



Australasian  
Association  
of Writing  
Programs

# TEXT

Journal of writing and writing courses

ISSN: 1327-9556 | <https://textjournal.scholasticahq.com/>

*The University of Queensland*

**Helen Marshall, Kathleen Jennings, Joanne Anderton**

*Science fiction for hire? Notes towards an emerging practice of creative futurism*

Abstract:

This article introduces the term *creative futurism* to distinguish a type of speculative writing from traditional creative writing practices, specifically those of science fiction. Creative futurism is not a clearly defined field or method of practice but rather a loose array of approaches, examples and contexts, often involving collaborations between writers and stakeholders from other fields. We define it as work which is futures-oriented, uses elements of the traditional creative writing skillset, but is constrained by an additional set of parameters (their purpose, context and requirements). To support this definition, science fiction author Joanne Anderton discusses her experience writing creative, near-future scenarios about the deployment of drones for Trusted Autonomous Systems (a kind of creative futurism in practice). She outlines how she and her stakeholders conceptualised the writing and how she applied traditional creative writing skills within this context. Building upon this, author and critic Kathleen Jennings identifies aesthetic features of traditionally published examples of creative futurism: its heightened focus on technology, its realist-rationalist tone, and the resulting subordination of other aspects of craft such as characterisation. We conclude by discussing aspects of writing practice that might be applied in the future to energeise this new form of writing.

Biographical note:

Dr Helen Marshall is a Senior Lecturer of Creative Writing at the University of Queensland. She has won the World Fantasy Award, the British Fantasy Award and the Shirley Jackson Award for her two collections of short stories. Her debut novel *The Migration* argued for the need to remain hopeful, even in the worst circumstances. It was one of *The Guardian's* top science fiction books of the year. She runs the What If Lab at The University of Queensland, which specialises in creative arts, speculative fiction and imagination-led workshops for researchers from different backgrounds and disciplines.

Kathleen Jennings is an award-winning writer and illustrator of Australian Gothic and fantasy fiction. Her novella *Flyaway* (2020) won a British Fantasy Award (the Sydney J Bounds Award) and was shortlisted for the World Fantasy Award and the Courier-

Mail People's Choice Book of the Year Award, among others. She has completed an MPhil in creative writing at the University of Queensland, focusing on Australian Gothic literature, and is currently a PhD candidate there, researching methods of creative observation and writing a novel. You can find her at [tanaudel.wordpress.com](http://tanaudel.wordpress.com).

Joanne Anderton is an award-winning writer of science fiction, fantasy and horror, children's books and creative nonfiction. Her most recent collections of speculative fiction short stories are *Inanimates: Tales of Everyday Fear* and *The Art of Broken Things*. She's currently undertaking a creative writing PhD at the University of Queensland for which she's writing a "speculative fiction memoir": a collection of short stories and essays which interrogates the line between fact and fiction, real and imagined. You can find her at [joanneanderton.com](http://joanneanderton.com).



Keywords:

Science fiction, speculative fiction, futurism, transdisciplinary, creative writing

## Introduction

In April 2023 (as we were composing this article), the Design Initiative at Dartmouth (DIAD) launched a new project to “create a collection of human-centered fiction that draws on faculty research to illustrate what our future could realistically look, sound, feel, and even taste like” (Mayor, 2023). This piqued our interest because while such collaborations have been known to happen sporadically over the last several decades, the rate of uptake seems to be increasing dramatically, driven in part by a growth in transdisciplinary studies (particularly in futures-oriented work) and a corresponding decline in funding for the humanities in most universities. As the humanities seek to find new pathways to demonstrate their relevance within a system increasingly favouring STEM subjects, such collaborations offer a powerful way to produce new knowledge and new ways of thinking that draw on the skillsets of writers and humanities scholars. Yet even as these collaborations have grown, relatively little has been written about how creative writers adapt what they do and the resulting effects these collaborations might have on the aesthetics of the stories produced.

This article aims to begin to fill this gap. We introduce the term *creative futurism* in order to distinguish a type of speculative writing from what we think of as traditional creative writing practices and publishing models, specifically those of science fiction. Creative futurism, we argue, is not a clearly defined field or method of practice but rather a loose array of approaches, examples and contexts. For example, *Consumer Reports* commissioned three short stories that “envision alternate data futures” that could influence technical and policy innovations, pairing experienced science fiction writers with advisors with deep data experience (Fahs, 2022). This, we suggest, is one form of creative futurism. So is Peter W. Singer and August Cole’s bestselling techno-thriller, *Ghost Fleet: A Novel of the Next World War* (2015), which presents a compelling near-future vision of a war with China, with its major extrapolations documented in accompanying footnotes that explicitly link it back to research on technological developments. The authors coined the term FICINT (fictional intelligence), also known as “useful fiction”, as an analytic tool that melds narrative and nonfiction to allow readers to “‘experience’ what the research is actually telling us, as well as ‘feel’ its effects” (Cole & Singer, 2020, pp. 1). Building on their work, the Australian War College runs the Perry Group, an elective that aims to foster a forward-thinking and imaginative mindset among defence leaders by encouraging its students to write fiction about the future. Lastly, over the past three years, France’s Defence Innovation Agency (BBC, 2020) has used a team of science fiction writers to create scenarios that would spur innovation and head off future threats. This too is creative futurism. However, despite the surface similarities and differences between these artefacts and intellectual exercises, we believe there are important links.

We situate creative futurism at the intersection of creative writing (most commonly science fiction but not exclusively) and futurism (or Futures Studies), an emerging field that examines societal and technological progress, as well as other environmental patterns, using a systematic, interdisciplinary approach, often aimed at investigating how individuals will live and work in the future. There are other terms we might use such as the “anticipatory imaginaries” to which this journal has devoted a splendid special issue, which can be defined as “futures oriented

creative spaces in the present” (Castoriadis, 1990/1997, pp. 3) where “societies do the work of maintaining and constructing their identities” (Bussey et al., 2018, pp. 1) through provocative hybrid forms. What strikes us as setting creative futurism apart from these anticipatory imaginaries is that the latter necessarily includes identity work and emotional response, two of the hallmarks of creative writing. Yet these are two areas where we observe creative futurist writings tend not to engage as deeply. So while it may be true enough if you squint with one eye, you see creative futurism, and if you squint with the other, you see anticipatory imaginaries, the difference in focus actually signals a profound shift in project. Creative futurism, which is often characterised by its emotional restraint and a realist-rational tone, otherwise simply seems like poorly done fiction. But we argue that a traditional science fiction story has qualities that are often surplus to requirement to those of creative futurism and may even seem to hinder its effectiveness.

In many cases, it may be hard to tell exactly where the intersection between science fiction, anticipated imaginaries and creative futurism lies. *Consumer Reports* published its stories in *Popular Science* along with accompanying policy response essays. Likewise, while Singer and Cole have written a novel that clearly performed well in the commercial market, the additional documentation they provide hints at a more targeted project than pure entertainment, what a *Wired* interview with its authors describes as a “400-page warning” (Volpicilli, 2015) to policy makers. In the third case, the Perry Group, from year to year, has made use of both the metacognitive aspects of creative writing (worldbuilding and envisioning scenarios, for example) and traditional writing skills. Some of their final projects include story snippets while others opt for a traditional report form. In the last case, we have no access to whatever the French science fiction writers have produced because that information is classified. What links these activities then – and importantly, what constitutes our loose definition of creative futurism – is work that is *futures-oriented*, *uses elements of the traditional creative writing skillset*, but *is constrained by an additional set of parameters (their purpose, context and requirements)*.

We take each of these in turn.

### ***Futures-oriented***

Science fiction and Futures Studies clearly overlap to some degree. One way of thinking about science fiction is, as Alvin Toffler argues, a “sociology of the future” that allows the reader to explore a “jungle of political, social, psychological, and ethical issues” (1970, pp. 208). More recent scholars and writers have contributed to the critical understanding of science fiction as a powerful tool for social commentary, imaginative exploration, and political critique. Darko Suvin whom we discuss below, for example, has become known for his concept of “cognitive estrangement” in science fiction, emphasising its ability to prompt critical thinking and explore alternative social realities. In essence, cognitive estrangement in science fiction serves as a catalyst for intellectual and imaginative engagement, fostering a deeper understanding of the world we inhabit. Others have also picked up on this feature of science fiction. Fredric Jameson (2005) explores the relationship between science fiction and capitalism, arguing that the genre reflects and critiques the dominant ideologies and structures of contemporary society.

Likewise, Mark Bould and China Miéville (2009) analyse the intersections of science fiction, Marxism and cultural theory, examining how the genre can reflect and engage with sociopolitical struggles and marginalised perspectives. In a similar vein, Tom Moylan (2020) focuses on the role of utopian and dystopian narratives in envisioning transformative social and political possibilities. What links these theorists is their framing of science fiction as a tool to explore and challenge, rather than to predict.

Different subgenres of science fiction do this work in different ways. Hard science fiction, which may be closest in tone and appearance to creative futurism, foregrounds scientific accuracy, plausibility, and adherence to known scientific principles, theories, and concepts. Soft science fiction, on the other hand, prioritises character development, social and psychological themes, and fields such as sociology, anthropology or political science. Weird fiction, such as the kind popularised by Miéville, explores the intersection of science fiction, fantasy and the political, using the genre to address social issues, examine power dynamics, and challenge established structure. While some forms of science fiction are explicitly interested in the future of humanity, most are concerned with using visions of alternative worlds to understand, interrogate and reflect contemporary society.

Alongside science fiction, we find common ground with another emerging form of writing: speculative journalism. Speculative journalism combines elements of speculation and imagination with traditional reporting techniques to envision and articulate alternative outcomes or trajectories for various issues, including politics, technology, society and the environment. A good example is a project called *Wicked Thinking* overseen by Dr Skye Doherty (2020) which uses news articles from the future to frame key energy issues in Australia. We see speculative journalism as a particular kind of creative futurism with its own specific contexts and constraints rather than a wholly different phenomenon.

In contrast to these creative endeavours, futurists systematically examine various possible, probable and preferred futures, along with the beliefs and myths that influence these futures. Despite the overlap, however (and even despite the historical influence of science fiction on future technologies), there is mutual suspicion between science fiction writers and futurists (Miles, 1993). For example, the science fiction critic Gary Wolfe reviewed *AI 2041: Ten Visions for Our Future*, a book that pairs fiction by author Chen Qiufan with speculative essays by Kai-Fu Lee, former executive at Apple, Google and Microsoft, which outlines different plausible technological developments underpinning each story. Wolfe notes he is sceptical of efforts to match up science fiction stories with “science fact” because the latter “has always seemed a redundant back-formation that no one would use at all, if it weren’t for the supposed need to remind us that science fiction is, well, fiction” (2022) but finds the combination in this book ultimately persuasive. We quote at length to draw out some salient, recurring perspectives:

Facing such self-imposed constraints, Chen’s stories (written in Chinese, and translated by four skilled translators) almost serve as case studies in what science fiction can do that “science fact” can’t. Where Lee writes about issues, Chen writes about characters.

Where Lee writes about potential, Chen uncovers potential problems (though Lee is quick to acknowledge such problems in afterwords to the stories). (2022)

Such collaborations point toward creative futurism as an emerging critical discourse but also indicate some of the features we discuss below: the evidence of constraints upon creative practice; the aesthetics of the resulting artefact (a case study, as opposed to a story); and the differences in focuses (issues as opposed to characters and technological potential as opposed to technological critique).

### ***Traditional creative writing skillset***

When we use the phrase traditional creative writing skillset, we mean specifically stories that make use of setting, characterisation, plot, theme and style (see Marshall's work on Story Thinking [2023] as a framework for transferring these skills to new environments). We do not mean to say that other forms of writing are not creative (that would be absurd), nor do we wish to suggest that the strategies and methods employed by futurists do not involve creativity. Rather, the kinds of artefacts and activities we are looking at either explicitly or implicitly signal themselves as bearing some relationship to the commercial market for fiction. In some cases, as we have seen, creative writers have been employed to write about technology in a way that may be different from their usual methods and interests. In other cases, they may have been brought in to do work for an organisation that uses their skillset but does not result in a written artefact. In yet other cases, novice writers experiment with these skill sets in order to inculcate new ways of thinking, sometimes producing artefacts but sometimes not. Here, science fiction is likely to be the touchstone, as it is the genre of literature that has most obviously concerned itself with imagining the future, but we see the potential for other kinds of crossover. For example, the spoken word poet Emily Spiers has contributed to a broader futures-oriented project that employs oral storytelling, improvisation, and theatrical collaboration to create an anticipatory futures practice (Liveley et al, 2021). But the history and general thrust of science fiction – dating back to Hugo Gernsback's editorial vision for *Amazing Stories*, which promoted stories of "scientification" that "mingled scientific fact" with "prophetic vision" (Gernsback, 1926/2017, pp.11) – make it the genre most obviously closely aligned with the goals of futurist explorations.

### ***Purpose, contexts and requirements***

Fundamental to our argument is that creative futurism is developed in relation to a different set of purposes, contexts and requirements than those of commercial creative writing. These produce discernible effects upon the aesthetics of these pieces, that is, the way they look and feel to outside readers. A review of *Ghost Fleet* in *Kirkus* hints at how constraints on writing the novel may have affected its emotional impact. It describes the novel's "vivid details" and "individual scenes showing both sides in the conflict" but notes "the passion is missing" and that the emotions of the characters "don't seep into the story" (Kirkus Reviews, 2015). We quote from this review not to highlight an actual deficiency, but rather to point towards some of the aesthetic effects of the writers' project (and Wolfe's review of *AI 2041* hints at the same aesthetic effects). In the case of *Ghost Fleet*, the work was obviously produced as commercial

fiction for a market but the constraints – the necessity to cleave to technological realism – meant that the authors were more interested in using story to explore a future world than they were in exploring the characters beyond their role as agents of plot. This is, we suggest, not a bug but a feature of this kind of writing. Often the purpose, contexts and requirements will be signalled by paratextual elements such as Cole and Singer’s use of footnotes. From time to time a work produced as a piece of creative futurism may find a home in the traditional market.

We recognise that these alternate contexts may carry with them additional ethical concerns. One is money. The tension between artistic autonomy and the necessity to commercialise one’s work has been a subject of scholarly inquiry for decades, with studies from Bourdieu (1993) to Brouillette (2014) exploring how writers navigate this delicate balance between creative expression and economic considerations. Creative futurism is interesting at least in part because it has the potential to offer a more lucrative income stream than traditional publishing for writers whose incomes have come increasingly under threat – while also then potentially pressuring those same writers to convince the reader of a particular viewpoint.

The other is the agenda of those commissioning the work. We are reminded here of Matt Carr’s 2010 article “Slouching Towards Dystopia”, which discusses the emergence of a genre called military futurology. This genre draws inspiration from both cold war scenario planning and apocalyptic Hollywood movies. Its aim is to protect the “western way of life” by addressing threats like terrorism and climate change. However, Carr argues that instead of promoting security, this genre fuels ongoing global warfare. He examines contemporary military futurist endeavours, such as the 1997 Global Trends Report and the rise of wargaming, highlighting their role in shaping and exerting dominance over the conflict-ridden twenty-first century. On the other hand, military scholars like Robert H. Latiff (2018) contend that the emergence of new forms of conflict and the rapid advancement of technology will present a formidable challenge to both soldiers and the public, affecting their comprehension of and reactions to crucial aspects of future war such as the justifications for initiating warfare and conduct during armed conflicts. He suggests that the public ought to have a better understanding of military matters in part because “it is unconscionable for a nation to cede its most important decisions to such a small and highly homogeneous group” (2018, pp. 10). Creative futurism offers one avenue for engaging the public more readily.

Other ethical considerations abound. Ought the usefulness of creative writing to be framed in terms of its value in financial terms? What happens when an imaginative literature invested in critique is instrumentalised or forced to take a deliberately “rational” approach? How does this change how these works are produced and consumed? While we want to flag these concerns, the sheer number of potential contexts makes it difficult to discuss the range of ethical considerations in detail. We highlight some ways these intersect with aesthetic concerns and artistic practice but we leave a more detailed interrogation to future studies.

### ***Our approach to the problem***

What, precisely, is creative futurism? We know it when we see it. But seriously, the apparent ambiguity of the term is strategic, as it enables us to triangulate the hallmarks, focus and effects, and work back from those to a functional consideration of the form. Creative practice by its nature is both bound by constraints and often energised by them. In approaching the topic we do not intend to denigrate creative futurism for not looking like other forms of fiction but instead seek to show how the purposes, contexts and constraints produce certain recurring strategies and effects. We also want to sketch out which aspects of our practice as we understand it now can be usefully carried over into this new form of writing and which might offer bold directions for exploration. In this sense, we opt for a deliberately disciplinary perspective on a phenomenon that both intersects with and escapes our own discipline.

The structure of our essay attempts to triangulate the phenomenon. In the first section, science fiction writer Joanne Anderton discusses an experience writing creative, near-future scenarios about the deployment of drones for Trusted Autonomous Systems, Australia's first Defence Cooperative Research Centre (a kind of creative futurism in practice). She outlines how she and her stakeholders conceptualised the writing and what she learned when applying traditional creative writing skills within this context. In the second section, author and critic Kathleen Jennings identifies some common aesthetic features of traditionally published examples of creative futurism: its heightened focus on technology, its realist-rationalist tone, and the resulting subordination of other aspects of craft such as characterisation. This discussion helps to provide a clearer "centre" for the category so that it can be recognised more easily when encountered in the wild. Together, these sections contribute to an understanding of how the constraints may have produced new writing strategies and new aesthetic effects and offer notes toward an understanding of the potential richness of creative futurist practice and its alignment with creative writing. We expect this to be useful to the field of creative writing both in that it will outline an area where creative writing skill sets might be applied and also in that it may help to distinguish why creative futurism does not necessarily look or "read" like other forms of fiction.

### **From case study to narrative scenario (via story)**

This section explores an example of creative futurism in practice, a collaboration between myself (Joanne), and Trusted Autonomous Systems (TAS), a Defence cooperative research centre with a focus on autonomous and robotic technology. As in several of the examples already noted, it is becoming increasingly common for science fiction writers to be asked to work with external partners for a range of reasons: to imagine future scenarios, to create narratives that communicate a visceral and engaging sense of these futures, and/or to use aspects of craft such as characterisation to explore how different kinds of people engage with technology. This project was aligned with those broad themes. In collaboration with the Australian Department of Defence and its stakeholders, TAS had developed a framework to reduce the ethical risks incurred in the use of artificial intelligence (AI) in military contexts, called the *Method for Ethical AI in Defence* (Devitt et al, 2021). They employed me to write specialised narratives of around two thousand words each, through which they could test the framework, looking for potential stress points, risks and triggers. The narratives needed to be



accessible to an audience made up of Defence and Defence industry personnel. Although I have no history in Defence or specialised knowledge of AI, I was able to adapt my skills as a science fiction author to generate the kind of creative futurist scenarios they required. In this section I examine the steps I took to transform a list of parameters and technologies into a narrative scenario and how that differs from my general creative practice.

### ***Purpose, contexts and requirements***

The project was bound by significant constraints that shaped the way I approached the work. For example, there are five key facets to the Method for Ethical AI in Defence (Devitt, 2021): responsibility (who is responsible for AI?), governance (how is it controlled?), trust (how can it be trusted?), law (how can we use it lawfully?) and traceability (how are its actions recorded?). My partners wanted to pinpoint these in three domains: air, land and sea. They asked me to write a narrative for each domain that would touch on all five ethical facets set five to ten years in the future. In addition to this, I also needed to frame the technology accurately and introduce a human element.

To complete the work, I was given detailed case study notes including the technology I could use and the kind of situation where that technology might be deployed. Because the scenarios were set in the future, it was necessary to consult my partners on any extrapolations from existing technology and to clarify technological capabilities. However, despite this strong focus on getting the technology right, it was made very clear from the outset that the focus of these narratives needed to be the effect of the technology on the people involved, rather than how the equipment worked. The interaction of human and AI is instrumental to its ethical development and use. Characters, then, had to be at the forefront. For readers to empathise with the people involved and understand the choices they make, the characters I created had to “ring true” to Defence personnel deeply familiar with their situation and jobs.

### ***The effects on creative writing practice***

The case studies I received were functionally a checklist – a set of instructions, many of which made traditional craft strategies impossible. For example, when writing speculative fiction, worldbuilding introduces most of the primary constraints. Mark Wolf argues imaginary worlds must be inventive, complete and internally consistent (2012, pp. 33). Jeff VanderMeer adds that the strategic use of “specific details” helps convince the reader of the reality of the world as long as these details do not seem jarring or contradictory (2013, pp. 220). The near-future world I would be writing about had its own set of specialised constraints, including that no geographical location or theatre of war could be identified or inferred from its description, thus making it difficult to provide the strategic specificity VanderMeer argues for. Likewise, I am accustomed to thinking about a theme or throughline when it comes to stories. Writing to a list of facets and creating clear moments for a reader to say, “this demonstrates the importance of *traceability*”, or “lack of *trust* in AI has led to this event”, feels entirely different, and less subtle, than alluding to such a thematic preoccupation.

The first, most obvious effect of writing to a list of requirements in this fashion was the way it brought my story-writing brain to a shuddering halt. To push through, I read other “useful fiction” examples – particularly “Striking Blind”, a paper that emerged from the Australian War College’s Perry Group, and “uses fiction to consider the opportunities and challenges of military Artificial Intelligence (AI) and autonomous systems” (Hamilton et al., 2021). TAS had flagged this as a good example.

Dissecting it proved to be a very useful exercise. I learned that it helped to start with the human perspective, use a light touch when integrating technology, and that it was vital to be upfront and clear about the mission objectives. But my main insight involved structure. I mapped out a simple but effective story-shaped arc: set up → inciting incident → turn → resolution. The set-up established the character, technology and mission, the inciting incident and turn highlighted the key ethical conundrums, and the resolution emphasised the human impact. I used this to create a template for each of the case studies:

The characters	One or two main characters
Their mission	What are they doing and why?
The setting	Geographical and political but drawn with broad strokes (the scenarios are purely speculative and not set in any real country, any real region or in the middle of any actual conflict)
The technology	Which RAS-AI (robotics, autonomous system and artificial intelligence) capability is to be tested?
The ethical facets	How would each be explored in the story?
The set-up	An amalgamation of characters, mission, setting and technology
The inciting incident	What “goes wrong” / what challenge do they encounter / what changes?
The turn	How do the characters react to the inciting incident in a way that explores the relevant ethical facets?
The resolution	How are the ethical facets brought to light or examined through the characters, their reactions and emotions?

The template enabled me to reimagine each case study as a story, translating an amorphous and somewhat alien set of constraints into a language I could understand. For each domain (air, land and sea), I took the case studies provided and generated notes for three scenarios. These notes were then sent to different stakeholders, reviewed and collaboratively refined. How realistic were the inciting incidents? Were my characters acting and reacting in a way that felt natural to a Defence audience? Just how advanced would AI technology be in five to ten years? Common science fiction tropes that suggested a military AI might deliver data and make suggestions through conversational English and a quirky personality, for example, were sadly unrealistic. Only after multiple meetings, rewrites and refinements did I take these notes and narrativise them.

### ***Gaps, omissions and pushback***

It took multiple drafts to finalise each narrative scenario. Writers are used to dealing with editorial feedback, but feedback from expert stakeholders has a different purpose. While editorial feedback refines a story in line with an author’s artistic vision, my stakeholders saw

these narrative scenarios as tools: a means to an end but not an end itself. This led me to realise that a narrative scenario is *not* a story.

Stories have their own particular structures, tropes, and expectations, all rooted in culture and tradition that we are immersed in from birth. As Peter von Stackelberg and Alex McDowell argue:

Stories appear to be an innate part of human beings. Provided they are engaging and follow a simple dramatic arc, even the simplest narratives can produce the release of neurochemicals like cortisol, which focuses attention, and oxytocin, which affects empathy. (2014, pp. 63)

As readers, viewers and consumers of stories, we have internalised them to the point where we can “feel” when something does not quite work even if we are not able to articulate why. It felt natural to me to lean into story expectations by using my template, so the story expectations of the stakeholders were naturally triggered. For all that we discussed the details of technology, we also debated just how a particular lieutenant might react given her emotional state and personal history. I was pleased when that happened. To engage enthusiastic readers in a character is one thing, to engage busy stakeholders who viewed the narrative as a tool to be used rather than a tale to be enjoyed meant it had to be doing something right.

That being said, the urge to make these scenarios into “stories” – with surprises, arcs, twists and multifaceted characters – was also the hardest thing to resist. TAS had requested very specific narratives with tightly defined constraints. I turned their case studies into stories so I could write them, but then those narratives wanted to become stories in their own right. They wanted their own autonomy: to surprise me, upset me, break my heart. But I could not let them.

While characters were at the forefront of each scenario, they needed to behave in a way that saw them align with Defence expectations and protocols. Someone might make a mistake, might hesitate, might be prejudiced or tired, but they absolutely could not go rogue, or fall in love with the imagined persona of their autonomous UGV (unmanned ground vehicle). The best realised characters contain an element of chaos. Adding dysfunction between what a character wants or thinks and what they actually do or say can add depth (VanderMeer, 2013, p. 191). Good characters, like people, are often layered with contradictions (Bauer, 2006, p. 115). But chaos and contradiction do not fit the purpose of the narrative scenario.

Metaphor, simile or any other lyrical writing that accompanies some of the best short stories also do not fit the purpose of a scenario. While some of my characters thought in metaphor, I had to keep those necessarily generic – like when a character in one scenario says to another, “coffee is life”, giving a little more surface-level depth to her personality. There is certainly no space for the broader engagement in metaphor that science fiction excels at. For instance, J. G. Ballard argued that science fiction should jettison accuracy as “the last refuge of the unimaginative” and explore “fresh situations and contexts that illustrate its theme obliquely” (1962, pp. 103). This form of exploration was impossible, given the constraints. The AI in these

scenarios was not a mirror reflecting our own humanity, nor an exploration of our fear of being usurped by the technology we have created. The AI in these narrative scenarios was a product, and the story was a tool to show how it worked.

The creative sacrifices required to generate “useful” scenarios for a particular set of stakeholders, in this case Defence and related industry, raises questions around the balance between storytelling for hire and imaginative freedom. If I was writing for myself, for the sheer intellectual and emotional joy of exploring an idea or putting myself in the shoes of a character, without the pressures and requirements imposed by a third party, would I have problematised the technology in ways I simply did not have the flexibility to do? Absolutely, because the power of storytelling is in those complications. I wanted to find a way to tell a story, in all its messy glory, and also adhere to the guidelines and do the job I had agreed to do, but over and over, I was forced to rein in my creative instincts. Even when I thought I had written with admirable constraint, the feedback I received was to pull them back even further. In the end, I had to accept that a story, no matter how well researched, planned and tightly structured, has a sense of its own life. There was no scope for these narrative scenarios to have their own lives. The purpose bound the characters and their actions in the same way it bound me to a particular style, mode and language choice. While a story is organic, a narrative scenario is mechanical.

### ***Why science fiction?***

It is almost tempting to ask, then, why employ a science fiction writer to do this work at all? But it is only now that this question raises its head to me. Never, in the actual process of writing the narrative scenarios did I wonder why I was the one doing it. Storytelling might be something many of us take for granted, but it is a complex skill that takes many years to master. I was reminded of this while sitting in front of a screen with half a dozen high-ranking military personnel staring back at me, as I explained my process, the reasoning for every step, and detailed the people, places and plots that I had created from their case studies. There is hard-won tacit and explicit knowledge here. In the end, this revitalised my appreciation for the work I was doing. Story is a powerful tool through which we connect to other humans and imagine possible futures. Narrative scenarios may strip away some of the depth that traditional science fiction storytelling employs, but it is still closely enough aligned with a sense of story to trigger and utilise the deeply embedded pathways within us. It simply uses them for a different purpose.

### **Creative futurism in the wild: Aesthetic effects**

While the previous section explored a practitioner’s struggles to work within the constraints of a specific creative futurist project, this section draws out how some of the aesthetics identified take effect more broadly in the commercial publishing sphere. I (Kathleen Jennings) am a writer myself, a literary critic and have been a judge for speculative fiction awards at the international level. My PhD work investigates the form of the speculative short story and underlying my observations is the analysis of a broad cross-section of over four hundred short stories. As part of this process, I have identified some of the stylistic features common to creative futurism published commercially as short stories. In the interests of scope, the main

examples I discuss are drawn from Kai-Fu Lee and Chen Qiufan's *AI 2041* (2021), and three stories by Malka Older, Sameem Siddiqui and Bonnie Jo Stufflebeam commissioned by Consumer Reports' Digital Lab (Fahs, 2022) and published by *Popular Science* in 2022. For reasons of length, I have only briefly summarised these stories and those included as contrasting examples. However, with the exception of those in *AI 2041* and Meg Elison's "Fifteen Minutes of Grace" (which can be accessed with a free trial subscription), all the stories discussed are freely at the links in the bibliography.

The stories that inform my observations are identifiable as short stories based on their features: self-contained narratives, limited word counts, inciting incidents, relevant worldbuilding, beginnings and middles and ends, adequate characterisation, and all the technically necessary narrative appendages. Yet they share stylistic constraints and commonalities that echo those described in the previous section: a heightened focus on technology, an overt realist-rationalist tone, and a palpable sense of extra-narrative focus or restraint. These features appear in the work of even established authors, often eroding their distinctive styles.

Broadly speaking, the typical creative futurist short story seems to be pulled in two directions, as the author attempts to mould the technological thought-experiment into a narrative form that makes use of characterisation, plot and setting, yet restrains wilder literary stylings. That is, the heightened focus on technology and the realist-rationalist tone together set a speed-limiting device on narrative impulses. Compared to general commercial speculative fiction stories, these stories never quite seem able to get the pedal to the floor and the reader is rarely permitted to forget their overt purpose, a point echoed in Wolfe's review of *AI 2041* and indeed in the previous section. This tension holds the style of a creative futurist story in suspension. If a creative futurist piece pulls too far from that point of balance, it is likely to either stop being recognisable as a story (becoming, for example, a vignette, scenario, visualisation or hypothesis), or stop functioning as creative futurism. But all these constraints flow from the overarching purpose (and intensity of focus) of the creative futurist short story.

### ***Heightened focus on technology***

The literary critic Darko Suvin argues that what distinguishes the poetics of speculative fiction from other forms of literature is its use of some new idea, which he calls a *novum* (literally, a new thing), and the "totalising" effect it has on its storyworld (1976/2016, pp. 80). In general, a creative futurist story is primarily distinguished by a heightened (and sometimes unrelenting) focus on a *novum* presented in a realist-rational manner. For example, "Shared Data" by Malka Older is an "eco-futurist hypothesis" commissioned by Consumer Reports' Digital Lab (Fahs, 2022) with an accompanying policy response essay by a data expert. It envisions a world that can withstand and endure the effects of climate disasters where a collaborative platform and data repository would offer up-to-the-minute details, understanding and venues for communal interaction to confront the challenges of natural disasters. In general, a *novum* could, of course, be environmental (climate change), political (non-capitalist economics), or sociological (social evolution), but a technological focus seems dominant in most instances, with its effects shading into other areas. As a result, I have abbreviated this to "the technology" throughout.

As in the example of “Shared Data”, the technology is often explicitly the central focus – the subject, perhaps, of a series of commissioned stories (Fahs, 2022) or the express purpose of a book (Lee and Chen, 2021), and the topic of accompanying expert commentary. But whereas Suvin’s *novum* can be seen as integral to science fiction’s method of exploring the nature of humanity – “a device for casting light on ourselves” (Broderick, 2022) – a creative futurist story’s driving purpose is to use characters and other story elements to explore a new technology. To reverse Suvin’s formulation, we “ourselves” become a device for casting light on the technology.

Imagine, for example, the difference between a story about memory augmentation that uses characters’ relationships primarily to *demonstrate* aspects of that technology, and a story in which devices for augmenting memory *explore* human relationships – or simply compare “The Memory of Tomatoes” (Stufflebeam, 2022) to “The Many Taste Grooves of the Chang Family” (King, 2022). In the first story, virtual assistants, data markets and neuralinks are depicted supporting relationships: taking weight off the effort required from a carer, enabling a mother who knows she’s losing her memories to interact with her daughter as if she remembers – charming as the memories are, they are introduced fairly late and are an illustration rather than the point. In the second, a technology enabling the recreation of a recipe from a remembered taste becomes a link permitting a father who is losing his memory to exact overdue revenge on his adult children for a childhood prank also remembered in sustained textural detail by the narrator. Here, the focus of the story is on the memory itself and all its nuances of boredom and shock and affection, rather than the believability of its method of recreation (although it is possibly one of several stories based on an existing prototype [Kow, 2022]). It is a story less about how we might remember than about what these characters choose not to forget.

This technology-centric approach shapes a creative futurist story in two main ways. First, this heightened focus on the technology constrains the narrative potential of that technology. Second, the sustained nature of this focus directs and modulates many aspects of the craft of fiction, all of which must serve that predominant technological concern. In general, in commercial speculative fiction, the roles available to a central *novum* (technological or otherwise) are many and various. The *novum* may instigate a plot, be a force within it, be incidental, be an element of the world, contribute to theme or style, be part of a metaphor, add flavour or be a character: villain, antagonist, protagonist, victim or force of chaos. However, the heightened focus on technology in a creative futurist story immediately removes many of the subtler roles. Technology cannot be merely the *context* of a search for a relationship (as it is in “Matrimonial Quest at Lunar Prime”, Omar, 2022); rather, it must intervene at every step (as in “The Golden Elephant”, Chen, 2021).

As the story’s focus, the technology is omnipresent. For example, I observed technology seldom serves as the sole or central basis for conflict, because that choice would foreground the characters (and may be incompatible with a client’s aims). Even if the technology were a *deus ex machina* for resolving a conflict, which would seem to give it a major role in the narrative, the technology would still be absent from too much of the rest of the story. The

technology is elevated above “mere” worldbuilding – it is more than a backdrop – but generally prevented from becoming a character. Those classic character types that do not vilify technology risk personifying it. See as a contrasting example Alison’s stressful “Fifteen Minutes of Grace” (2022), which while very much centred on the near-future uses and consequences of proprietary vehicle software does not cast that technology in a benevolent light, and which is in consequence difficult to envisage as a creative futurist story.

The majority of creative futurist stories actively avoid personifying technology, continually revealing and framing it *as* technology even if characters attribute personalities to it. For example, in Chen’s “Twin Sparrows” (2021), the educational AI assigned to each twin does appear to have a distinct personality, but the text specifies how that is designed by and for the characters and can be adjusted by third parties to enhance their education and relationships. A degree of personification or emotiveness *can* work in creative futurism. In “Gods Behind the Masks” (Chen, 2021), for example, two generative systems are depicted as locked in battle but in that case, the enlivening metaphor is embedded in existing jargon.

So the place of technology is finely balanced. It must inform the world, but cannot be too subtly laid in. It must be actively involved in the plot, but the opportunities to characterise it are limited. Characters must interact with it, but their humanity cannot be distractingly idiosyncratic. The technology cannot merely be acted *upon* by characters, but the opportunities for it to *be* a character are constrained by the realist-rational tone; it must be described in detail but not too figuratively. This suggests that in creative futurism, the technology (and its attendant realist-rational mode) should sit at least alongside the traditional primary narrative elements of character, context and conflict, consequently moderating or muting other stylistic considerations.

### ***Realist-rational tone***

The second main hallmark of creative futurism is its realist-rational tone. This is related to the purposes of creative futurism. There is naturally a degree of overlap between purposes that a creative futurist story may serve versus those of a non-creative futurist short story. However, if these were to be arranged on a continuum, with conscious rationality at one extreme and aesthetic sensibility at the other, it is clear that the distribution of creative futurist purposes is towards the strictly rational end. The need to satisfy this purpose and generate specific responses in the reader (and by implication to satisfy the requirements of the client or publication calling for the piece) creates common constraints on creative futurist stories, which are reflected in their tonal similarities.

Creative futurist pieces are dedicated to perceived realism, supporting their focus on technology. Cole and Singer’s discussion of FICINT exemplifies this approach:

As readers, we love science fiction and fantasy stories set in other worlds or galaxies far, far away. Even this too has a place in education. ... But in the sense that FICINT has to be useful fiction, it is set in the real world. It is not just that the locales are here on planet Earth (and, often most usefully and interestingly in places that people

recognise, be it a bar in Hawaii or Union Station in DC), but that the fictional stories set there also reflect the real world. Even if the scenario played out is designed to push the boundaries of thought, the characters in it should reflect who realistically might be there and how real people would act under those circumstances. (2020, pp. 6)

Clarity, plausibility and explanatory logic are paramount, and anything else tends to be stripped away. After all, a lyrical paean to a machine may tend to call its practicability into doubt. Explanations are laid out with earnest sobriety, actions and technological functions supported and justified. As a result, it is often difficult for the reader to become immersed, or to forget that a story is being calmly detailed, with emotion and unexpected viewpoints quickly offset by exposition. The requirements of creative futurism therefore resist too great a play of literary invention. And together, these central technology and tonal requirements, by constraining other narrative aspects, create the secondary distinguishing features of creative futurism.

### *Effects on creative practice*

These primary features (the central focus on technology, and the realist-rational tone in which it is presented) directly and indirectly affect key elements of short stories. These particularly include setting and exposition, plot structure, pacing, characterisation, narrative distance, voice and style. These become subservient lenses, focusing further on the central topic. The table below summarises observations from my reading. The table also indicates some of the interrelationships such as how requirements for exposition, for example, also influence pace and narrative distance. Although there is of course a range of purposes and treatments across creative futurist stories, some of these similarities are particularly striking. The measured, incremental pace (supported by logical links and justifications) is shared by plots as diverse as the fairly literal titles “Quantum Genocide” (Chen, 2021) and “The Memory of Tomatoes” (Stufflebeam, 2022) would suggest. Whereas a voice or aesthetic can frequently carry a short speculative story, in creative futurism such stylings are often surface-level. To the extent a creative futurist story brushes up against cyberpunk or solarpunk or adventure subgenres, it may get some paint on it, but those aesthetics and modes (and all the possibilities of chaos or worldview or hijinks embedded in each) must remain subservient to the core purpose.

Importantly, these features are not merely side effects. They seem to emerge from the story’s navigation of the requirements of the mode, the constant adjustment of the plot, the integral exposition, the particular necessities of characterisation, and the modulated pace, creating an ecosystem of techniques and stylings that keeps the reader emotionally at arm’s length, the better to engage them intellectually. And in most of these stories, pulling forward themes or deepening characterisation might make them more commercial stories, but they would cease to be creative futurism. For example, if oppression or politics or love were pulled forward in “Gods Behind the Masks” (Chen, 2021), it would become a story about the most thematically dominant element, but it would cease to be *about* deep fakes. The focus needs to be kept.

The table below outlines some of the main features I have observed, and I offer some discussion following.



<b>Element of craft</b>	<b>Heightened focus on technology</b>	<b>Realist/rational treatment</b>	<b>Uncommon techniques</b>
<b>Concept</b>	<p>Must be technology centred</p> <p>Client requirements may limit role of technology (negative or chaotic, for example)</p> <p>Details and extrapolations clearly set out</p>	<p>Even-handed treatment of technology (in intention if not always successful in practice)</p> <p>Technology cannot be overly personified</p> <p>Use of characters often necessary to pull story to a conclusion and provide emotional resonance</p>	<p>Subtler, indirect and negative roles for technology, such as antagonist, villain, victim, comic relief</p> <p>Human tendencies such as personifying technology, superstition, conspiracy theories</p> <p>Ethical explorations outside of those embedded in the original concept/client requirements</p>
<b>Description and setting</b>	<p>Setting must support the focus on the technology</p> <p>Technology must be demonstrated, justified, worked out and explained</p> <p>Uses explicit and straightforward description in preference to thematic and ornamental description</p> <p>Difficult to forget that it is a constructed engineered situation</p> <p>Positioning to answer or support expert interaction</p>	<p>Must be believable, defined, supported and explained</p> <p>Cannot rely on suspension of disbelief</p> <p>Frequent use of competent, parental, or expository characters</p> <p>The more specific the intended audience, the more expository the style</p>	<p>Unusual settings, or environments that push back against the story</p> <p>Implicit exposition</p> <p>Suspension of disbelief</p> <p>Allowing the reader to fill in the blanks</p>
<b>Relationship to present</b>	<p>Extrapolation from present primarily focused on technological advances</p> <p>Consideration of technological impacts on/changes to the present situation</p>	<p>Plausible and defensible extrapolation from the present</p> <p>Tendency to assume recognisable norms (see also characterisation)</p>	<p>Social commentary</p> <p>Critique and satire</p> <p>Metaphorical engagement with present</p> <p>Surprising variation from the present, allowing reader to question and fill in the blanks</p>
<b>Plot structure</b>	<p>Must be centred around or informed by technology</p>	<p>Must be believable</p>	<p>Chaotic plots (for example, the</p>

	<p>Position of technology established early, subordinating human elements</p> <p>Technological vs character turning points jostle for position (see “The Golden Elephant”, Chen, 2021)</p> <p>Interactions with technology guided by what will best demonstrate its features and uses</p> <p>Common endings include competence paying off, finding a new way to work within the system, or liberation by or acceptance of the technology</p>	<p>Logical linear progression common</p> <p>Logical endings, incorporated and related to the use of the technology</p> <p>Few surprises for reader</p> <p>Dramatic large-scale change at the end of the story is unusual (although it does happen – see Chen’s “Quantum Genocide” (2021), although even there it feels like a temporary solution)</p> <p>Endings that can feel tidy, pat, small or like a moral or lesson</p>	<p>disastrous deployment of oil-eating organisms in “Oil Bugs”, Gwen C. Katz, 2022)</p> <p>Unusual structures and formats (non-linear, list structure, diary ....)</p> <p>Extremes of genre or mode</p> <p>Multi-layer plots and subplots (unless they can be united at technological pinch-points)</p> <p>Open-ended endings unusual (compare for example Parker’s AI story “Our Lady of Tomorrow”, 2023)</p> <p>World-breaking endings unusual</p>
<b>Pacing</b>	Regulated by requirements for ongoing exposition	Logical progression	Relentless or highly nuanced or variable pacing
<b>Characterisation</b>	<p>Characters cannot be so individual they detract from the technology</p> <p>Idiosyncrasies serve to demonstrate aspects of the technology, for example “Twin Sparrows” (Chen, 2021)</p> <p>Character must be in a position to interact with the technology in a way that demonstrates it</p> <p>Projected default human interaction, or competence</p>	<p>A tendency to a stereotypical or default character (the caretaker daughter, the harried father), or a character within an acceptable default range for their type</p> <p>Frequent caretaker, parental and paternal roles</p> <p>Characters who are likely to interact with the technology</p>	<p>Highly idiosyncratic and unusual characters</p> <p>Characters who do not bear the weight of representing a group</p> <p>Specific, unexpected and personal reactions and interactions</p> <p>Interrogation of what “realistic” or “probable” means, and according to whom</p>
<b>Character Arc</b>	Guided and facilitated by	Predictable	Deep character

	the technology	Exemplary Explained	change Concerns and arcs unparalleled by technology
<b>Psychic Distance</b>	Requirement for exposition has distancing effect  Too close an experience of the story may distract from the focus	Stories not frequently emotive  Cautious to avoid reader-response that is counter-productive or irrational  Focus on eliciting an intellectual (more predictable) as opposed to emotional (less predictable) response  Often conveys impression of what reader should feel rather than actually feeling it	Strong empathy  Emotional involvement and associations  Immersion  Full range of possible reader-responses  Examining the implications of the emotional tenor being privileged
<b>Tone and Voice</b>	Appropriate to allowing the details of the technology to be conveyed  Unexpected tone and voice may be a distraction	Rational and logical  Less measured tone and voice may be a liability (a sarcastic voice or a tragic tone may call the reliability of the text into question)  There is a strong impression that not only must the story always remain conscious of its purpose and focus – so too must the reader	Wilder and unexpected tones and voices  Acknowledgement that tone alone doesn't make content rational, and attendant ethical explorations  Visibility of author's biases and values
<b>Style</b>	Appropriate to clearly delineating technology  Extraneous features omitted  Purposeful and accurate jargon required  Adopted modes (romance, Gothic, adventure) allowed to the extent they do not pull focus from the technology	Cannot be too poetic or figurative  Clarity and precision  Adopted modes cannot become "implausible"	Opaque, ambiguous, and open-ended devices, such as metaphor, allegory and satire  The pleasure of language (including technical jargon)  Elements that aren't overly instrumental  The wider field of language and tropes of other modes and genres (romance,

			cyberpunk, and so on)
--	--	--	-----------------------

### ***Possibilities for further exploration***

The purpose of the creative futurist story creates constraints that exert certain forces on the short story form. However, the restrictions of the realist-rational tone may present drawbacks, particularly in terms of its restrictions on use of metaphor (and personification), highly individual characterisation and the authorial imagination more generally.

First, the future is ultimately speculative. Metaphors, nebulous as they seem, and even the personification of technology may stand in for breakthroughs as yet unanticipated. *Winning Westeros* offers a provocative chapter that explores how undead White Walkers in *Game of Thrones* anticipate themes that may emerge in the future of war, including combatants without human motivations and combatants without susceptibility to regular psychological pressures (Scharre, 2019).

Second, the potentially chaotic influence of idiosyncratic characters may demonstrate potential interactions more pointedly than the blunted actions of a character who must stand in for a whole section of humanity. Interactive design, for example, makes use of extreme characters (or brink users) to highlight cultural issues or character traits that might be antisocial or in conflict with a person's status (Djajadiningrat et al., 2000). Indeed, design fiction inspired by science fiction is another kind of writing that may fall under the category of creative futurism (Shedroff & Noessel, 2012).

Third, the constraints of creative futurism appear to resist too strong a play of imagination and personal style, an intriguing consideration, when authors are presumably recruited because of that imagination and style, or at least for the credibility it has earned them. Certainly, the cyberpunk writer William Gibson anticipated the aesthetics of future technology as much as the technologies themselves when he coined the term "cyberspace" (Cavallaro, 2007).

Fourth, leaving unquestioned what is "realistic" and "rational" may have a blinkering effect, as well as attendant philosophical, ethical and cultural ramifications. First, the tonal constraints inhibit the deployment of other styles. Second, and more importantly, the tone disguises the foundational question of just how rational the assumptions and choices made are, and how they have been assessed: by whose guidelines, and according to which philosophy, and (particularly given the tendency to assume a "default" humanity) in whose interests? Such constructions leave important questions unasked: how, for example, is realism being defined by the author or client in relation to a necessarily as-yet-unreal future? Or if all acts of seeing are charged (Haraway, 1988), then can a creative envisioning that does not shift or acknowledge its starting position ever be purely objective?

Ultimately, creative futurist short stories overlap in many respects with commercial short stories, and there are a few that achieve recognition in both camps. For example, Greenblatt's

“If We Make It Through This Alive” (2022), published as part of Slate’s *Future Tense Fiction*, “a monthly series of short stories from Future Tense and Arizona State University’s Center for Science and the Imagination about how technology and science will change our lives”, is also included in Locus Magazine’s “2022 Recommended Reading List”. This is an interesting case study, because rather than shaking off constraints, it cloaks them, much as “Gods Behind the Masks” (Chen, 2021) did by using personification permitted in existing jargon. The straightforward structure of Greenblatt’s road-race plot complements and conceals the straightforward creative-futurist plotting and pacing. Memories anchored to milestones disguise exposition as characterisation. By passing the story from one character to the next, an illusion of complex character arcs is created.

The purpose and value of a creative futurist story, however, is centred in a different location from that of a commercial science fiction story, held there by the tension between the short story form and the requirements of creative futurism. This tension directs and constrains their use of literary tools and devices and is generally visible to the reader.

### Some final thoughts

Creative futurism has enormous potential for helping people from other fields draw upon skillsets honed by creative writers to imagine inventive scenarios and immerse readers in those scenarios. When adapting conventional creative writing wisdom, it is important to be aware of the extent to which that advice may be shaped by genre, form and publishing contexts, and reader expectations (an emphasis on character transformation, for example). We have pointed out how the constraints within creative futurism have resulting aesthetic effects and challenges to traditional creative practice. We feel being conscious of these tensions is useful because it supports those creating creative futurist short stories, guides understanding and assessing creative futurist stories, offers consideration when advertising the benefits of the form, points toward areas for further theoretical investigation and prompts creative challenges for writers and their clients.

Because the purposes of stories have played such a substantive role in our analysis, we end then with a list, intended as a provocation. Below we outline some of the purposes of creative futurist stories alongside those of traditional creative writing.

Apparent purposes of creative futurist stories		
Demonstrate	Challenge stereotypes	Complement
Explore	Justify	Modelling (act of)
Dramatise	Defend	Model (for later use)
Correct	Position	Analyse
Predict	Answer experts	Be analysed
Render accessible	Please experts	Provoke
Engage	Didactic	Sell or market
“Realism”	Performative	Create or contribute to a conversation
Realism	Pair with education/commentary	A “boundary object”

A few other common purposes of creative writing, for comparison		
Entertainment	Delight	Revenge
Wonder	Intellectual puzzle	Bewilder
Unsettle	Satirise	Horrify
Elicit a physical reaction	Create a mythos	Express a feeling
Record an experience	Amuse	Represent
Prove a point	Call certainty into question	To reflect on existence
To model something inherently unmodellable	Explore identity	Reflect on culture/present
“...To keep civilization from destroying itself.” –Bernard Malamud (quoted in Wershba, 1958/1991, pp. 7	“...To discover what I am doing.” –Flannery O’Connor (1979, pp. 40)	“I can shake off everything as I write; my sorrows disappear, my courage is reborn.” –Anne Frank (2019, pp. 593)

## References

- Alexander, P. (2022, August 25). We. *The Deadlands*, 16. <https://thedeadlands.com/issue-16/we/>
- Ballard, J. G. (2017 [1962]). Which way to inner space? In R. Latham (Ed.), *Science fiction criticism: An anthology of essential writings* (pp. 101–103). Bloomsbury.
- Brouillette, S. (2014). *Literature and the creative economy*. Stanford University Press.
- Bauer, D. (2006). *The stuff of fiction: Advice on craft*. University of Michigan Press.
- BBC. (2019, July 19). *French sci-fi team called on to predict future threats*. <https://www.bbc.com/news/world-europe-49044892>
- Bould, M., & Miéville, C. (2009). *Red planets: Marxism and science fiction*. Gardners Books.
- Bourdieu, P., & Johnson, R. (1993). *The field of cultural production: Essays on art and literature*. Polity Press.
- Broderick, D. (2022, March 14). Novum. In J. Clute & D. Langford (Eds.), *The encyclopedia of science fiction*. SFE Ltd and Ansible Editions. <https://sf-encyclopedia.com/entry/novum>
- Bussey, M. P., Chandler, L., Crew, G., & Robertson, R. (2018). Introduction: Anticipatory imaginaries: Dialogues between academic research and the creative imagination. *TEXT*, 22, 1–4.
- Carr, M. (2010). Slouching towards dystopia: The new military futurism. *Race & Class*, 51(3), 13-32. <https://journals.sagepub.com/doi/pdf/10.1177/0306396809354164>

- Cavallaro, D. (2007). *Cyberpunk and cyberculture: Science fiction and the work of William Gibson*. Continuum.
- Castoriadis, C. (1997). *World in fragments: Writings on politics, society, psychoanalysis, and the imagination* (D.A. Curtis, Trans.). Stanford University Press. (Original work published 1990).
- Chan, L. (2021, April). A house is not a home. *Clarkesworld Magazine*, 175.  
[https://clarkesworldmagazine.com/chan\\_04\\_21/](https://clarkesworldmagazine.com/chan_04_21/)
- Chen, Q. (2021a). Contactless love (E. Jin, Trans.). In K. Lee & Q. Chen (Eds.), *AI 2041: Ten visions for our future* (pp. 123–51). Currency.
- . (2021b). Dreaming of plenitude (E. Jin, Trans.). In K. Lee & Q. Chen (Eds.), *AI 2041: Ten visions for our future* (E. Jin, Trans.) (pp. 403–22). Currency.
- . (2021c). Gods behind the masks (E. Jin, Trans.). In K. Lee & Q. Chen (Eds.), *AI 2041: Ten visions for our future* (pp. 35–54). Currency.
- . (2021d). Isle of happiness (B. Zhou, Trans.). In K. Lee & Q. Chen (Eds.), *AI 2041: Ten visions for our future* (pp. 359–88). Currency.
- . (2021e). My haunting idol (E. Jin, Trans.). In K. Lee & Q. Chen (Eds.), *AI 2041: Ten visions for our future* (pp. 169–99). Currency.
- . (2021f). Quantum genocide (A. Dudak, Trans.). In K. Lee & Q. Chen (Eds.), *AI 2041: Ten visions for our future* (pp. 257–301). Currency.
- . (2021g). The golden elephant (B. Stone-Banks, Trans.). In K. Lee & Q. Chen (Eds.), *AI 2041: Ten visions for our future* (pp. 5–21). Currency.
- . (2021h). The holy driver (E. Jin, Trans.). In K. Lee & Q. Chen (Eds.), *AI 2041: Ten visions for our future* (pp. 214–45). Currency.
- . (2021). The job savior (A. Dudak, Trans.). In K. Lee & Q. Chen (Eds.), *AI 2041: Ten visions for our future* (pp. 315–43). Currency.
- . (2021i). Twin sparrows (B. Stone-Banks, Trans.). In K. Lee & Q. Chen (Eds.), *AI 2041: Ten visions for our future* (pp. 69–107). Currency.
- Cole, A. & Singer, P. W. (2020). Thinking the Unthinkable with Useful Fiction. *Journal of Future Conflict*, 2, 1–12.  
[https://www.queensu.ca/psychology/sites/psycwww/files/uploaded\\_files/Graduate/OnlineJournal/Issue\\_2-Singer.pdf](https://www.queensu.ca/psychology/sites/psycwww/files/uploaded_files/Graduate/OnlineJournal/Issue_2-Singer.pdf)
- Devitt, K., Gan, M, Scholz, J., & Bolia, R. (2021, February). *A method for ethical AI in defence*. <https://www.dst.defence.gov.au/publication/ethical-ai>
- Djajadiningrat, J. P., Gaver, W. W., & Fres, J. W. (2000). Interaction relabelling and extreme characters. *DIS '00: Proceedings of the 3rd conference on designing interactive*

*systems: Processes, practices, methods, and techniques*. Association for Computing Machinery, 66–71. <https://doi.org/10.1145/347642.347664>

- Doherty, S., Snow, S., Jennings, K., Rose, B., Matthew, B., & Viller, S. (2020). Vim: A tangible energy story. In A. -G. Bossler, D. E. Millard & C. Hargood (Eds.) *Interactive Storytelling*, 271–80. Springer International Publishing. [https://doi.org/10.1007/978-3-030-62516-0\\_24](https://doi.org/10.1007/978-3-030-62516-0_24)
- Elison, M. (2022, June 12). *Fifteen minutes of grace*. The Sunday Morning Transport. <https://www.sundaymorningtransport.com/p/fifteen-minutes-of-grace>
- Fahs, G. (2022, March 17). *Three speculative futures for consumer data*. Digital Lab at Consumer Reports. <https://digital-lab-wp.consumerreports.org/2022/03/17/three-speculative-futures-for-consumer-data/>
- Frank, A. (2019). *Anne Frank: The collected works*. Bloomsbury.
- Gernsback, H. (2017). Editorial: A New Sort of Magazine. In R. Latham (Ed.), *Science fiction criticism: An anthology of essential writings*. Bloomsbury. (Original work published 1926).
- Greenblatt, A. T. (2022, January 29). *If we make it through this alive*. Slate. <https://slate.com/technology/2022/01/if-we-make-it-through-this-alive-greenblatt-short-story.html>
- Hamilton, S., Maajan, D, Marlow, B, Stocker, A., Tracey, D. & Zahnleiter, S. (2021). *Striking blind*. The Forge. <https://theforge.defence.gov.au/perry-group-papers/striking-blind>
- Haraway, D. (1988). Situated knowledges: The science question in feminism and the privilege of partial perspective. *Feminist Studies*, 14(3), 575–599. <https://doi.org/10.2307/3178066>
- Jameson, F. (2005). *Archaeologies of the future*. Verso.
- Katz, G. C. (2022, February 15). Oil bugs. *Translunar Travelers Lounge*, 6. <https://translunartravelerslounge.com/2022/02/15/oil-bugs-by-gwen-c-katz/>
- King, A. (2022, May 2). The many taste grooves of the Chang family. *Diabolical Plots*, 87, <https://www.diabolicalplots.com/dp-fiction-87c-the-many-taste-grooves-of-the-chang-family-by-allison-king/>
- Kirkus Reviews. (2015, April 16). Review of the book *Ghost fleet: A novel of the next world war*, by Peter S Singer and August Cole. *Kirkus Review*. <https://www.kirkusreviews.com/book-reviews/pw-singer/ghost-fleet/>
- Kow, S. (2022, February 4). Patreon exclusive: interview with author Shih-Li Kow. *Flash Fiction Online*, 101. <https://www.flashfictiononline.com/article/fried-rice/>
- Latiff, R. H. (2018). *Future war: Preparing for the new global battlefield*. Vintage Books.



- Lee, K., & Q. Chen. (2021). *AI 2041: Ten visions for our future*. Currency.
- Lipitz, N. (2021, March 31). The office drone. *Future Science Fiction Digest*. <https://future-sf.com/fiction/the-office-drone/>
- Liveley, G., Slocombe, W. & Spiers, E. (2021). Futures literacy through narrative. *Futures*, 125(102663). <https://doi.org/10.1016/j.futures.2020.102663>
- Locus Magazine. (2023, February 1). 2022 recommended reading list. *Locus Online*. <https://locusmag.com/2023/02/2022-recommended-reading-list/>
- Marshall, H., Wilkins, K., & Bennett, L. (2023) Story thinking for technology foresight. *Futures*, 146(103098). <https://doi.org/10.1016/j.futures.2023.103098>
- Mayor, C. (2023, April 6). *Dartmouth design project combines fact & fiction to imagine possible futures*. Dartmouth Engineering. <https://engineering.dartmouth.edu/news/design-project-combines-fact-and-fiction-to-imagine-possible-futures>
- Miles, I. (1993). Stranger than fiction: How important is science fiction for futures studies? *Futures*, 25(3), 315–321.
- Moylan, T. (2020). *Becoming utopian*. Bloomsbury Publishing.
- O'Connor, F. (1979). *The habit of being: Letters of Flannery O'Connor*. Farrar, Straus & Giroux
- Older, M. (2022, March 15). *Shared data*. Popular Science. <https://www.popsci.com/technology/shared-data-a-short-story-from-an-alternate-future/>
- Omar, D. (2022, July). *Matrimonial quest at Luna Prime and other existential dread*. Fireside Fiction. <https://firesidefiction.com/matrimonial-quest-at-luna-prime-and-other-extential-dread>
- Parker, N. C. (2023, January 15). *Our lady of tomorrow*. The Sunday Morning Transport. <https://www.sundaymorningtransport.com/p/our-lady-of-tomorrow>
- Scharre, P. (2019). White walkers and the nature of war. In M. Brooks, J. Amble, M. L. Cavanaugh & J. Gates (Eds.) *Winning Westeros: How Game of Thrones explains modern military conflict*. Potomac Books.
- Shedroff, N. & Noessel, C. (2012). *Make it so: Interaction design lessons from science fiction*. Rosenfeld Media.
- Siddiqui, S. (2022, March 17). *Home@Heart*. Popular Science. <https://www.popsci.com/technology/home-at-heart-short-story/>
- Singer, P. W. & Cole, A. (2015). *Ghost fleet: A novel of the next world war*. Mariner Books.

- Stufflebeam, B. J. (2022, March 16). *The memory of tomatoes*. Popular Science. <https://www.popsci.com/technology/the-memory-of-tomatoes-short-story/>
- Suvin, D. (1979). *Metamorphoses of science fiction: On the poetics and history of a literary genre*. Yale University Press.
- The Perry Group. (2020, September 15). *The Perry Group*. The Forge. <https://theforge.defence.gov.au/perry-group-papers>
- Toffler, A. (1970). *Future shock*. Random House.
- VanderMeer, J. (2013). *Wonderbook: The illustrated guide to creating imaginative fiction*. Abrams Image.
- Volpicilli, G. (2015, August 14). *Interview: 'Ghost Fleet' imagines a harrowing, realistic future of world war*. Wired. <https://wired.co.uk/article/ghost-fleet-interview>
- von Stackelberg, P. & McDowell, A. (2014). What in the world? Storyworlds, science fiction, and futures studies. *Journal of Futures Studies*, 18(3), 57–76.
- Wershba J. (1991). Not horror but sadness. In L. M. Lasher (Ed.), *Conversations with Bernard Malamud* (pp. 3–7). University Press of Mississippi. 3–7. (Original work published 1958).
- Wolf, M. J. P. (2012). *Building imaginary worlds: The theory and history of subcreation*. Routledge.
- Wolfe, G. K. (2022, February). Gary K. Wolfe Reviews AI 2041: Ten Visions for Our Future by Kai-Fu Lee & Chen Qiufan. *Locus Magazine*. <https://locusmag.com/2022/02/gary-k-wolfe-reviews-ai-2041-ten-visions-for-our-future-by-kai-fu-lee-chen-qiufan/>

## Acknowledgements

We wish to acknowledge Joanne Anderton's institutional partner, Trusted Autonomous Systems, for providing the opportunity discussed in this article. Thanks also to Professor Kim Wilkins of The University of Queensland for reading an early draft.