced with a fictional setting, reasonably close to the Primary World. Disturbing developments then heighten the world’s secondariness. For example, Hurricane “Vanessa” has caused extensive damage to New Orleans and in the novel’s initial present, the city is “patrolled by Homeland Security forces in full battle dress” (Cronin 65). Added is also a sense of renewed or intensified global hostility, rendered in biological terms: “war was everywhere, metastasizing like a million maniac cells run amok,” and it is made clear that the hoped-for super-soldiers infected with the virus would be put to use “in the mountain caves of northern Pakistan, or the eastern deserts of Iran, or the shot-up buildings of the Chechen Free Zone” (Cronin 84, 183). Rather than evoking a storyworld completely separated from the actual world, *The Passage* is anchored in a context which then has to be incrementally adjusted.

Although events in the fictional setting do not drastically reset the defaults of the Primary World, the novel’s first sentence, containing a proleptic description of Amy, one of the protagonists, pulls in a different direction. Although Amy is in the initial present “just a little girl,” she will become “the One Who Walked In, the First and Last and Only, who lived a thousand years” (Cronin 3). Immediately after this brief indication of Amy’s future fate, the narrative shifts back into delineating her earliest childhood and to how her mother is forced to abandon Amy at an orphanage in Memphis. Long before being transformed into a near-immortal, however, Amy is portrayed as already, inexplicably, extraordinary. The most salient example of her apartness is when Amy is taken to the zoo where she communicates with the caged polar bears, telling her distraught minder Sister Lacey that the bears know “[w]hat I am” and inciting a general uproar in the other animal exhibits (97). These conflicting images of Amy create a number of what Alan Palmer refers to as “ontological gaps” in the evoked storyworld (34). Amy’s “true” nature is in the novel’s present that of a young, vulnerable girl, albeit with unusual powers, and in the projected future that of a singular survivor, likewise with abilities that set her apart. What these gifts and abilities yet mean within the storyworld is not determined, and Amy’s fictional mind remains challenging because of the double temporal perspective. Further, a distance is created between the reader and the characters she interacts with in the “now” of the narrative, since the latter have no knowledge of the references indicating what Amy will become.

The main resetting of Primary World defaults, however, results from the novel’s hybrid genre-belonging; while anchoring some events in science it also borrows heavily from the fantastic genre, specifically from vampire horror. Yet, at the outset references to vampires as belonging to myth and legend align readers and characters. Professor Jonas Abbott Lear, who makes the initial discovery of the virus in Bolivia, is asked by a high-ranking military officer if he is “the vampire guy” and relating the event to a friend in an email, Lear reflects: “You know how I feel about that word—just try to get an NAS grant with “vampire” anywhere in the paperwork” (Cronin 20).

Illustrating a wish to avoid a derogatory term, Lear's initial and subsequent emails simultaneously gesture to a reality that is more difficult to align with fiction. He refers to statues found in the jungle, photographs of which are attached to the messages (images not included in the predominantly text-based novel) and by way of explication instructs the addressee to direct attention to "the bent animal posture, the clawlike hands and the long teeth crowding the mouth, the intense muscularity of the torso" (21). He also likens the objects to other artefacts: "the pillars at the temple of Mansarha, the carvings on the gravesite in Xianyang, the cave drawings in Côtes d'Amor" (22). The references conjure up an image of a possibly supernatural presence, surfacing periodically in different times and cultures. The relatively slow process of turning realism into the fantastic "enable[s] readers to recenter themselves in a fictional world that is governed by different physical laws (and therefore accommodates different possibilities) than the world of everyday experience" (Herman, *Storytelling and the Sciences of Mind* 147). In the process of storyworld construction, that is, vampires as traditionally envisaged remain lodged in the domain of the fantastic and something new, but related, takes their place.

Even as the test subjects in Project NOAH begin to exhibit traits that align them with vampires in the cultural tradition, the word vampire is used sparingly, and only when other descriptors seem insufficient. In contrast to many contemporary vampire narratives, the monster's perspective is only sporadically represented in *The Passage*, which contributes to exacerbating the threat it constitutes. These glimpses reveal further ties to common conceptions of vampiric strengths and weaknesses including a loss of individuality, insatiable blood lust, and abilities to powerfully influence human minds. Along with references to the selection process and the test subjects' isolation, these glimpsed perspectives can be used in the reader's storyworld construction, but are inaccessible to the human characters populating the Time Before. Although both readers and select characters start to conceive of the test subjects as progressively more monstrous, they may do so for different reasons: the former because of what they are explicitly told about feelings of alienation, dehumanization and violence, the latter because their close proximity to the test subjects allows them to observe aberrant behaviors.

The apocalyptic moment in *The Passage* represents a figurative border that produces a higher level of secundariness of the fictional world. And the moment is clearly demarcated: it takes "[t]hirty-two minutes for one world to die, another to be born" (Cronin 192). This, then, is when the test subjects break out of the facility they have been held in and upend the state of affairs in the surrounding world. The narrative's focus on Amy, who has been taken to Colorado by the FBI agent Brad Wolgast to be a thirteenth test-subject, means that the reader is situated in close proximity to the catastrophe, a witness to its climax, and the ensuing shifts between various perspectives give a relatively complete picture of events.

Considering the novel's opening sentence, it is not surprising that Amy survives the disaster, and in book two Wolgast brings her to Oregon to weather the aftermath of the apocalypse during what is referred to as the "Year of Zero" (Cronin 211).³ Rumors travel among the scattered survivors, relayed through the Internet and intermittent newspaper reports. The first newspaper article represented in the novel effectively enforces the difference between anonymous masses on the one hand and the reader, Wolgast and Amy on the other: the latter have witnessed the apocalypse and can see through the attempts to couch reality in slightly more reassuring terms. The article refers to the outbreak as the "Colorado fever virus," perceived as spread by "anti-American extremists," and to the Government's aim to "punish those responsible" (223). In the second news report, published two months later, the infection is straightforwardly referred to as a vampire virus. The main story of the piece is the fall of Chicago; victims are divided into casualties and infected

³ This designation may mean that time has been reset after the apocalypse for Wolgast, but within the storyworld this also alludes to "Subject Zero," the first of the infected, whose actions allow the test subjects to escape.

and there are reports of fires following flyovers, but no confirmation that this is part of an official strategy to contain the virus. The political decision is important to the reader, however, since it makes understandable the detonation Wolgast and Amy later experience and which ends the former's human life. Included in the report are also references to the first steps taken to divide the country, thus foreshadowing the severely fragmented humanity that will exist in the post-apocalypse. Despite the time lapse between the two reports, their details allow the reader to fill in the blanks and construct a causal chain in which resistance has given way to desperation.

The sections of the novel set in the Time Before are thus thematically joined by various processes starting or resulting in isolation even before the apocalypse occurs. For example, all the nuns at the orphanage in Memphis, except one, are killed once Amy has been taken away. Project NOAH is based on the idea of "[z]ero footprint," that is, the test subjects (including Amy) and workers at the facility are chosen because they have no immediate family or friends that will miss them (89). As Herman argues "different kinds of narrative practices entail different protocols for worldmaking, with different consequences and effects" (*Storytelling and the Sciences of Mind* 105). The fragmentation of humanity is expected in (post)apocalyptic narratives, and paralleled in *The Passage* by the switch between different text types and narrative perspectives already in the Time Before. The evoked storyworld is thus one of uncertainty, on the levels of both content and structure.

The Time After

The mix between the genres of science fiction and fantasy/horror in *The Passage* continues to set up protocols for storyworld construction, and the devastation of a recognizable environment and culture in the post-apocalypse is expected, as are a marked absence of security, a shortage of resources, and an absence of overarching laws. The bulk of *The Passage* is set almost a century into the future, paratextually signaled at the opening of each book by the temporal marker 92 A.V., the abbreviation arguably standing for After Virus or After Viral Outbreak.⁴ The reader's transition into this new present is complicated, however, by a mix of text forms that draw attention to rather than close narrative and ontological gaps, and references to yet another temporality.

The short, third book, "The Last City," marked 2 A. V., opens with an undated evacuation notice from Philadelphia, with information about the procedure and what each child must and cannot bring. Then follows an excerpt from a book presented at the conference taking place in 1003 A.V. While all fiction, Palmer notes, "is necessarily incomplete and full of blanks where nothing is said about a part of the storyworld and gaps where something but not everything is said" (34), the slight temporal difference between books two and three in *The Passage*, along with references to texts and artefacts that have been produced in one time and consumed in another, place high demands on the reader's cognitive engagement. The reader is kept close to the Time Before, and then informed that some form of life exists also a millennium from the apocalyptic event. However, the book excerpt contextualizes the evacuation notice by giving a first-hand account of the process of forced relocation. In the passage from the book, Ida Jaxon (at this point unfamiliar to the reader) reflects on her childhood memories in Philadelphia, being separated from her family; she describes the windowless train cars, and how children as well as adults are shot in the confusion surrounding the boarding. Palmer argues that "real-world knowledge, . . . stereotypical sequence[s] of events, and . . . ways of reacting to stereotypical situations and events" are used to fill in the gaps occurring in all written discourses (46). Although the aim of the journey is to save the children, the reader's

⁴ The characters do not use the abbreviation A.V., only refer to the year 92, but a reference is made to "the GREAT VIRAL CATAclysm" which resets time (Cronin 265).

emotional response may be one of trepidation as the text forms together evoke images of trains to concentration camps, and by extension genocide.

The fourth book, “All Eyes,” opens with a text presented in the distant future and then shifts to 92 A. V., the timeframe in which the actual narrative plays out, but the juxtaposition in this instance means that the distance between the reader and the characters is enhanced: the latter’s dwelling place and judicial documentation may be perceived as objects of study in a future setting. A reconstructed map of the Colony is followed by a document from 17 A. V. which outlines the structure and organization of an agricultural society. It is not indicated who, or by what means, the map has been reconstructed, but it is signaled as presented at the 1003 A. V. conference, whereas the “DOCUMENT OF ONE LAW” is inserted without reference to it being accessed in the distant future (Cronin 264). What the latter makes clear, however, is that the fragmentation and isolation beginning in the Time Before are sustained in the post-apocalyptic world and that literal as well as figurative boundaries have been erected. References are made to the importance of family belonging, to “THE WATCH” upholding the safety of the community through firepower, and to “THE SANCTUARY,” in which children are kept separate until their eighth birthday (265). Anyone violating the rules ensuring that a quarantine is kept, such as the use of a radio or opening the gate, or divulging information to the young children about the surrounding world, receives “the penalty of PUTTING WITHOUT THE WALLS” (266). The two texts provide a visual image and a shorthand to rules of existence in the setting the reader is about to imaginatively relocate to.

The first chapter focused on life in the Colony opens with another prolepsis introducing Peter Jaxon, “Peter of Souls, the Man of Days and the One Who Stood [who] in the last hours of his old life” is waiting on the high wall surrounding the community (267). Forging a link with Amy in the Time Before, Peter is doubly introduced: as the individual he is at the moment the reader meets him, and as who he will become once his life transitions into something new. As with Amy, the reader alone is privy to the fact that a transformation is imminent and arguably uses this knowledge in the process of character and storyworld construction.

Emphasizing the secondariness of the fictional world, the chapter effectively summarizes past and present human existence in the isolated community, which may facilitate the reader’s orientation in it. In fact, Peter’s thoughts, which are described as, “a mental inventory in three dimensions with complete sensory accompaniment,” flesh out the previously inserted map by adding details such as “the smell of animals,” the “fog of humidity” in the greenhouses, and “the voices of Littles playing” outside the Sanctuary (268). Peter occupies an isolated, bird’s-eye perspective in this scene. No one speaks to him this evening, “the sixty-third of summer,” because he is waiting on the wall “to serve the Mercy” for his brother: to kill Theo should he return as a “viral” (268, 270). New familial obligations have thus been introduced as individuals are transformed, and left alone on the wall, Peter reminisces about the past hope for rescue and contact, about his own father’s journeys as far away as the Pacific Ocean, and about the diminishing possibility of encountering a Walker, that is an uninfected human, outside the Colony. This history chronicling a progressively more circumscribed and isolated life is concluded by Peter thinking about the beauty of stars, witnessed and talked about by both his father and by their relative Ida Jaxon, who is consequently re-introduced to the reader and placed within the 92 A.V. temporality. The stars, however, remain invisible to him as Second Bell tolls, instructing those working outside the wall to return, as the heavy gate closes, and “the lights c[o]me on” (275).

The situation the reader navigates is consequently one of paranoia and unrelenting light due to the ever-present threat of photophobic virals, and one in which much knowledge is lost or has been repressed. The few books that are “allowed to remain” in the Sanctuary gesture to the many that have been deemed unsuitable because “the Littles . . . were not to know anything about the virals or what had happened to the world of the Time Before” (270). Starting with withholding information from the children, the ignorance follows characters into adult life: as Peter reflects,

“most things from the Time Before” confound him. “How did people live? . . . If there were no virals, what made them afraid?” (296). Peter and the other characters in 92 A. V. are one or two generations away from the apocalyptic event but not necessarily aware of what they no longer are allowed to know. The result is an ontological distance between characters and readers, and potentially also a sense of frustration in the latter as some information could be of importance in the new circumstances. The reader is consequently in a curious position, bit by bit learning about the new conditions of 92 A. V., while simultaneously knowing considerably more than the characters about the past that defines their existence.

The well-lit post-apocalypse suffers from a crisis that introduces an end-within-the end: the depletion of mundane batteries. “Mankind had built a world that would take a hundred years to die,” one character reflects. “A century for the last lights to go out” (306). The novel’s second turning point is a result of this crisis and a crumbling trust between the Colony’s inhabitants, foreshadowed by repeated references to dreams and nightmares. These dreams often “feel like . . . someone *else’s* memories” and Colony leader Sanjay Patel perceives of the nighttime voice as belonging to an “imaginary friend . . . singing its mysterious name: *I am Babcock*” (Cronin 451, 408). Babcock is one of the original test subjects in Project NOAH and his ability to influence minds is in this way continued from the Time Before. The Colony inhabitants are also pitted against each other through Amy, who inexplicably has Walked In to the community and who possesses unnatural gifts of healing. In this fraught situation, the lights go out and the thirty-two apocalyptic minutes that end the world in the Time Before, are in the Time After replaced by three nights of violence and destruction as the community is invaded by virals. The end of a century of relative safety prompts Peter and a small group to set off towards Colorado to track down a radio signal—a faint and forbidden trace of the technologically advanced society preceding them—to establish contact with others and, if possible, avert the threat of a definite, nation-wide end.

Amy, who in this temporality is still superficially a young girl, accompanies the small band of characters, and the century that separates the reader’s encounters with her produces a significant ontological gap. As Palmer argues, the assemblage of a complete fictional consciousness is contingent on a “process by which the reader constructs a series of encounters with a particular fictional mind into something that is coherent and continuous” (186). That is, through coalescing a character’s “cognitive, ideological and perceptual viewpoint[s],” the reader assembles a representation of a mind through narrative clues: statements, actions, reported thoughts, and emotions (187). “[W]hat is not made explicit under [a] particular aspect is indeterminate,” Palmer continues, and it is down to “the competence of the reader to fill in the gaps by creating more aspects under which the character may be implicitly or hypothetically perceived,” a process commonly made easier because of the reader’s real-world experience of constructing whole minds of people she or he encounters sometimes only sporadically (198).

Amy, then, is challenging on the one hand because of the scant narrative clues given, on the other because her unchanging appearance and supernatural gifts lack real-world referents. In the final brief chapter in book four, the reader follows an unnamed female character moving with the changing seasons, asking the question “*who am I*,” and having dreams, which, like the Colony inhabitants’, answer the question with “*I am Babcock. I am Morrison, I am Chavez. I am Baffes-Turrell- Winston-Sousa-Echols-Lambright-Martinez-Reinhardt-Carter*” (351, 354). As the reader knows that Amy is the thirteenth test subject, the list of the previous twelve help establish that the text passage is indeed centered on her, but the poetic and fragmentary nature of the chapter raises more questions than it answers. As Petter Skult argues, building on Palmer’s ideas, “all that is not viewed, named, placed by the author, becomes a sort of ontological gap in the reader’s mind” (106). The innumerable experiences (the unnamed) Amy must have had during almost a century are unaccounted for and the reader encounters her on terms relatively similar to the characters’ in 92 A. V., bit by bit learning about her isolated existence and extraordinary gifts.

This form of ontological gap to be filled in by characters and readers alike is paralleled by the “reclamation” of geographical areas, knowledge of which has been lost in the post-apocalypse; as these “are again named” in the narrative “they emerge out of the ontologically gray-spaced unknown” (Skult 108). The fragmentation characterizing existence in *The Passage*, however, entails an incomplete or only partial reclamation of physical space. The most effective example is when Peter, Amy, and the small group enter a dilapidated large city. Even though unfamiliar with cities as such, the artificiality of it strikes the travelers as markedly different from what they have expected. Names of buildings, such as Mandalay Bay and The Luxor mean nothing to the travelers and neither do signs outside shops such as “Prada, Tutto, La Scarpa, Tesorini” (Cronin 522). The clash between reclamation and collapsed cultural memory is especially pronounced in the characters’ reactions to “a massive structure of ribbed steel [with] four legs that tapered to a narrow tip” (527). Several characters recognize the Eiffel Tower and know it should be in Paris, as they have encountered images of it in books from the Time Before. The illogic of seeing it in their own country, however, makes them reach the conclusion that it must have been moved to this strange place from France. There is thus a lingering awareness of places beyond the country’s boundaries, but no active memory of Las Vegas, the latter hindering the characters from reclaiming the abandoned city through naming. To the reader, in contrast, the descriptions of the city arguably result in a process of reclamation, as well as the construction of a causal chain of destruction pre-dating the small group’s arrival.

The fragmentation of knowledge regarding vampires in the evoked storyworld similarly introduces a significant distance between characters and readers, one that is potentially frustrating because some knowledge of vampires could help the characters. In the Colony, as previously noted, all vampire-related fictional artefacts are inaccessible, and a pseudoscientific explanation of the process of transformation is presented, by which “a virus [steals] the soul away” from the infected (270). This is represented as “the one truth from which all other truths descended,” and introduced to children when they leave the Sanctuary on their eight birthday (270). However, the intermittent contact between the small group and other survival communities illustrates that all have assembled their own stories and explanations, and also that levels of suppression vary. At a military compound, Peter is present at a showing of Tod Browning’s 1931 film *Dracula*. Of course, he has had no previous contact with the visual medium, but then realizes that it is “[a] story, like the old books in the Sanctuary, the ones Teacher read to them in circle” (656). Despite this reference to fiction, Peter’s conclusion is that “the movie seemed almost to be a kind of instruction manual” and that it may reflect a real past event (657). Given this understanding, Peter assumes that Jonathan Harker in Browning’s film will perform the Mercy once it is clear that his wife Mina has been turned. Here, the film showing grinds to a halt because of a viral attack and it is not until later that one of the officers tells Peter what happens. ““They don’t kill the girl. They kill the *vampire*. Stake the son of a bitch right in the sweet spot. And just like that, Mina wakes up, good as new”” (742). Peter’s experiences make him misread the events in the film, but it is nevertheless instructive since, it turns out, killing one of the original virals releases the souls of those he has turned.

The group’s meetings with other isolated pockets of humanity also highlight the conflicting stories told about the apocalypse. In Colorado, Peter is told by a general that: ““Some people say the quarantine worked, that the rest of the world is just humming right along out there without us. . . . Others believe . . . that everybody’s dead [and] that the quarantine wasn’t quite as tight as people thought”” (650). Logic underpins both strands of development. In the former, the communication silence surrounding the US is explained by an “electronic barricade” matching the geographical, in the latter, the breach of the quarantine is seen as a result of greed (650). Inhabitants of other nations would have been unable to resist the suddenly unguarded valuables, resources and military equipment, but as a result of their infringement, they have likely carried the virus back to where

they came from. To Peter, this speculation is logical and leads him to see the world as a forever “empty place” (650).

The reader, however, is put in another position due to the knowledge of “the Third Global Conference on the North American Quarantine Period” in 1003 A. V. as it demonstrates that some form of life exists after the apocalypse and that, by extension, Peter’s conclusion is faulty (250). Manjikian comments that post-apocalyptic narratives commonly make “the reader . . . ‘decentered’ because the narrative he [sic] has used to make sense of the world has been rewritten, and as a result his [sic] sense of place is different” (206). In *The Passage*, the reader has already been decentered twice as the recognizable landscape of the US has first undergone a crisis, then been depicted as a bleak post-catastrophe world. The conference, then, introduces a third set of assumptions the reader has to contend with. However, very little is said about the conference participants and audience. Manjikian argues that they are “anthropologists and historians from the future” and that the results they “present are based on their analyses of hand-written journals and other artifacts rescued from the new post-apocalyptic civilization” (214). This reading demonstrates Manjikian’s own cognitive filling in of gaps in the narrative, as she is assigning identity to characters not explicitly described and awarding them an agency which likewise is not part of the narrative in *The Passage*.⁵ The reader’s knowledge of the conference proceedings is just as likely to result in an uneasy identification process that fills an important decentering function, forcing him or her to ask questions about the motives and identity of the conference participants.

The conference takes place at the “Center for the Study of Human Cultures and Conflicts [at the] University of New South Wales, Indo-Australian Republic,” a geographical location that does not in itself suggest that the US is still uninhabitable, but that other changes have taken place (Cronin 250). In an analysis of neo-imperial tendencies in Cronin’s novel, Glennis Byron and Aspasia Stephanou maintain that “older colonial assumptions about the primitive other are . . . put into play” and “racist attitudes” are reinscribed, particularly in placing the discovery of the virus in “uncivilized” South America (193). The conference is left out of Byron’s and Stephanou’s discussions, but it illustrates a reversal of positions. Again, since it is impossible to determine the identity and objectives (even the species) of the scholars within the narrative, it is difficult to state how they see the objects presented. The featured documents produced in a distant past can be seen as signs of a highly developed preceding civilization, or as artefacts belonging to a primitive phase. However they are viewed, the characters the reader has come to identify with become objects of study, and as Othered in this process as previous civilizations in the reader’s “now.”

Conclusion: Fragmentation and Collaborative World Building

In all processes of storyworld construction, Herman argues, readers “do not merely reconstruct a series of events and a set of existents, but imaginatively (emotionally, viscerally) inhabit a world in which, besides happening and existing, things matter, agitate, exalt, repulse, provide grounds for laughter and grief.” Even if these reactions and responses are not always identical, they need to be experienced “both [by] narrative agents and [by] interpreters working to make sense of their circumstances and (inter)actions” (*Basic Elements of Narrative* 119). In *The Passage*, the challenge to the reader’s immersion is foremost underscored by temporal and structural fragmentation which demands that the reader continuously reorients her- or himself. Immersion into two separate timeframes is consequently required and the erratically inserted sections from the future conference disrupt the process, especially as they remain unconnected to a narrative progression and lack specified narrative agents. This potential deferral of immersion may be paradoxical at the outset

⁵ The third installment of the trilogy reveals that Manjikian’s assumptions are correct. However, her 2012 discussion is (and could only be) based solely on *The Passage*.

because the mental construct evoked in the mind of the reader, the storyworld which continues to expand when narrative details are added to it, finds a parallel in the world building of another kind as inhabitants of the devastated post-apocalypse try to piece information together and reconstruct the world.

In relation to the world building that takes place in the novel, the reader's position within and movement between temporalities can also occasion a sense of isolation. The characters in *The Passage* are on different levels presented as cogs in a machine. Figuratively, characters from the different time tracks are revealed to complement each other—there is a sense of fate guiding their actions which points forward to an eventual resolution. In literal ways, each character strategically utilizes his or her specific strengths and abilities. Survival in the post-apocalypse is thus a question of teamwork as far as the human characters are concerned. The reader's process of storyworld construction is of a related, yet distinct kind. In some respects, there are significant parallels, especially when the protagonists encounter individuals or communities that can complement or supplant previously held information. In these instances, ontological gaps are filled in by the reader and characters in tandem: the characters' world expands as does the reader's storyworld. At other times the reader is in a privileged position with cultural memory intact and with access to information hidden from the characters. The evoked storyworld is in these cases significantly larger than the world and world-knowledge held by characters confined to a particular temporality. Finally, the novel's protagonists in the post-apocalypse do not have to learn about their own reality as the reader is required to do: the characters' world stays the same, the evoked storyworld expands. Ultimately, the characters' world building and the reader's storyworld construction pull in different directions and preclude an alignment between the reader and the characters he or she is invited to laugh or cry together with. Effectively mirroring the salient theme of Cronin's novel, the reader is alone.

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Not long before the end? SF and the economics of resource scarcity

Jesper Stage

Abstract: The commodity price booms of the early 1970s and of 2006–2014 were both associated with predictions of devastating scarcity of key natural resources, in popular media as well as in science fiction. However, both price booms ended within a few years for largely similar reasons, linked to the economic incentives that high commodity prices create. Given the economic forces that ensure that spells of resource scarcity usually do not last, writers of science fiction set in scarcity futures, especially fiction of the “if this goes on...” type, need to provide plausible reasons why those forces might stop working. This paper examines how authors describing resource-scarce future Earths have attempted to offer such reasons, and how those reasons have evolved over time.

Keywords: natural resource scarcity, economics, science fiction.

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The commodity boom in the early 1970s and the boom in 2006–2014 both led to high prices for many raw materials. Both price spikes were associated with predictions among natural scientists and in the popular press that the world was running out of key natural resources (see e.g. Meadows et al. for the first price spike, and Kjell Aleklett, Robert A. Lovett, or Robert Silverberg for the second). In both periods, SF writers picked up on these predictions, and “scarcity stories” – SF set in resource-scarce futures – increased in popularity. Despite the obvious similarities between the two periods, there were key differences between the scarcity stories written during those periods. One important difference was that the second generation of scarcity stories was written for readers who were at least to some extent aware that the pessimistic predictions of the 1970s had not, in fact, come true. SF writers needed to account for this in their authorial world-building, and provide plausible explanations for why the economic drivers that had resolved the temporary resource scarcity problems of the 1970s would not again do so.

The economic forces that tend to end spells of resource scarcity and high resource prices are well understood (see e.g. Jon M. Conrad or Barry C. Field for standard treatments of this topic in natural resource economics). Increased absolute or per-capita scarcity of a natural resource will in most cases tend to make production (or, in the case of non-renewable resources, extraction) of the resource more costly, driving up the price of the resource for its users. This will in turn tend to

reduce demand for the resource in the short run, as well as encourage users to switch to other, usually worse, alternatives. In the slightly longer term, the higher price of the resource will make it more profitable to (i) develop means of using existing sources of the resource more effectively, (ii) identify new sources of the resource, (iii) improve existing alternatives to the resource, and (iv) develop new alternatives to the resource. This will create incentives for innovation and development of technologies that permit one or several of these four options to be put into effect more cheaply, gradually driving down the price of the resource in question either because more of the resource becomes available or because users are able to shift to improved alternatives. Notably, while all four sources of innovation will tend to matter in practice, in principle any one of them would be enough to resolve the problem on its own – at least in the longer term. Thus, an SF author who accepts this mainstream analysis of resource scarcity, and who wishes to set a story in a future world where some key resource has become permanently scarce, will need world-building where it is plausible either that the potential for profits has stopped having an impact on these four forms of innovation or, alternatively, that innovation itself has become infeasible.

There could be several reasons for the author of a scarcity story to disregard the standard economic analysis of why increased natural resource scarcity is normally a temporary phenomenon. Some of the natural scientists in both generations of price-spike literature (Alekklett can again serve as a useful example from the more recent spike) explicitly rejected economists' analysis of the problem, including the premise that innovation could help resolve the resource problems that they discussed. Thus, an SF writer could similarly choose to reject the standard analysis and write a story where, for physical reasons, innovation has become more difficult than in the past.

Another reason to disregard the standard economic analysis could be that the SF author simply wants to tell an entertaining story and does not wish to give too much thought to background detail. However, scarcity stories are frequently in the "if this goes on..." tradition of SF, aiming to warn readers of what might happen in future with increased scarcity of one or several important resources. Thus, the need for plausibility is harder to brush off than in SF written for other purposes. Indeed, if a key purpose of a story is to warn the reader of what might happen if some trends continue unabated, the author needs to convince the reader that the story actually provides a reasonable picture of the future to which those trends might lead.

Of course, rather than an SF author's rejecting the standard economic analysis, s/he may simply be unaware of it. Many authors continue to feel that, rather than referring to the disciplines in question, they can handle social science aspects of their stories through reliance on "common sense" reasoning that may not align very closely with what those disciplines actually have to say about the topics in question (thus, for instance, Brian Stableford notes (1129) in the *Encyclopedia of Science Fiction* that "the influence of academic sociology [on SF] is clearly negligible" – this when writing about ostensibly sociological SF). There is an increased expectation among readers that writers should strive to get key aspects of the natural and social sciences right in their stories; nonetheless, there is no question that some disciplines remain more equal than others in this respect. Authors disregard mathematics or physics at their peril, but while there is a growing expectation that authors should also attempt to make, for example, the biology, sociology and economics in their stories plausible, the bar remains substantially lower for these disciplines.

Thus, studying how authors of scarcity stories explain – if they do – the continued resource scarcity in their stories provides an interesting test case for how SF deals with the social sciences in general. This paper studies some widely discussed scarcity stories from the two commodity boom periods to see how they deal with the role of economics, and also looks at a few other stories that can be used to illustrate specific aspects of this. Economics is rarely discussed at length in SF works, but scarcity stories form a strand of SF where this general rule might be broken. An author of scarcity SF who rejects the standard economic analysis of scarcity issues and believes that innovation is less feasible than such an analysis predicts (and, thus, also less feasible than it has

been in the past) can be expected to make this important premise clear in the story. An author who accepts the standard analysis, but nonetheless believes (at least within the scope of the story) that innovation is unlikely to solve the problem in practice, can be expected to explain why this is so. On the other hand, an author who ignores the standard economic analysis because of a lack of awareness of it can be expected not to discuss innovation at all – or, at any rate, not to do it in a way that contrasts the lack of innovation in the story with what one would expect from the mainstream economic analysis of scarcity issues.

Very few SF authors have set scarcity stories in futures where innovation has ceased for intrinsic reasons. Cyril M. Kornbluth (“The Marching Morons”) and Paolo Bacigalupi (“Pump Six”) both set stories in futures where the average intelligence has declined precipitously; Kornbluth explains this as being due to cumulative genetic deficiencies, while Bacigalupi blames environmental toxins for causing irreparable brain damage. A scarcity story set in such a background could, in principle, be used to explain a lack of innovation, but so far no writer has taken this approach. Notably, both Kornbluth’s and Bacigalupi’s stories focus on characters who are of above-average intelligence, presumably because it is difficult to write engaging stories about futures where everyone is of low intelligence. Scarcity stories set in such a future would similarly suffer from the problem that it is difficult to write engagingly about problems that only remain unresolved because the protagonists, and everyone around them, are markedly less intelligent than the reader is.

Another option for explaining a lack of innovation is to set stories sufficiently far into the future and in societies with sufficiently advanced technologies that physical laws preclude additional innovation. However, a detractor for such stories would be that the future societies described would have technologies sufficiently advanced to make them near indistinguishable from magic (Clarke), in turn making it difficult to write engagingly about the problem that these technologies cannot be further improved. Thus, for instance, Michael Moorcock, in his *Dancers at the End of Time* series (*An Alien Heat*, *The Hollow Lands*, *The End of All Songs*), describes a future where the universe is literally ending and where everything the characters do with their advanced technologies further depletes the universe’s limited remaining resources, thus making its demise increasingly imminent. However, most of the characters come across as decadent in the extreme, and although these stories are interesting for other reasons, the scarcity aspect has probably not engaged many readers.

Instead, most authors writing scarcity stories have described futures where technological innovation would be possible in principle, but nonetheless does not take place in practice. One way of making this more plausible is to reduce the importance of the profit motive, for instance by setting stories in future societies where the economic system has changed such that prices and profits become less important as drivers of behaviour than they are in our society. However, even in societies where profitability is of limited importance, it seems likely (see e.g. Jared Diamond or Rosenberg and Birdzell) that competition with surrounding societies would – at least over the longer term – encourage development of technologies that permit more efficient use of scarce natural resources. Thus, for plausibility, such stories either need to be set in futures where the new, stagnant status quo has not been in place for long – for instance, post-apocalypse stories set shortly after the apocalypse in question¹ – or in future societies that are relatively isolated and do not need to fear competition from surrounding societies.

While the price boom of the 1970s saw a number of scarcity stories being written, there are also earlier examples of SF authors considering resource scarcity. However, these earlier authors

¹ Mulligan (*Shattered States: Catastrophe, Collapse and Decline in American Science Fiction*) analyses post-apocalyptic literature at length and identifies social constraints such as access to knowledge and education, rather than resource constraints per se, as the key constraints to recovery in most post-apocalypse stories.

tended to assume that technological innovation would be unproblematic. William Hope Hodgson's 1912 novel *The Night Land*, for example, is set on a far-future Earth after the Sun has died – possibly the ultimate energy scarcity problem. The novel includes no discussion of economics per se or of economic incentives as a driving force for innovation. However, humanity has (and, it appears, so too have its enemies) developed technologies that allow it to draw on the “Earth-Current” rather than the Sun for energy, and this is not described as having posed any major difficulties – although the protagonist does anticipate, much further in the future, “the day when the Earth-Current shall become exhausted” (Hodgson 41), suggesting that even surviving the death of the Sun is not enough to put fears of future scarcity to rest.

In Lawrence Manning's *The Man Who Awoke* series of short stories from the 1930s, the protagonist sleeps for thousands of years at a time and wakes up into increasingly further-future societies. However, unlike most “when the sleeper wakes” stories of the time, social progress (as defined by the authors in question) is not linear, and none of these societies are utopian in any sense; rather, each new society has its own set of problems. The protagonist's first awakening, in the year 5000, brings him to a society that has run out of oil and coal, and which has switched to biomass-based energy and hydropower instead. The transition from fossil to renewable energy (which is already thousands of years in the past by the time the protagonist awakes) is described as having been traumatic, but – interestingly – not primarily for technological reasons. Instead, vested interests delayed the transition for economic and political reasons; not a common expectation for the adoption of new technologies in the pulp SF of the time. Thus, to the extent that the development of new energy sources was difficult, the lack of innovation was due not to intrinsic difficulties, but to social and political resistance.

Scarcity stories written at the time of the first major spike in resource prices were considerably more pessimistic about technological solutions. Harry Harrison's *Make Room! Make Room!* from 1966 is set in an overpopulated future United States where the main adaptation to the low per-capita availability of resources is that people have increasingly switched to vegetarian diets because meat has become too expensive. The film version, *Soylent Green* (released in 1973) famously predicts that dead bodies would be used to produce food and that people might be bred for food as well – an innovation clearly chosen for shock value rather than for its plausibility as a solution to food scarcity. Harrison's novel was published before Paul Ehrlich's *Population Bomb*, which predicted hundreds of millions of people imminently dying of starvation, and which brought population growth to broader public attention, but the novel's themes resemble those of the subsequent population debate. Harrison explicitly references the pessimistic Malthusian reasoning about population growth:

‘I'll tell you what changed’. He shook the boot at her. ‘Modern medicine arrived. Everything had a cure. . . . Old people lived longer. More babies lived who would have died, and now they grow up into old people who live longer still. People are still being fed into the world just as fast – they're just not being taken out of it at the same rate. . . . So the population doubles and doubles – and keeps on doubling at a quicker rate all the time.’ (Harrison 173)

John Brunner's *The Sheep Look Up* from 1972 deals primarily with environmental degradation, but also mentions increased per-capita scarcity of natural resources, notably food and water, and is similarly bleak about humankind's future prospects. Other than a few environmental extremists, nobody makes a serious attempt to deal with the approaching environmental collapse, and while there are corporations that seek to profit from selling water purifiers and non-contaminated food, their products are either defective or fraudulent:

It was a filter cylinder from a Mitsuyama water-purifier. It was discolored . . . and the close-packed plastic leaves it was composed of had been forced apart. . . . ‘That’s what all the faulty ones look like’, Pete said. ‘Mack’s found three like that already today.’ (Brunner, *The Sheep Look Up* 321)

‘. . . what he’s worked out is this. If you divide the amount of home-grown produce Puritan sells per year into the amount of ground you’d need to grow it on, there literally isn’t enough uncontaminated land left in North America. . . . And he’s analyzed their stuff, and as I say about half of it is no better than you can get in a regular supermarket.’ (Brunner, *The Sheep Look Up* 261).

Despite the profits that could be made by providing functioning solutions, what little corporate funding goes into research on improved food and water provision is clearly insufficient. In his next novel, *The Stone That Never Came Down*, Brunner does suggest that better management of resources might be possible, but only after society has been transformed by a drug which makes humans wiser by artificial means; if humanity is left to its own (current) devices, the assumption appears to be that the portrayed problems will remain insoluble.

Sam J. Lundwall’s *2018 A.D. or the King Kong Blues* from 1975 portrays a future where the oil crisis has become a permanent fixture of the world economy, and suggests that there will be no solution to the problems caused by the high energy prices. Instead, consumers are depicted as having accepted the higher energy prices for decades, and governments worldwide have quietly tolerated a permanent shift in global economic power to the remaining oil producers.

None of these scarcity stories, emblematic of their period, has politicians seriously contemplating alternatives that would permit society to cope more adequately with the envisaged scarcity problems; nor do they describe commercial interests being incentivized by high resource prices to develop new technologies. In reality, in most cases the high resource prices of the early 1970s changed the incentives for innovation and resource exploration and led to increased availability of the resources in question, in line with the standard economic analysis. Moreover, as pointed out by David Brin in the afterword to his novel *Earth*, one of the reasons an environmental catastrophe was averted was that the “sheep” of Brunner’s title *did* look up before it was too late, and began to demand more stringent environmental policies from their politicians.

Nonetheless, the pessimism of the 1970s SF novels about the scope for better husbandry of the world’s natural resources was well in line with the perceptions of the time. The prevailing popular perception of corporations at the time was that they were maintainers of the status quo, dominated by managers more interested in carving out stable empires within their corporations rather than by stockholders interested in making profits through developing new products (see e.g. John Kenneth Galbraith for a description of the mainstream opinion of the time). In line with this, although corporations feature prominently in both Brunner’s and Lundwall’s scarcity stories, none of these entities seek to make money by developing technologies that would reduce the resource scarcity problems discussed in the stories, even though such technologies would be hugely profitable; instead, the corporations that feature chiefly seek to increase their share of the profits from the status quo or to fool customers into purchasing ostensible solutions that do not actually work.

The decline in the prices of most raw materials after the 1970s led to reduced public concern about physical resource scarcity; SF echoed this reduced interest. During the late 1970s, 1980s and 1990s, few explicit scarcity stories were written. Stories where key resources become scarce and where this results in widespread poverty, such as Octavia E. Butler’s *Parables*, typically explain such scarcity as the outcome of social disintegration rather than as an outcome of physical scarcity per se. As Hee-Jung Serenity Joo notes, these novels are about “the U.S. becoming a third world nation” (283), with its social and economic collapse leading to, among other things, local resource

scarcity. While global environmental problems form part of the background in the books, their narratives are not about global resource scarcity per se. Furthermore, other nations in this imagined future world are described as doing substantially better. The key problem is thus portrayed as being social resource scarcity rather than physical resource scarcity, i.e. the main constraint on resource availability is a poorly functioning society, not physical resource scarcity per se.

During the first decade of the new century, the prices of many natural resources began to rise again. Rising incomes in many developing countries, especially in Asia, led to increasing per-capita consumption of food in such countries, pushing up the cost of many staple crops (see e.g. Stage et al.). The investment boom, especially in China, drove up prices for many raw materials, while the overall boom in the world economy drove up prices for oil and other energy sources (see e.g. Radetzki and Wårell). At the same time, climate change became a major issue on the global policy agenda. Climate change was linked to concerns about rising energy prices and the lack of viable alternatives to fossil fuels, as well as to concerns about impacts of a changed climate on food production and on water availability. In fact, global per-capita production of most of these resources (including food, raw materials and oil) actually rose during this period, but global demand for the resources rose even faster, driving up their prices (see e.g. Radetzki and Wårell or Stage et al.). Where water availability became an issue, it was primarily linked to unclear water legislation that encouraged the wasteful use of water, rather than to physical water availability that was not enough for household needs (see e.g. World Bank). Nonetheless, the rising prices made their mark on popular perceptions and the topic of looming resource scarcity resurfaced in SF. Many authors have been pessimistic both about the future climate, about future energy availability and about the future of modern civilization overall.

Robert Charles Wilson's *Julian Comstock* stories (*Julian: A Christmas Story* and *Julian Comstock: A Story of 22nd-Century America*) are set generations after a global environmental and economic collapse which brought down civilisation. In this future world, humankind has been able to recover and re-establish a civilisation reminiscent of the 1800s, but for several decades there has been no attempt at further recovery. Thus, despite the fact that there are large nations again, embroiled in more or less continuous warfare, none of the warring parties have actively attempted to adapt warfare technologies from the 1900s to the available natural resources. Instead, all sides appear relatively content to remain at the level at which they have stabilised, despite the potential advantages of improving their technologies further. Nonetheless, "the ongoing War . . . had engendered new industries that employed mechanics and wage-laborers in large number [and this] might eventually transform the traditional rural economy" (Wilson, *Julian Comstock: A Story of 22nd-Century America* 102), so despite the rulers' wish to keep society at the level where it has stabilised, industrialised warfare is beginning to cause structural changes in other parts of the economy as well. The protagonists' attempts at reforming their society ultimately fail, but the implication is thus that social and economic change will come anyway.

In Bacigalupi's *Windup Girl* stories from 2005 through 2009 ("The Calorie Man", "The Yellow Card Man", *The Windup Girl*), set in an energy-scarce future where concern about climate change has led to strict constraints on the use of what little fossil energy remains, technology outperforms its current counterparts in many areas (notably biotechnology). However, despite the stories being set in a future where many decades of high energy prices would presumably have made innovation in the energy area extremely profitable, very little appears to have happened in that respect. Research in improved energy storage is mentioned, but the investigated technology is unworkable in practice and is mainly used as a smokescreen for industrial espionage (Bacigalupi, *The Windup Girl* 8). The main energy innovation is that, thanks to genetic modification, ethanol crops have become more productive. However, biogas and wind power appear permanently stuck at roughly the levels they were at when the stories were written. There is little mention of other non-fossil energy sources such as hydropower, solar power or nuclear power, and there appears to have

been little corporate or public research on developing new energy technologies – despite the potential profits to be made by doing so. The first of the stories (Bacigalupi, “The Calorie Man”) suggests that patent and intellectual property rights regulations have become even more stringent than in our present, and this could perhaps help to explain the limited innovation; nonetheless, it does appear likely that the huge potential for profits would encourage firms to seek ways around these patent regulations. Thus, a key assumption in these pessimistic energy-scarcity stories seems to be that, even once geopolitics have stabilised in response to the new energy-scarce situation in the imagined future, a century of high energy prices would have less impact on energy-related innovation than a few years of high energy prices actually had in our own world.

Bacigalupi’s subsequent *Ship Breaker* novels (*Ship Breaker* and *The Drowned Cities*) from 2010 and 2012 more realistically portray energy and natural resource scarcity as being caused by social breakdown rather than by physical scarcity. Analogously to Butler’s earlier novels, these novels are set in a post-collapse United States reminiscent of failed states in today’s developing world; however, while the world outside the United States is not described in much detail, it has apparently adapted and moved on, and has technologies superior to those available today. As with the earlier Butler works, therefore, these newer novels can be seen as examples of social, rather than physical, resource scarcity.

The peak of the food price spike in 2008 saw the publication of the first *Hunger Games* novel (Suzanne Collins, *The Hunger Games*; it was followed by *Catching Fire* in 2009 and *Mockingjay* in 2010), set in a future where food production per capita has remained low for many decades, following an ecological collapse. Panem, the state portrayed in the novels as having replaced the former North American nations, is clearly isolated from the rest of the world: there is no mention of the world outside North America in any of the novels. Thus, there is no pressure to innovate from external enemies or competitors. Despite this, there has also clearly been considerable technological progress since our time, but the government has diverted this innovation effort into areas other than food production, and at least some of the hunger in the novels is evidently – as in our own time – due to inequitable distribution, rather than insufficient production, of food:

But the real star of the evening is the food. Tables laden with delicacies line the walls. . . . Whole roasted cows and pigs and goats still turning on spits. Huge platters of fowl stuffed with savoury fruits and nuts. Ocean creature drizzled in sauces or begging to be dipped in spicy concoctions. Countless cheeses, breads, vegetables, sweets, waterfalls of wine and streams of spirits that flicker with flames. (Collins, *Catching Fire* 88, on festivities among the upper class)

All I can think of is the emaciated bodies of the children [at home]. (Collins, *Catching Fire* 92)

The clear implication is that, once the oppressive government has been overthrown at the end of the third novel, food scarcity is going to be relieved as well.

The water-scarce future portrayed in the recent short film *The Sand Storm* (released in 2014) – where the unreliable public water supply in a Chinese town causes people to purchase water from vendors – would be easily recognisable to denizens of cities in many present-day developing countries.² However, the main causes of poorly functioning public water supply in such cities are misallocation of existing water and insufficient investment in water delivery infrastructure rather than physical water scarcity per se (see, for instance, World Bank), and it seems likely that more

² One difference compared to most present-day developing countries is that in the film the vendor delivers water to people, rather than people having to go to the vendor for water. Thus, from the perspective of the consumer, water delivery actually works better in the film than it does in many developing countries today.

investment in public infrastructure, and prioritising household water use over other uses, could have prevented the water supply problems in the film as well.

In the most recent of the post-apocalyptic Mad Max movies, *Mad Max: Fury Road* (released in 2015), a large-scale environmental collapse has led to widespread water scarcity, but water is available to those with sufficient technology and access to water is primarily portrayed as a political issue. In the water-scarce future portrayed in Bacigalupi's *The Water Knife* stories from 2007 through 2015 ("The Tamarisk Hunter", *The Water Knife*, "A Hot Day's Night"), reduced physical water availability has similarly been exacerbated by poorly functioning social structures. While a decades-long drought has reduced the physical availability of water in the western US in the future portrayed in the stories, it is clear that water rights and water legislation are major factors driving the plots:

The problem wasn't lack of water or an excess of heat, not really. The problem was that 4.4 million acre-feet of water were supposed to go down the river to California. There was water; they just couldn't touch it. (Bacigalupi, "The Tamarisk Hunter" 66).

There is still water, and there would presumably be more than enough water for household use if it were allocated differently or if households were able to move to areas where it was in more plentiful supply. However, a weak federal government is unwilling to revise national water legislation, unwilling or unable to prevent individual states from restricting unwanted immigration from other states, and unable to prevent states from taking matters into their own hands and enforcing water rights through physical force. While unfortunately not completely unrealistic, this weak federal government is central to making the plots in the stories possible; had federal policies been different, prioritising water for household use over enforcing agricultural water rights, the problems in all three stories could have been resolved quickly. Bacigalupi has himself noted (see e.g. Brian Calvert) that reallocated water and investments in improved technology could have solved the problems in the stories, but that – by removing the key driver of the plots – this would have made the stories less interesting and detracted from the points that he wanted to make about contemporary water and climate policy.

Scarcity stories provide an interesting example of how application of the social sciences – economics, in this case – has changed in SF over time. The commodity price spikes in the early 1970s and in the first decade of the new millennium were both associated with predictions of imminent physical resource scarcity, and both spikes inspired a number of SF stories set in resource-scarce futures. However, judging from the selection of stories discussed here, the rationale for continued resource scarcity in these stories has shifted between the two price spikes – at least to some extent. In the first generation of scarcity stories, it was taken as a given that humankind would be unable to deal with the problems posed by increasing physical scarcity and that, regardless of the economic incentives which resource scarcity tends to generate, innovation and changes in resource management would not be enough to resolve those problems. In the second generation of scarcity stories, a growing number of stories justify continued resource scarcity as being caused by poorly functioning societies, rather than by physical scarcity. This increased emphasis on resource scarcity as a primarily social rather than physical phenomenon is entirely in line with mainstream economic analysis of the topic. Thus, the bar for how the social sciences are used in SF continues to be lower than that for the natural sciences, but it may at least be rising.

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Dreams and Themes in the texts of the “Reaalifantasia” group:
Unnatural Minds in Anne Leinonen’s *Viivamaalari*
and J. Pekka Mäkelä’s *Muurahaispuu*

Minttu Ollikainen

Abstract: This article deals with the unnaturally functioning and frame-breaking dreams and the unnatural minds they are connected to in the novels *Viivamaalari* (2013) by Anne Leinonen and *Muurahaispuu* (2012) by J. Pekka Mäkelä. The dreams in the novels are discussed as examples of the poetics and thematics of Reaalifantasia, a young Finnish group of authors who in their writings combine fantasy elements with features of other genres. These minds and dreams as well as the ideologically charged themes they foreground are analyzed using the concepts and viewpoints of unnatural narratology.

Keywords: reaalifantasia, magical realism, unnatural narratology, dream, Anne Leinonen, J. Pekka Mäkelä.

Biography: Minttu Ollikainen is a doctoral student at the University of Jyväskylä. She studies the fiction of the Finnish group of writers, who label their texts as “reaalifantasia”.

During the past decade, fantasy and science fiction elements have become more common in Finnish literature. For example, in year 2000 the Finlandia prize, the most esteemed literature prize in Finland, was awarded to a speculative novel about a man and a troll, *Ennen päivänlaskua ei voi* by Johanna Sinisalo.¹ In 2014 it was given to a novel that contains science fiction elements, *He eivät tiedä mitä tekevät* by Jussi Valtonen, and in 2015 to a novel about the limbo between life and death, *Oneiron* by Laura Lindstedt. The increase in the number of novels that combine fantasy and science fiction elements with prose that otherwise draws on the conventions of realism has spurred discussion on narrative techniques in the Finnish literary field (see Hirsjärvi 169–170).

A relatively new group of writers, which call their texts “reaalifantasia”² participates in this discussion (see Jämsén 1–2; Heikkinen 14–15). The group consists of four authors: Pasi Ilmari Jääskeläinen, Juha-Pekka Koskinen, Anne Leinonen and J. Pekka Mäkelä. Their so-called manifesto, “Reaalifantastikot ja reaalifantasia”, was published in Jääskeläinen’s blog³ in 2006. It

¹ Translated to English as *Not before sundown* in 2003 and *Troll* in 2006.

² In this article, I refer to the texts of this group of writers as “reaalifantasia” and to the group itself as “Reaalifantasia”.

³ The manifesto, “Reaalifantastikot ja reaalifantasia”, was originally published in Pasi Jääskeläinen’s blog, *Jäniksenselkäläisen*

stated that the members of the group wish to foster a new way of writing that mixes features of different genres and combines fantasy elements with storyworlds that resemble the world their readers encounter daily (Jääskeläinen, "Reaalifantastikot ja reaalifantasia"). According to the manifesto, the term "reaalifantasia" consists of two words, the first of which refers to reality and the way fiction depicts it while the second one refers to fantasy and the different ways fiction can alter the depiction of reality (Jääskeläinen, "Reaalifantastikot ja reaalifantasia"). In this article, I use the original Finnish term of "reaalifantasia", since any combination of words such as "real" or "reality" and "fantasy" would fail to convey the same tone and meaning contained in the original neologism. By sticking to the Finnish term, I also want to highlight the nature of reaalifantasia as a particularly Finnish phenomenon in the field of Finnish speculative fiction, although it is also connected to more global phenomena such as magical realism (see Jääskeläinen, "Reaalifantastikot ja reaalifantasia"). Namely, I will use it to refer to the texts written by this specific group of writers who themselves describe their texts as reaalifantasia.

The way of writing described in the reaalifantasia manifesto – the mixing of fantasy elements with features of other genres – creates storyworlds that appear quite unstable. (Jämsén 65, 71, 75; Heikkinen 87; Ollikainen 132–134). It is hard to tell whether the strange things that occur are real or belong to a dream (see Jämsén; 4–5, 65, 75; Ollikainen 132–134). Here I will focus on dreams and the minds of their dreamers as examples of fantasy elements that cause this kind of instability. The way I see it, dreams are one of the most easily distinguishable example of the way the commonplace, the natural, the conventional, and the real are combined with fantasy, the unnatural, estranging, and the unreal in the poetics of reaalifantasia. In the actual world, human beings dream every night. Even though the contents of these dreams may be pure fantasy, there is nothing strange in the act of dreaming. But something strange must take place in the storyworld for the events of a fictitious dream to invade the world outside the dream.

In my master's thesis (2016), *Fiktio on jumalallinen uni* ("Fiction is a Divine Dream"), I analyzed the way dreams function as fantasy elements in Pasi Jääskeläinen's fiction and the way these elements foreground the themes of their frame stories. I argued that in the works of Jääskeläinen, dreams operate as metalepses (Ollikainen 116, 122). By transgressing the narrative levels, dreams also break the boundaries between the minds of different characters and affect the time structures and narrative spaces of the stories (131–132). In Jääskeläinen's texts, this foregrounds the themes of mind, time, space, and fictitiousness (134–136).

This article will focus on the effects dreams have on their dreamers, the characters, and their minds in two works of reaalifantasia, *Viivamaalari* (2013) by Anne Leinonen and *Muurahaispuu* (2012) by J. Pekka Mäkelä. In the debut novel of Jääskeläinen, *Lumikko ja yhdeksän muuta* (2006), for example, the inhabitants of a small village repeatedly dream of the wandering undead corpse of the mysteriously disappeared author Laura Lumikko (81, 162–163, 243, 269).⁴ The shared dreams raise questions about the boundaries between individual minds (Ollikainen 51–66). These questions in turn are connected to Alan Palmer's views on social minds, the social interaction of human minds, and their presentation in fiction (12, 130–131). I wish to broaden the perspective found in my MA thesis and to show that this theme is also prevalent in the works of other authors of reaalifantasia.

In my analysis, I will utilize concepts introduced by researchers of unnatural narratology, a branch of narratology that studies the unnatural and impossible elements of narratives (see Alber et al. "What Really is" 104). The viewpoints of unnatural narratology help to illuminate and interpret the way dreams as well as other fantasy elements of reaalifantasia both break the rules of the frame stories' storyworlds and fail the readers' expectations that are based on their real world cognitive

Kirjallisuuden seura, which has since been taken down. A summary of the manifesto and of other Jääskeläinen's blog texts about reaalifantasia can be found, in Finnish, in Hanna Matilainen's book, *Mitä kummaa* (30–34).

⁴ Translated to English as *The Rabbit Back Literature Society* in 2014.

frames and scripts (see Alber et al. “What Really is” 104–108; Alber, “Impossible Storyworlds” 80–81, 93–94). One of the key concepts here is Stefan Iversen’s “unnatural mind”, a strategy of urging readers to anticipate a literary character to have a human-like mind and then failing these expectations (Iversen 98; Alber et al. “Unnatural Narratives” 120). Additionally, I will discuss the relationship between the conventional and the estranging in texts that include fantasy elements.

The manifesto of reaalifantasia can itself be regarded as a value statement about the importance of appreciating the diversity of strategies found in fiction (see Heikkinen 13). The way of writing that the authors of reaalifantasia wish to promote affects the way different ideologies are represented in their narratives. The hypothesis of this article is that the fantasy elements of reaalifantasia novels work as techniques to foreground ideological themes. I suspect that the unstableness of the rules, concerning the boundaries of the minds of the characters, that govern the reaalifantasia storyworlds affects the interpretation of the ideological thematics depicted in the novels. In his book, *Unnatural Voices*, Brian Richardson has indicated how in some cases we-narration and the changes in narration can represent the “oscillation between isolated individualism and a more collective consciousness” (38). Instead of the narrative structures or strategies of the novels, such as the we-narration, my focus is on the characters and their minds in general. One of my main concerns is the way dreams in reaalifantasia foreground ideological themes surrounding the human conception of the individual mind and its relationship with other minds, or in other words, the relationship between individualism and collectivism.

Reaalifantasia – the Poetics of Unnatural and Unstable Worlds

According to their manifesto, the members of Reaalifantasia want their texts to be considered as reaalifantasia instead of as representatives of a specific established genre (Jääskeläinen, “Reaalifantastikot ja reaalifantasia”). The authors wish to advance a genre-free approach to literature, in which all strategies found in fiction would be considered as equally valuable and could be used in any text (Jääskeläinen, “Reaalifantastikot ja reaalifantasia”). They believe that not all literature can or should be based on the very narrow reality construction of today (Jääskeläinen, “Reaalifantastikot ja reaalifantasia”). The aim therefore is to remind us that a fictive text is always a mixture of mimesis and fantasy (Jääskeläinen, “Reaalifantastikot ja reaalifantasia”).

The idea of fiction being a mixture of mimesis and fantasy is not new (see Heikkinen 12). In 1984, Kathryn Hume stated in her book, *Fantasy and mimesis*, that there are two impulses in literature: one mimetic, the other fantastic (20). The idea that a text could be genre-free is also naïve. Nonetheless, the manifesto has a point: a book should be judged neither by its cover nor by its genre characteristics. Since the publication of the manifesto, there has been confusion about the essence of reaalifantasia (see Jämsén 2). As an approach that criticizes the power of genres, it demands not to be considered as either a genre or a sub-genre (Jämsén 75–77). The manifesto sees reaalifantasia as a western variation of magical realism with unique local qualities (Jääskeläinen, “Reaalifantastikot ja reaalifantasia”). Further study is required to assess reaalifantasia’s place in the field of speculative fiction more accurately. It is, indeed, hard to draw strict lines between reaalifantasia and, say, magical realism and new weird, both of which share features with reaalifantasia (Jämsén 32–33, 71–83). Considering Reaalifantasia’s critique of classifications, situating it and defining it thoroughly might defeat the purpose (see Jämsén 32–33, 71–83; Heikkinen 14–15). Reaalifantasia can nevertheless be taken to refer to texts by a group of writers who wish to forward a certain kind of poetics, which contains both elements of fantasy and realistic descriptions of the everyday world.

According to the definition Jämsén provides in her master’s thesis, *Reaalifantasia fantastisen kirjallisuuden lajityyppinä* (“Reaalifantasia as a Fantasy Genre”), a reaalifantasia novel

contains a storyworld that resembles the actual world of its prospective readers (81–83). This storyworld includes at least one fantasy element that sets it apart from the actual world and therefore estranges the reader (81).⁵ Jämsén points out that these fantasy elements also discomfort the characters who get in touch with them (44, 71). The fantasy elements render the laws of the storyworlds unstable and flickering (Jämsén 43–44, 71; Heikkinen 87). Both the characters and the readers of reaalifantasia can try to explain away these discomforting elements and sometimes they both stay unaware of whether the fantasy elements exist in the level of the storyworld or not (Jämsén 43–44, 71). I would like to highlight that the storyworlds found in reaalifantasia only resemble the actual world; their laws and structures may turn out to be very different from the first expectations of readers (see Ollikainen 132–134).

Whereas the manifesto and the project of Reaalifantasia can be seen as a value statement regarding the importance of the appreciation of the multiplicity of literature, so can the project of unnatural narratology. The researchers of unnatural narratology – for instance, Jan Alber, Stefan Iversen, Henrik Skov Nielsen, and Brian Richardson – wish to expand narratological categories to cover the entire spectrum of strategies that have been used in narratives throughout history ("What is Unnatural" 375, 380). These also include the strange, impossible, and estranging phenomena (Alber et al. "What Really is" 104). Unnatural narratology studies the way narratives differ from the frames that readers use to understand real-world phenomena (Alber et al. "Unnatural Narratives", 115–116). It pays attention, for example, to the way minds of fictive characters and narrators can deviate from the parameters of the real world (Alber et al. "Unnatural Narratives" 115–116). In narratives, the minds of characters may, for instance, melt into one another (Richardson 12). The theorists of unnatural narratology often criticize the models that see fictive minds in terms of the way real-world knowledge considers real-world minds to function (Iversen 103–104; Alber et al. "Unnatural Narratives" 115–116, 120–124). As such, they disagree with the likes of Alan Palmer who insists that minds in fiction are to be read as if they were real-world minds (Iversen 103–104; see Alber et al. "Unnatural Narratives" 120–124; "Unnatural Voices, Minds", 356–357). The researchers of unnatural narratology claim that these models should be broadened to meet, for example, the intrinsically fictive narrative minds (Alber et al. "Unnatural Narratives" 115–116, 120–124).

Theorists of unnatural narratology each have their own definition of the unnatural (Alber et al. Introduction 2–5). Jan Alber, for example, defines an unnatural element as something that is physically, logically, or humanly impossible and estranges readers ("Unnatural Narratology" 449; "Impossible Storyworlds" 80). According to Stefan Iversen, unnatural elements cause paradoxes between the rules of the storyworld and the actual events taking place in it (Alber et al. "What is Unnatural" 373). These paradoxes defy explanations (Alber et al. "What is Unnatural" 373). From this point of view, Gregor Samsa's turning into a bug in Franz Kafka's famous short story, "The Metamorphosis" (1915), is unnatural because the depicted mixture of the mind of a bug and the mind of a human seems to resist the rules of the storyworld ("What Really is" 102–103). According to Iversen, the mixture of minds in "The Metamorphosis" is one example of the way fictional minds can be unnatural (97). In Alber's definition, this same metamorphosis would probably violate the physical and logical laws and the human limitations that belong to the readers' real world frames, therefore making it unnatural and estranging. Here, I will rely on these two definitions of the unnatural, because the difference between them helps me to analyze the way minds in reaalifantasia can deviate both from the norms of the actual world and the norms of the storyworlds in which they belong.

⁵ Jämsén analyzes only two novels in her master's thesis, which raises the question whether her proposed definition is suitable for describing the poetics of reaalifantasia. However, I see it as accurate enough, regarding the subject matter of this article.

Monika Fludernik has pointed out some of the possibilities unnatural narratology might have if it focused more on “the fabulous, magical, fantastic or supernatural” (“What is Unnatural” 363–364; see also Petterson 77–81). Even though the researchers of unnatural narratology emphasize the unnatural as an intrinsic characteristic of all fiction and narratives, they tend to focus on postmodernist literature (see Marttinen 50). The interest is also often in finding unnatural elements hidden in realistic texts (see M. Mäkelä 142–143). Few of them are interested in the unnatural elements of fantasy or science fiction. When, for example, estrangement is mentioned in unnatural narratology, it is usually used in the Shklovskyan sense (Shklovsky 34) to refer to elements that distract and disconcert the reader (see Alber, “Impossible Storyworlds” 80; Alber and Heinze 11). It is not seen, for example, the way it is understood by Darko Suvin, who defines cognitive estrangement in science fiction as “factual reporting of fictions” by introducing novums, that is, innovations differing from the writer’s and the implied reader’s norms considering reality, in otherwise realistic contexts (6–7, 63–64). Nor is it connected to Todorov’s idea of fantastic hesitation between the natural and supernatural explanations of the strange events experienced by the implied reader (33). Alber, Iversen, Nielsen and Richardson state in their answer to Fludernik that “the fabulous, magical, fantastic or supernatural” is part of the conventionalized unnatural, as it is explicated in Alber’s definition of the unnatural (“What is Unnatural” 373).⁶ There, many unnatural elements are conventional strategies of science fiction and fantasy (Alber “Unnatural Temporalities” 174–175, 185–187). In fact, Alber rules the elements of fantasy and science fiction out of the scope of the estranging unnatural (Alber, et al. “What is Unnatural” 373). Although they are impossible and unnatural, in the context set by the genre they do not appear as defamiliarizing (Alber et al. “What Really is” 103). Alber claims that when these kind of unnatural elements occur in the realist settings of postmodernist fiction, they do have an estranging effect (“Unnatural Temporalities” 174–175, 185–187; Alber et al. “What Really is” 103).

Let us ignore the implications of a branch of narratology claiming to give attention to the strange phenomena in fiction while taking the oddities of fantasy and science fiction for granted and look at Alber’s way of distinguishing the conventionalized unnatural of fantasy from the estranging unnatural of postmodernism. The distinction appears to be useful when describing the poetics of reaalifantasia. It raises questions about the nature of reaalifantasia’s fantasy elements: Are they estranging unnatural elements? Do they disconcert readers? Jämsén’s (81) definition of the fantasy elements of reaalifantasia resembles Alber’s (“What Really is” 103) view on the estranging unnatural elements of postmodernism: these elements occur in contexts and storyworlds in which readers do not necessarily expect to encounter fantasy elements, thereby functioning as a strategy of estrangement. This is not the only thing that reaalifantasia has in common with postmodernist fiction. According to Brian McHale, the dominant of postmodernism is ontological (9–11). That is, the diverse strategies of postmodernist narratives are means to foreground the ontological aspects and the structures of their storyworlds, their textual structures and the relationships between them and the world outside them (9–11). In my view, reaalifantasia is ontological in the same way McHale (59–60, 73–74) regards science fiction and fantasy to be ontological: the fantasy elements set the ontological structures of the storyworlds of reaalifantasia under stress because these elements do not seem to obey the laws of the storyworld (see Heikkinen 6; Ollikainen 134).⁷

For Alber, it is essential to try to understand and interpret what the unnatural elements of narratives mean (“Unnatural Narratology” 455–457; “Unnatural Spaces” 63). According to him, the

⁶ Please note that the articles Alber, Iversen, Nielsen and Richardson have written together are polyphonic. The researchers often discuss the different opinions they have on unnatural narratology, its concerns and especially the different meanings the term unnatural might have. Therefore, when I refer to these articles, I specify which scholar’s definitions and viewpoints I am referring to when these viewpoints do not match.

⁷ In her master’s thesis, *Eriskummallisen muotoiset palapelinpalat* (“The Pieces of Puzzle of Extraordinary Shape”), Maarit Heikkinen discusses the elements of postmodern fantasy in Jääskeläinen’s first novel and their ontological consequences on the storyworld.

unnaturalness of narratives always tells us something about human life ("Unnatural Narratology" 455–457; "Unnatural Spaces" 63). Alber describes altogether nine different strategies that readers can use to cope with and interpret unnatural elements ("Impossible Storyworlds" 79; "Postmodernist Impossibilities", 274–275). One of the strategies is to interpret the unnatural elements of a story as the mental states of its characters, such as hallucinations or dreams ("Unnatural Narratology" 452). It would be tempting to follow this strategy and claim that the strange dreams of reaalifantasia are nothing but dreams. This strategy, however, is hard to apply to the dreams in question, since they tend to transgress their own frames and affect not only the dreamers but other characters as well.

As another strategy, Alber suggests interpreting unnatural elements as representing the themes of the narrative ("Impossible Storyworlds" 82). According to Jämsén, the fantasy elements of reaalifantasia often represent the themes of their stories (75, 81). I have found this thematization strategy useful in interpreting the effects of the unnatural dreams in the fiction of Jääskeläinen (134). Even though Alber does not name "ideological reading" as a specific strategy, he does claim that it is possible to understand, for example, the social minds of we-narratives by thinking of the ideological functions they may have ("The Social Minds" 222–223). I am using Alber's reading strategies as a method of analyzing and interpreting the dreams found in reaalifantasia. I am also using his strategies to predict the ways a reader might interpret and explain these dreams. The hypothesis I shall demonstrate next is that in addition to their thematic functions, the unnatural fantasy elements of reaalifantasia can also foreground ideological themes.

Unnatural Minds in *Viivamaalari* by Anne Leinonen and *Muurahaispuu* by J. Pekka Mäkelä

Muurahaispuu by J. Pekka Mäkelä is about a lonely physicist moving back to his childhood home. During his stay there, Kari Länneheimo, the protagonist and first-person narrator of the novel, goes through the belongings left behind by his demented father, who has moved to a nursing home. Meanwhile, he also gets to know his new neighbors. *Viivamaalari* by Anne Leinonen comprises chapters with different first-person narrators. Several clues in the novel hint at a connection between the lives of the narrators and the life of the main character and main narrator, an isolated woman who has involuntarily accepted the post of a conceptual artist. Hoping to learn how to create conceptual art, she starts to follow a woman called Ursula, who paints a long white line through the city. After these crucial life changes, both the woman in *Viivamaalari* and Kari in *Muurahaispuu* begin to have strange and vivid dreams about people close to them.

According to Alan Palmer, human minds are connected to one another, their functioning is often visible to other human beings, and in some cases thinking is intermental, shared and communal (5, 11–12, 185). Palmer claims this to be also the case with fictional minds (5, 11–12, 200). He states that narrative theory has focused too much on the individual and subjective aspects of fictional minds (11–12). Alber has broadened Palmer's later perspectives on social minds in fiction and showed that fictional social minds may differ from the social minds of the actual world ("The Social Minds" 222–223). Some social minds in fiction may turn out to be unnatural, as Iversen (94) has also demonstrated. According to Iversen, the unnatural minds of fiction lure readers to imagine fictive characters to have humanlike minds but then fail these expectations in a way that cannot be naturalized or conventionalized easily within the given context (98–99, 104–107, 110).

I claim that the behavior of both the dreams and the minds of their dreamers in *Viivamaalari* and in *Muurahaispuu* is on the unnatural side of the spectrum of social minds in fiction. It is not necessarily unnatural if the dreams of a person are connected to the worries of those near him or her

(see Alber, “The Social Minds” 217–218), but the dreams depicted in these two novels do not stay within their natural frames. These dreams mix the minds of their dreamers with the minds of other characters in a manner that is impossible outside fiction. Both in *Viivamaalari* and in *Muurahaispuu*, the main character goes through thoughts, memories, and experiences of other characters in his or her dreams, causing the contents of other minds to blend into the main character’s narration.

In *Viivamaalari*, the dreams of the main person correspond to the events of the lives of other first-person narrators of the novel. The woman dreams, for example, of making a blue painting while in another chapter Mr. Friedrich is painting one (178–181). One day the woman even finds out that someone has painted her kitchen wall blue while she was away (182–184). The woman has a strong feeling that these vivid dreams in which she is someone else, living someone else’s life, are not her dreams (29–33, 66, 151–153, 178–179):

In fact, I don’t want to fall asleep. My dreams are not mine. Sometimes almost a tangible feeling of alienation wakes me up in the middle of the night: I can smell strange aromas and see shades of colors that I didn’t know existed. In my dreams, I do rather strange deeds, deeds of a kind that my subconscious can’t make up by itself. That is why I hate sleeping. That is why I hate dreaming. (Leinonen 66)⁸

In *Viivamaalari*, these strange dreams seem to be connected to the protagonist’s false memories and feelings of disorientation (28, 48, 57, 177, 194–195, 211–212). Handling new objects, such as a pizza slicer in a store, repeatedly conjures up memories that do not belong to her past (57, 106–107, 110, 113).

In *Muurahaispuu*, Kari also has vivid dreams of being someone else in a different apartment in the same building. In his dreams, Kari is often an immigrant woman washing the dishes or a Finnish woman starting a relationship with another woman (38–40, 73–75, 92–94, 108–114, 175–176, 180–187). Kari is particularly discomfited by the dreams in which he is a frustrated Finnish man planning a terrorist attack:

I have been wrong in the sense that the good vibes of the past few days haven’t made my dreams any better. Last night I was once again planning an attack, examining the map and pictures of Kontula, keeping in touch with anti-Islamic networks from across Europe, preparing a bomb that fits into an ordinary backpack so that there also remains enough space for a water bottle. These dreams have once again felt so real that I have momentarily considered whether I should contact the police. (J. Mäkelä 235–236)

Kari sometimes tries to affect the actions of the people in his dreams, with poor results (152). When he gets to know his neighbors better, he finds out that they lead lives that resemble his dreams (41, 75, 266, 148). For example, one of his neighbors ends up getting arrested for planning a terrorist attack (250–252).

As is characteristic for a *reaalifantasia* novel, the storyworlds of both novels resemble the world of their prospective readers (see Jämsén 81). Therefore, there is not much in these storyworlds that would, at least at first, naturalize the dreams or make readers expect their behavior to deviate from the behavior of real-world dreams. This makes the dreams unnatural according to Iversen’s definition of the term (see Alber et al. “What is Unnatural” 373). The story of *Muurahaispuu* is situated in Helsinki in the 2000s. The storyworld of *Viivamaalari* contains some oddities, but nothing suggests that these oddities have something to do with the nature of the dreams. All in all, the storyworld of *Viivamaalari* resembles a quotidian city, apart from an unusual system in which different jobs and posts are given to citizens by lottery and the existence of mystical creatures called “angels” that tend to appear in crowded places and explode (13–20).

⁸ The translations of the quotes from Anne Leinonen’s *Viivamaalari* and J. Pekka Mäkelä’s *Muurahaispuu* are my own.

As is typical of the reaalifantasia novels, the characters are desperate to find explanations for the fantasy elements they encounter in the storyworld (see Jämsén 43–44, 71). This is also a typical characteristic of fantastic texts where the implied reader may, in addition to his or her own hesitation, identify with the characters' or character-narrators' hesitation between the natural and supernatural explanations of strange events (Todorov 31–32, 37, 82–86). In *Muurahaispuu*, Kari repeatedly takes into account the possibility that he has lost his mind (200, 230, 236). In the novel, however, he never gets an explanation for his unnatural dreams. When Kari's older sister tells him that she used to have similar dreams of her neighbors in her childhood, the siblings start to speculate possible reasons for this phenomenon (126–127, 289–292). Kari starts to suspect that their childhood home in the apartment building might be some sort of an anthill (128–130). Ants indeed have social, intermental minds (128). Their ability to communicate with each other and to work in an anthill as a single organism is quite efficient and markedly different from the social capacities of humans (81–87, 128–129). Kari tries to explain his capability to see his neighbors' lives in his dreams as being a consequence of a mutation that gives him ant-like abilities (128–131). He also suspects that the structures of the apartment building might have something, such as a mold or microbes, that activates these abilities (149–150, 230). His suspicions are never confirmed nor rejected.

The woman in *Viivamaalari* has been hospitalized in the past because of her hallucinations (31, 205). There she has been told to concentrate on her individual and unique life (205). Her dreams make her fear that she has lost her mind again, yet she refuses to take the medication prescribed to her (31, 194–195). This does not prevent her from eventually getting an explanation for at least some of her dreams. She has dreams in which she is living the life of, for example, Mr. Friedrich because he lives inside her mind, without being simply a figment of her imagination (236). In the end of the novel, she receives a recording from Mr. Friedrich – only to hear her own voice on the tape (231–231). According to the tape, the planet Earth was destroyed a long time ago by an alien race called "the angels" and another alien race has tried to save humanity (232–233). According to the tape, humans of the day are living in an ark built by this benevolent alien race (234). The cities of the ark and their citizens lead a parallel existence, meaning that different minds share the same body: there is usually one fully aware main personality and a group of unaware, "sleeping", side-personalities who live in the dreams and daydreams of their host persona (233–236, 240). Later, the woman finds out that some other people in her city are also aware of their sleeping side-personalities and some have even managed to get rid of theirs (240–241, 248–251). These "new" rules of the storyworld of *Viivamaalari* offer some sort of an explanation of its unnatural dreams and minds. As a result, the dreams fail to fill Iversen's definition of the unnatural. Yet, I would claim that the explanation given in the last pages of the novel is still relatively estranging from the readers' point of view.

The intermental social minds of *Muurahaispuu* and *Viivamaalari* are unnatural minds in the sense that the social minds of the actual world tend to have at least some kind of boundaries between them. As Alber claims, in fiction some social minds become more understandable if they are compared to the ideological functions they may have ("The Social Minds" 215). In my view, one can interpret the unnatural social minds in *Viivamaalari* and in *Muurahaispuu* as representations of the ideological themes prevalent in the two novels. By breaking the limits and separateness of human minds, these unnatural social minds highlight the fact that human minds are social and that to flourish, every mind needs connections to other minds.

The unnatural social minds and dreams of *Viivamaalari* and *Muurahaispuu* can be read as a critique of today's individualism, in the everyday meaning of the term. Extreme individualism, or subjectivism, is not good for a human being. The problems both Kari and the woman have in the beginning of the novels, their solitude and hesitations, ease after they accept their social and collective dreams as part of who they are. In the end of *Viivamaalari* (267–268), when the white

line has finally been finished, the woman is quite happy with herself and her dreams. She feels that the different personalities in her head are part of her and she learns to communicate with them and negotiate with their needs (267–268). In the end of *Muurahaispuu* (299, 302–303), after researching the history of his father's family and after getting to know his neighbors, Kari feels that his experiences and dreams have made him more empathetic and able to do his new work, to help other researchers at CERN solve scientific problems. Both novels end with their protagonists falling to sleep, waiting to dream (Leinonen 268; J. Mäkelä 303).

Conclusion

According to Jan Alber, the unnatural in narratives usually seeks to tell us something about what it is to be human (“Unnatural Narratology” 455–457; “Unnatural Spaces” 63). The natural and unnatural social minds in fiction may in some contexts have ideological functions (Alber, “The Social Minds” 213–214; see Richardson 38). In this article, I have demonstrated how the fantasy elements of reaalifantasia foreground the ideological thematics of being human. The unnatural dreams and the unnatural social minds of their dreamers in *Viivamaalari* by Leinonen and *Muurahaispuu* by Mäkelä tell us something about the nature of human mind and how minds need other minds.

Reaalifantasia is a relatively new group of writers and a lot remains to be studied in its poetics. Dreams are only one example of its unnatural and estranging fantasy elements and the dreams in reaalifantasia novels do not always function as either fantasy or unnatural elements. Even the woman in *Viivamaalari* has dreams that do not originate unnaturally in the memories of her side-personas (151–153, 250, 253). Then again, the unnatural dreams in reaalifantasia do not always deal with the shared nature of minds and the ideological aspects of this type of shared minds. In Jääskeläinen's fiction, dreams sometimes break the temporal structure of the frame story and thus tell something about the human conception of time (Ollikainen 67–86). These kind of fantasy elements, however, tend to make the storyworlds of reaalifantasia both unstable and estranging – and the poetics of reaalifantasia fascinating.

The writers of reaalifantasia aspire to a new way of writing. This goal is in itself a statement about the value of the multifarious strategies of fiction (see Heikkinen 13). This statement relates to the questions of the way the world and the life of human beings are seen and represented and can be seen and represented in everyday language and in fiction. It is also connected to the question of which elements and strategies of fiction are considered to be estranging in what contexts and which are taken as mere conventions – a question, which I hope is going to be discussed more thoroughly in future research.

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A Book Review:
A Handy Dictionary for SF Futurists
Ace G. Pilkington – *Science Fiction and Futurism:
Their Terms and Ideas*

Chris Pak

Pilkington, Ace G. – *Science Fiction and Futurism: Their Terms and Ideas*. McFarland, 2017.
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Science fiction and futures studies, futurism, or any of the other terms that denote the analysis and theorization of the future have been bound in a relationship that Frederick Pohl, writing in *The Futurist*, characterizes as “a pretty amiable symbiosis” (8). Authors and readers of science fiction and its scholarship, futures studies, governmental institutions and private business have commented upon or drawn on this connection to develop contingency plans to future-proof against a variety of scenarios. While there has been much scholarship in this area, there have been few works that propose to offer accessible overviews of the history of ideas and the traffic between science fiction and futures studies. Ace G. Pilkington’s *Science Fiction and Futurism: Their Terms and Ideas* seeks to address this gap in scholarship for a disciplinary intersection that is becoming increasingly important in a climate where Ulrich Beck’s notion of “risk society” is becoming ever more salient.

Published by McFarland, *Science Fiction and Futurism* joins such works as Thomas Lombardo’s *Contemporary Futurist Thought: Science Fiction, Futures Studies, and Theories and Visions of the Future in the Last Century* (2006) and Gary Westfahl, Wong Kin Yuen and Amy Kit-Sze Chan’s *Science Fiction and the Prediction of the Future: Essays on Foresight and Fallacy* (also from McFarland, 2011). Unlike these texts, Pilkington’s reference work offers an introductory account of the key terms in futures studies that have been influenced by science fiction, and not a sustained theoretical analysis of the ways in which science fiction influenced the development of ideas and their application for developing new technologies and scenarios. While informed by Jeff Prucher’s *Brave New Words: The Oxford Dictionary of Science Fiction* (2007), *Science Fiction and Futurism* is not a dictionary. It does not restrict its scope to the emergence of any given term, but it fills a gap in the literature by ranging across time to trace the coherence between ideas that feed into the contemporary scientific understanding of key concepts that science fiction has anticipated.

The book is organized into two sections: part one, “The Terms of Science and its Fictions,” contains fifty-five entries that explore the development of central scientific ideas and technologies. The shorter part two, “Genre Terms,” provide twenty-three entries that address the context for the emergence of these ideas. The text begins with a foreword by the futurist and science fiction writer David Brin, in which he acknowledges the propensity for debate amongst readers and writers of science fiction. He offers an alternative term for the mode: speculative history. While he suggests

unconvincingly that speculative history is appropriate because few science fiction writers are scientifically trained but that “all of us are complete history junkies” (Pilkington 1)—one might just as easily argue that few such writers are trained as historians, but many have an interest in science—Brin’s extended rationale in support of this term is compelling.

The entries in part one include many that are unsurprising, such as “Robot” and “Robotics,” “Artificial Intelligence” and “Deep Blue,” and “Cyberspace.” There are fewer, more recent terms, such as “Internet of Things,” “Utility Fog” (designating clouds of robots at the nanotechnological scale) and “Neural Lace” (“a neural interface between the brain and electronic or chemical systems,” Pilkington 108). Some unusual and colloquial terms appear, such as “Corpsicle,” “Kludge” and “MacGyver.” Pilkington relies heavily on the contributions to science of Isaac Asimov, *Star Trek*, Brin and Bruce Sterling, which accounts for the large number of entries dealing with computing and artificial intelligence. Surprisingly, other science fiction writers one might expect to see in this context, such as Cory Doctorow, Ramaz Naam and Karl Schroeder are not mentioned.

Even more surprising is the dearth of entries relating to biological systems and climate technologies. While entries for “Solar Sail” (which acknowledges solar energy) and “Goldilocks Planet” are present, given the consideration that geoengineering is receiving as an answer to climate change in popular culture and in scientific and governmental contexts, an entry for “Terraforming” or “Geoengineering”—particularly since the former was coined from within science fiction discourse and the latter by analogy to that term—would have been welcome. Similarly, while there is an entry for “Uplift” and “Mutant”—reflecting the interest in nuclear energy throughout the text—“Genetic Engineering” or “Pantropy” do not receive separate entries, although the biological is not completely omitted: there are entries for “Uterine Replicator,” “Multiplex Parenting” (the creation of fertilized embryos with more than two genetic donors) and “Solo Parenting” (distinct from clones; the creation of fertilized embryos created from a single donor), which reflect on how genetic engineering might transform conceptions of family. The omission of such entries despite the inclusion of “Kludge,” a derogatory term for an unadapted human, is puzzling given that the entry “Mutant” does not encapsulate the full range of issues and developing technologies associated with genetic engineering.

Part two, “Genre Terms,” contain entries that account for the different formulations of terms such as “Science Fiction,” “Science Fantasy,” “Speculative Nonfiction” and “Speculative History,” among others. These entries are necessarily not comprehensive and are appropriate to the length of the text itself, but are nevertheless useful for the reader new to science fiction. They open up the dialogue about genre classification that has occupied much scholarship in the field without being burdensome. Other entries in this section explore narrative forms such as “Lost Colony,” “Monomyth” and “Ruritania.” Other useful additions explore science fiction’s mythic inheritance in entries such as “Archetype,” “Cassandras” and “Faust,” which acknowledge the long tradition of thought about the future that informs science fiction and futures studies. However, a notable omission in this section is the lack of entries exploring “Futures Studies” or “Futurism,” which would have helped to orient readers new to these disciplines and would have allowed the symbiotic connection between science fiction and futurism to be contextualized.

The entries in *Science Fiction and Futurism* overall seek to trace the ideas that arise in science fiction and their influence as inspiration to scientists and technologists. These connections are important and are a fascinating read for the new reader and science fiction aficionado alike, although the second part is less useful for those already familiar with the debates about science fiction as a genre or mode. The book is accessibly written and succinct, and is most valuable as an introductory text and a spur for further research into the relationship between the imagination of the future and its realization. While there are glaring omissions with regard to issues related to climate

change, alternative energy systems and to innovations in society, the entries that are included are for the most part highly relevant to the practice of futurism as a discipline.

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Biography: Chris Pak is the editor of the Science Fiction Research Association's *SFRA Review*. He is the author of *Terraforming: Ecopolitical Transformations and Environmentalism in Science Fiction* (Liverpool University Press, 2016).



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A Book Review:
A Pathbreaking Study of Terraforming in Science Fiction

Benjamin R. DeVries

Pak, Chris. *Terraforming: Ecopolitical Transformations and Environmentalism in Science Fiction*. Liverpool University Press, 2016. ISBN: 978-1-78138-284-4

In her introduction to *The Left Hand of Darkness*, Ursula K. Le Guin is at pains to counter views of science fiction (sf) that figure the genre as “[s]trictly extrapolative” (xxiii). While granting the importance of extrapolation as a creative tool, she maintains that many celebrated sf texts do not primarily aim at prognostication but instead read like a literary thought experiment, a mode of inquiry directed not toward some probable future but at the present. In his 2016 monograph on terraforming, Chris Pak echoes Le Guin’s approach to the genre. Framing sf as a “literature of epistemology” (6), Pak’s *Terraforming: Ecopolitical Transformations and Environmentalism in Science Fiction* takes up its futuristic subject—the transformation of alien planets—and uses it to think through questions that are as current and Earth-y as they get: How does sf reflect on and challenge our relation to nature? How did (and does) sf participate in scientific and popular discourses about the environment?

Published by Liverpool University Press as part of its Science Fiction Texts and Studies series, *Terraforming* charts the development of ecological thought in twentieth-century sf. As such, the book proceeds chronologically. Pak approaches a battery of works from across the century—everything from Sir Arthur Conan Doyle’s “When the World Screamed,” to Frederick Turner’s *Genesis*—as a series of case studies whose depictions of Earth and, more often, alien planets respond to and even anticipate shifts in the ideological tectonics of environmentalism. In particular, Pak focuses on how this succession of texts treats terraforming. Less interested in terraforming’s technological what’s and how’s than in its qualities as a literary trope, Pak uses terraforming to animate a robust and far-ranging analysis that touches upon topics as diverse as ethics and genre, capitalism and aesthetics, deep-space colonialism and narrative space-time. This scholarly expansiveness, however, generally returns Pak to his principal ecological investments: instrumentalism and nature’s otherness.

Chapter one of *Terraforming* explores these investments directly, in its discussion of pre-1950s sf. Focusing on works from the interwar period, Pak considers examples of early terraforming stories like H. G. Wells’s *The Shape of Things to Come* and Edmond Hamilton’s “The Earth-Brain,” and argues that terraforming in these stories often frames the natural world as a space to be “landscaped” to meet human needs. Counterintuitively, however, this impulse to landscape, or master, also acknowledges nature as a site of dangerous excess, such that it requires mastering in the first place. As Pak puts it: “The endeavour to govern nature [...] is symptomatic of humanity’s fundamental dependence on a hostile environment” (23). For Pak, then, terraforming stories of the

interwar period dramatize the kernel of nature's otherness that humankind cannot overcome. Like a return of the repressed, that otherness irrupts into these stories in the form of the sublime and through what Pak calls the "proto-Gaian living world motif" (38). Anticipating John Lovelock's 1965 Gaia hypothesis, this motif figures prominently in Pak's book and frames planets as complex, self-regulating systems produced through the interaction of organic and inorganic matter.

Later chapters build on the ecological concerns of chapter one and weave them into a larger account of sf's history. Chapter two, for instance, traces the development of instrumentalism in sf from the interwar period into the 1950s. Here, Pak situates writers like Ray Bradbury and Arthur C. Clarke within the American pastoral tradition in order to illustrate how, by the end of the 50s, "a distinct engagement with the politics of imperialism, nationalism and utopia" had soured the technocratic optimism that marked terraforming tales of the 30s and 40s (89). This more critical encounter with the terraforming motif characterizes the direction that sf takes after the 1950s, according to Pak. Indeed, as he moves from the mid- to the late twentieth century and from there (briefly) to the twenty-first century, Pak observes the ways in which sf increasingly figures the terraforming motif in relation to ethics, politics, and human/alien otherness.

Yet while these later discussions of Kim Stanley Robinson's *Mars* trilogy or James Cameron's *Avatar* will prove interesting to some readers, it is Pak's examination of terraforming in the 1960s, 70s, and 80s that merits the most attention. In particular, it is here that ecologically minded sf begins to take explicit shape. A development catalyzed by American counterculture, sf writers during these three decades pushed against the genre's earlier instrumental tendencies in order to produce a "distinctly 'green discourse'" (137). In his discussion of that discourse's beginnings in the 60s and 70s, Pak focuses on the resurgent popularity of the proto-Gaian living world motif and on the terraforming stories of authors like Le Guin and Frank Herbert. This discourse, in turn, solidifies in the 1980s as environmental theories (like Lovelock's Gaia hypothesis) become a feature of the cultural mainstream.

Framed in this manner, *Terraforming*—especially its chapters on sf of the 1960s through 80s—should prove useful to scholars of speculative fiction, particularly those interested in plotting sf's evolution. Akin to the work of Ursula K. Heise and Eric C. Otto in that it too recognizes sf as a site for environmental inquiry, Pak's diachronic approach to the terraforming trope expands the conversation by clarifying the genre's changing relationship with ecological thought. For this reason, I also suspect that the book would be valuable to ecocritics curious about how ecological theories are anticipated, adopted, and shaped in popular contexts. Indeed, in the very process of talking *about* ecology and sf, Pak *performs* a kind of textual ecology, drawing endless connections between sources and practically reveling in the never-settled dialogic relationship between and within science and sf.

Of course, for readers who prefer a more narrow or restrained treatment of sf and ecology, the analytical sprawl engendered by Pak's readings may prove frustrating. Moreover, it can be tempting to equate *Terraforming*'s breadth with exhaustiveness, which certainly is not the case. For one, although Pak reflects productively on many, many sf texts, the texts themselves are predominantly authored by men. Likewise, since Pak sets aside discussions of pantropy (the technological adaptation of the human body to the environment), scholars will have plenty of room to elaborate the intersection of planetary and bodily landscaping. For its part, however, Pak's decades-spanning analysis of terraforming is an impressive work. It finds in sf an opportunity for a "disciplined thought experiment" (Pak 8)—a space for speculations about the future, yes, but also and especially for reflections on the present.

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Biography: Benjamin R. DeVries is a graduate student at the University of Illinois in Urbana-Champaign and will be starting his PhD coursework on twentieth-century American literature in the fall of 2017. In addition to his interest in speculative fiction during and after that period, his research focuses on Americanness as a concept, and on how modernization and globalization have challenged spaces deemed formative of American identity, like the American West. With its discussion of place, pastoralism, and American sf, Chris Pak's *Terraforming* constitutes an extension of the questions that motivate DeVries's research.



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