Journal of Futures Studies
2024,Vol. 28(4) 01-14
DOI: 10.6531/JFS.202406_28(4).0001

Article

Support, Structure and Speed: Key Concepts for the Digital Delivery of Creative Foresight Workshops

Helen Marshall[1]*, Kim Wilkins[1], Lisa Bennett[2], Ksenia Ivanova[3], Joanne Anderton[4]

[1]*School of Communication and Arts, Faculty of Humanities and Social Sciences, The University of Queensland, St Lucia, Queensland, Australia*
[2]*College of Humanities, Arts and Social Sciences, Flinders University, Sturt Road, Bedford Park, South Australia, Australia*
[3]*Defence Science Technology Group, Edinburgh, South Australia, Australia*
[4]*School of Communication and Arts, Faculty of Humanities and Social Sciences, The University of Queensland, St Lucia, Queensland, Australia*

Abstract

This article presents lessons learned which support the digital delivery of creative workshops addressing technology foresight. It analyses a workshop template which uses speculative fiction techniques to explore the potential disruptive effects of emerging technologies within society and expand participants' capacity for thinking about critical junctures and unintended consequences. Our findings show creative workshops can engage participants in technology foresight through playfulness and mess or open-endedness, yet these elements are harder to navigate in a digital environment. Three themes—supporting discussion, structuring worldbuilding, and sustaining speed—were vital to help reduce cognitive load, manage communications and select appropriate tools.

Keywords

Workshop, Creative Writing, Science Fiction, Worldbuilding, Emerging Technologies.

Introduction

This article presents and contextualises the activities used in "Project Ursula"—a collaboration between creative writers at The University of Queensland and analysts from the Defence Science and Technology Group (DSTG) which demonstrated how speculative fiction techniques might be harnessed to facilitate creative foresight workshops in a digital environment. The project was intended to explore the potential disruptive effects of emerging technologies and expand capacity for 'out-of-the-box' thinking. The project was named for the famous science fiction writer Ursula K. LeGuin who argued that stories offer new ways of creating "thought experiments" that embody "reversals of a habitual way of thinking, metaphors for what our language has no words for as yet, experiments in imagination" (1976 [1989], p. 9). While her works of fiction (like many of her contemporaries) addressed the impacts of radical new technologies on future societies, her approach was uniquely sociological, imagining the ramifications of technologies upon cultures and social structures. In taking Le Guin as the namesake for the project, we aimed to produce a template for a technology foresight workshop that was participatory, creative, and playful.

This project made use of a conceptual framework called Story Thinking created by three of the article's co-authors, which articulates how expertise and techniques gained from writing science fiction and fantasy (SFF) can be applied to technology foresight, particularly in workshops that involve transdisciplinary research teams (Marshall et al, 2023). In using the term *technology foresight* we draw upon a rich history of practices situated within Futures Studies that focus on "*learning approaches* rather than deterministic forecasts and blueprints" (van Dijk, 1991, p. 223). We have found particularly resonant a collaborative model consisting of experts, policy makers, strategic

* *Corresponding author*.
E-mail addresses: helen.marshall@uq.edu.com (H. Marshall), k.wilkins@uq.edu.au (K. Wilkins), lisa.bennett@flinders.edu.au (L. Bennett), ksenia.ivanova@dst.defence.gov.au (K. Ivanova), j.anderton@uq.edu.au (J. Anderton)

Received: 2 April 2023 and Accepted: 4 July 2023

thinkers and others that acknowledges how "[a]ll stakeholders in the foresight process have their own interests, knowledge, and vision" and that when they act upon the knowledge generated during the foresight process they "produce possible pictures of the future" (van Dijk, 1991, p. 224). This latter point offers a clear area of overlap with the work of science fiction writers like Le Guin as they create thought experiments situated in fully realised, immersive future environments and populated by characters who both use and are affected by new technologies. We recognise that there is also a history of tension between science fiction and Futures Studies (eg. Miles, 1993) and advocate for these creative strategies to augment other systematic and comprehensive approaches rather than replacing them.

Another way of considering these "pictures of the future" or "thought experiments" is, of course, as scenarios. We use the term *scenario* loosely, acknowledging that it has been linked to a variety of methodologies within Futures Studies and has different meanings in different domains (Spaniol & Rowland, 2018). Indeed, as creative practitioners coming to grips with the literature, this word presented a particular stumbling block and it took some time for us to translate the word into our own disciplinary language. Should a scenario simply contain external forces? Was it the starting point for a series of actions to unfold or did it encapsulate those actions? Was it richly described or trimmed down, a prompt for thinking? In this paper, by *scenario* we mean a pivotal event or interesting situation set in the future. The closest analogue within creative writing is an *inciting incident*, a narrative hook which draws the reader into the story and sets the plot in motion. In addition to laying the groundwork for characters to make decisions and deal with the consequences of their actions, inciting incidents also tend to contain within them important elements of backstory which shape why events are unfolding the way they are. These defining elements of inciting incidents—their immersiveness and their situatedness within a chain of cause and effect—make them useful mechanisms for engaging participants and understanding the possible trajectories of new technologies.

The workshop template which we developed collaboratively had three goals. Firstly, it was intended to support transdisciplinary researchers as they shared their expertise about the potential impacts of new technologies on Australian society in the next 10-20 years. Secondly, it would produce a range of scenarios that outlined these impacts, developing several worst-case scenarios in more detail so participants could explore opportunities for risk mitigation and resilience. Lastly, the resulting set of activities needed to be quick to mount with the capacity for digital delivery so participants from around the globe could contribute their expertise.

This last point was particularly salient. The capacity for digital delivery was a key desirable that shaped how the workshop was conceptualised and operationalised. The use of creative methodologies as part of face-to-face futures-oriented workshops is becoming better established (eg. Bell, 2005; Schwarz, 2008; Finn & Wylie, 2021), but there is little research on how these methodologies translate to a digital environment. While platforms such as Microsoft Teams can bring international participants together to collaborate, they also create additional challenges as participants may face technical difficulties and issues with fatigue, focus and distraction, which diminish their ability to remain engaged. Our paper summarises these challenges and offers a range of practical strategies for addressing them.

Background

"Project Ursula" was conceived at the intersection of two trends in creative foresight workshops, which we will discuss: transdisciplinary team building and the use of SFF skillsets. Firstly, the role of interdisciplinary and transdisciplinary teams has been acknowledged as an important aspect of foresight and strategic thinking in a range of environments (for example, Ryan, 2021 on Defence, p. 16 and Choi & Pak, 2016 on medicine). Increasingly, programs such as the Emerging Disruptive Technology Assessment Symposium (EDTAS), which helps the Next Generation Technologies Fund future-proof Australian Defence Force, are undergirded by partnerships between government, universities, and industry. A broad knowledge base is important for this kind of work. Current governance structures often struggle to address complex issues such as the side effects of socio-technical change, so they can be minimized in advance rather than regulated afterwards. Gudowsky & Peissl (2016, para. 5) argue these structures could benefit from an understanding of futures and forward-looking activities but they also require broader engagement strategies, which move away from "reductionist experts-only-settings when creating such imaginaries." It is clear digital technologies offer new possibilities for bringing together such teams (Woodyatt et

al., 2016), allowing participants from across the world to access workshops and for multiple workshops to be run in parallel or sequence, with minimal cost and infrastructure. Yet there are numerous challenges associated with facilitating workshops online which include limited interaction, attention space and participant fatigue, as we discuss in more detail below.

Secondly, Defence organisations have recognised the value of SFF in imagining future possibilities and "inspir[ing] divergent thinking about advanced technologies and how to apply them in concert with new ideas and new organizations" (Ryan & Finney, 2018, para. 7). The tradition of using speculative fiction writers in Defence horizon scanning is already established. In 2017, UK's Defence Science Technology Laboratory (DSTL) conducted a feasibility study "Does science fiction have a role in futures analysis?" and their investigations (which included a member of our team) "came to the overwhelming conclusion that it does, but [they] were less sure how this could be achieved" (2017, p. 1) Similarly, the Army Cyber Institute at West Point has worked with Arizona State University's Threatcasting Lab, commissioning writers to produce comic-book science fiction prototypes, or fully fleshed-out scenarios for military to use in planning for unforeseen conflicts (Cole & Singer, 2020). Several academics (including Liveley et al, 2021.) associate the use of narrative techniques with Futures Studies, particularly through science fiction, not as a means of making predictions, but rather to explore the implications of new technologies by embedding them within a fictional future scenario.

Within Project Ursula, we explored how creative methods drawn from science fiction could help participants transcend their disciplinary perspectives as they came together to think about the future. These techniques were woven into the structure of a three-hour workshop, trialled in June 2022 with an application workshop then delivered in August 2022 for a larger cohort of twenty participants, including analysts, transdisciplinary subject specialists, and creative writers. None of the participants were paid, and, in this case, all self-selected. Two iterations of the workshop were delivered digitally via GovTeams, a comprehensive whole-of-government collaboration service based on Microsoft Teams. We collected data in the form of feedback on the workshop methodologies, ease of use and relevance to research, as well as the scenario notes and analysis generated within the workshop, which were written up in narrative form and analysed for common themes. The outputs of the project included a researcher-facilitator's guide to the workshop, from which we include an excerpt in the Appendix, and a forthcoming report on methodologies and generated scenarios.

Our workshops supported participants in co-creating and analysing future scenarios concerning the development of novel technologies. The subject of the workshop was the development of virtual existence technologies (such as the Metaverse) and their impacts on Australian society over the next ten to twenty years, a period coinciding with other DSTG horizon scanning activities, with the intention that the workshop format could be adapted to other technologies. The focus on scenario generation emerged from research which indicated its importance for technology foresight (Piirainen & Lindqvist, 2010) and dovetailed with our strengths in narrative as professional storytellers. Participant feedback guided the revision of the workshop, addressing both the broader conceptual framework and how these techniques were applied in the digital environment. This article addresses the latter element in detail.

Challenges for Creative Foresight Workshops in Digital Environments

As Bell argues, creativity and innovation sit at the heart of Futures Studies (2005). In our experience, the most successful creative workshops engage audiences by creating "affinity spaces" of pleasure (Gee, 2005) that develop a rapport between researcher-facilitators and participants (Monroe, 2021). Much research advocates for play as a means to engage participants and provoke creative thinking (for example, Vavoula & Sharples, 2007). There is a long tradition of pedagogical games being used by futurists in the RAND corporation and their subsequent work within consulting groups such as the Hudson Institute, The Futures Group and the Institute for the Future. Our approach, however, veers away from what the French sociologist Roger Caillois (1961) calls *ludus* (play strategies involving calculation and subordination to rules) and toward *paidia* (active, tumultuous, exuberant and spontaneous playfulness). Following this particular way of thinking about playfulness, we have observed that creative workshops tend to make use of processes that are messy, deliberately open-ended or chaotic (Dillon & Craig, 2021). Both "play" and "mess" emerged as important themes from the literature review which undergirded our workshop design.

These themes are complicated by specific challenges exacerbated within the digital environment: cognitive load, communication, and toolsets.

Cognitive load

Foresight activities are intrinsically complex. Zaidi argues that imagining the future, even in 10-year increments, can be difficult for workshop participants (2019). Additionally, creative workshops are less common within STEM fields, meaning creative methods may be unfamiliar to some participants or may for some be seen as less desirable or relevant. This challenge is heightened in the digital environment where operating the technology, navigating windows, and interpreting indistinct social cues add to cognitive load.

Communication

Communication problems are a significant impediment to effective cross-disciplinary collaboration (Javenpaa & Leidner, 1999). Our activities require participants to analyse ideas and maintain a sense of cohort within a three-hour timeframe. The digital environment exacerbates communication issues because transitions between speakers are more awkward to manage; conversation is less natural; lag times create unnatural pauses; and audio and text contributions may occur simultaneously. These issues are compounded for transdisciplinary participants who may use technical terminology, acronyms, or jargon. Activities completed by small groups (say, four to six participants) in breakout rooms create other complications, where researcher-facilitators must participate in all activities, hop between rooms, or else monitor remotely by watching progress through a syncing digital tool.

Toolsets

Digital toolsets can enhance participation and create artefacts (virtual post-its, digitised worksheets, and polls) valuable to researcher-facilitators (Shamsuddin et al., 2021). Yet in practice while the digital environment offered some affordances, a great deal of our planning involved negotiating technological constraints and trialling solutions for issues including slow-to-sync tools, internet connectivity problems and differing levels of access to platforms for internal and external participants. Many free tools we had used in the past such as Google Docs (a textual collaboration tool) and Miro (a visual collaboration tool) did not meet the security protocols of partner organisations. Furthermore, digital tools may also be difficult to use without training and risk failure or disruption.

Project Ursula: Testing Workshop Design

Creative technology foresight workshops require participants to share their expertise and discuss their perspectives. This is necessary to encourage out-of-the-box thinking as participants bounce ideas off one another, but open-ended discussions must be balanced against the time constraints of the workshop and the need for focus, so groups can make progress on a specific problem over a short period of time (Monroe, 2021, p. 350). We adopted the following structure (figure 1) intended to guide participants in developing their scenarios.

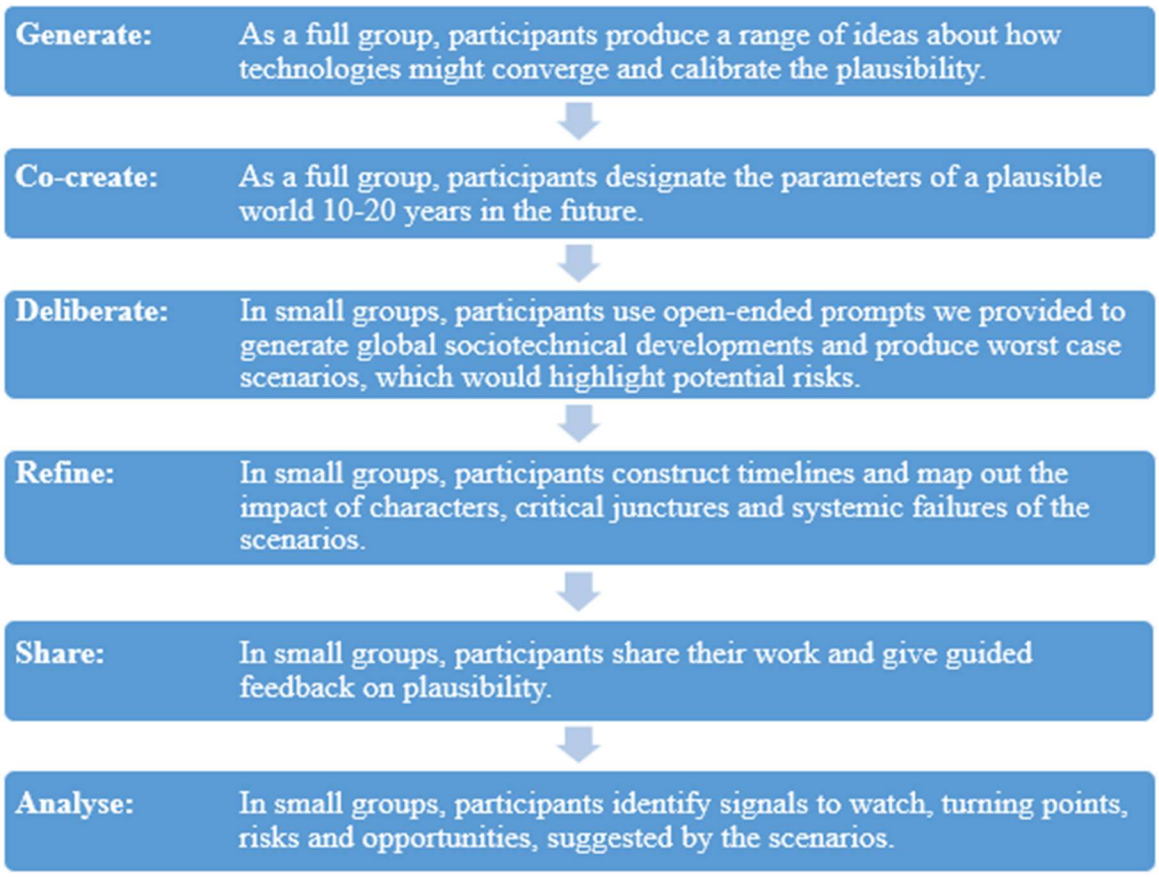

Fig. 1: Workshop steps

Our data gathering highlighted three areas where our skillset lends itself to creative technology foresight workshops delivered digitally.

Supporting discussions

Sociality is important for building rapport and for synthesising knowledge in transdisciplinary research (Hall et al., 2012), yet as we have discussed, the digital environment creates additional communication challenges. Likewise Schulz et al. (2015, p. 324) argue that playfulness can overcome participants' aversion to using artistic or creative methods in which they have no training. We wanted to establish a playful rapport, alternating between discussions which took place in the primary Teams room with all participants and small group discussions within breakout rooms.

Steps 1 and 2 (Generate and Co-Create) of our workshop template were guided by researcher-facilitators working with the whole group, using verbal and chat-based structured brainstorming as well as digital tools such as polls to capture participant preferences. These activities allowed us to shape the "aesthetics of the invitation," a concept which includes signals establishing how participants will engage (White, 2013; also Finn & Wiley, 2021). In our case, we used a warm-up activity to set participants at ease, while members of our team used emojis, jokes and positive reinforcement in the chat to set the tone. The initial exercises generated a shared sense of purpose and established a mutual understanding of the parameters of the workshop. The latter is important within creative foresight workshops, which benefit from playfulness and mess during brainstorming phases, but must calibrate for plausibility. Establishing shared understandings of workshop goals and methods minimises the chances that a small group working in a breakout room without direct researcher-facilitator oversight will drift off course.

Yet full group discussions limit the number of people who can share expertise at any given time and can be disrupted by participants who monopolise speaking time. We have previously identified several types of adverse participant behaviors:

1. "grandstanding" (a participant who hogs the microphone);
2. "knowing-it-all" (a participant who shuts down others' contributions by focusing only on the present state of technology);
3. "status-squashing" (a high-status participant who dampens participation deliberately or indirectly);
4. "class-clowning" (a participant who makes jokes and derails the conversation).

Aspects of these behaviours on their own can be positive. "Grandstanding" can show off enthusiasm; the "knowing-it-all" can bring the conversation back to reality; "class-clowning" can inject humour and build rapport; and "status-squashing" can lend their authority to the workshop. Our experience suggests that at most a group will only have a few adverse participant behaviors that genuinely risk disrupting the workshop. For us, the biggest risk was running over the time allotted for activities, which was tightly scripted. To counter this, we aimed for "herd competency" (Stenros & Montola, 2019), a concept borrowed from Live Action Roleplaying, in which facilitators aim to have enough willing or experienced participants to make it easier for others to enter the spirit of the workshop. Self-selection of participants ensured those who participated in the workshop were relatively amenable to its methods from the outset. We also limited the number of activities we did with the full group. In breakout rooms, adverse behaviors, if they appeared, would only affect a few other participants and could be managed tactfully by group leaders, as discussed below.

Participants were divided into small groups using breakout rooms to complete steps 3-6 (Deliberate, Refine, Share and Analyse). Groups were determined in advance to include a mix of disciplinary backgrounds. These activities required closer collaboration and more detailed discussion such as scenario generation. Challenges identified with the use of breakout rooms included group drift, a lack of access to instructions or easy options for clarification, and slow start times for activities. We used two strategies to handle these challenges: group leaders and digital worksheets. Group leaders were asked in advance to guide the discussion, ensure adequate notetaking took place and monitor the time notifications. The use of group leaders meant that we did not need to visit the breakout rooms ourselves, risking interrupting the flow of the participants' discussions. We also designed digital worksheets within Microsoft OneNote to include activity instructions and provide a location for note-taking. We selected this tool because it was built into GovTeams and met data security requirements. Using OneNote had some benefits. For instance, we could create a folder architecture that grouped materials, allowing for easier navigation between tasks, and it also created durable records of the work. There were several drawbacks, though. The tool did not sync instantly, which meant if multiple group members contributed at once, then they risked writing over each other's contributions, while some typed contributions were not visible at all to other participants (or researcher-facilitators). External participants could not access OneNote directly, but instead had to view it through the group leader's screen sharing, which shrunk the screen size of the document. This in turn meant that the document had to be designed with larger-than-normal font sizes to be visible through screen sharing, making it harder for primary users to access. As may be evident, the limitations of the digital tools presented a source of friction for the workshop. At best, these limitations were mitigated through advanced planning, iterative design and testing, streamlining activities, the use of multiple researcher-facilitators, and the generosity of the participants themselves. Of course, not all online collaboration tools suffer from these issues and the suite of tools within Teams and the associated affordances are continuously evolving. In fact, our feedback indicated many participants were impressed by the suite of tools; nevertheless, we found exercises should not be more complex than they needed to be to accomplish the core work, and thus recommend limiting the use of tools where possible. Many exercises drawn from creative writing can be completed with no or very few tools, making them ideal for a digital environment.

Structuring worldbuilding

At the heart of our workshop was a set of activities that facilitated 'worldbuilding', the creation of a future

storyworld, as a precursor to scenario generation. We argue that storyworlds act as a systems-level view, outlining the interrelationship of a variety of domains (social, political, economic, etc.), and creating affordances and limitations for the kinds of actions that can occur. Steps 2-4 (Co-create, Deliberate, Refine) helped participants imagine a future world and then create a scenario within that world. This set of activities was designed to reduce the cognitive load of the complex task of foresight, and we have included the detailed instructions within our Appendix.

In our experience, worldbuilding is both easy and difficult. Ryan argues that "it takes a lot of cognitive effort to imagine a world very different from ours, because we cannot use our experience of the real world" (2015, pp. 12–13). A strategy which can work well for short workshops is one of "minimal departure" (Ryan, 1980). Here, worldbuilders mark out key differences between the storyworld and the real world, but in all other areas opt for a default position of 'the world as we know it'. These form the broad contours of the storyworld, with further differences emerging later as the scenarios become more detailed. In this workshop, we solicited ideas from the group about political, economic and environmental trends, and used a poll to determine which points of departure they wanted to accept as part of the future world. These naturally tended to follow formulae common within science fiction such as *exaggeration* (distorting current trends)*, inversion* (reversing current trends) and *extension* (extrapolating current trends) (Samuelson, 1993, p. 194). For example, when asked, "Who has power in this world?", answers ranged from exaggerations (billionaires) to inversions (black markets) to extensions (China and tech companies). We did not introduce an explicit process for the facilitators to reject ideas on the basis of plausibility but instead instructed participants during a process of polling to select those they deemed plausible.

Many writers, ourselves included, follow this methodology, creating (or co-creating) a storyworld in broad strokes by exaggerating, inverting and extending existing trends, and keeping it aligned with the real world where not explicitly marked. Once the parameters of a storyworld have been established, it becomes easier to test, extrapolate and refine the world's logic by imagining events that could occur within it. This reduces cognitive load for participants (already high within a digital environment), because activities can be successfully scaffolded, moving from overarching trends affecting the storyworld to more detailed and complex scenarios with multiple points of departure, each with its own first-order and second-order consequences (as we show in the Appendix). It also meant the number of possibilities for potential scenarios within step 3 and step 4 was usefully reduced, so they did not experience what is colloquially known amongst writers as "blank page syndrome", where a writer finds it difficult to get started on a new project, because they face so many initial decisions.

Sustaining speed

A third element that shaped our workshop design, one overlooked in the literature we surveyed, was the element of speed (or pace). When pace is discussed, as in O'Byrne & Pytash (2015), it tends to be conceptualised as the rate at which students tackle learning across a curriculum. As creative writers, our sense of the pace of the workshop mirrored aspects of our creative practice. Writers craft stories as structured experiences, which engage readers through the use of specific effects. For example, a series of short, staccato sentences can build drama. The arrangement and timing of exercises likewise has an important impact on engagement. Closest to our sense of the importance of pace is Sangster's discussion of primary mathematics lessons (2007), which identifies features that affect engagement, including strong facilitator presence, level of difficulty, good timing, and clarity of explanation/expectation. Despite clear differences in context, many of these same features guided our workshop planning.

Early on, we decided on a brisk pace, structured primarily via short activities (twenty minutes or less, in most cases) with clear instructions, building to one longer scenario creation activity. Drawing on our own experience as storytellers, the pace of a novel opening can help reduce resistance to entering a storyworld, what Ryan calls the "painful period of initiation" (2015, p. 13) readers go through as they immerse themselves in a new environment. As Finn & Wylie (2021) point out, tight time boundaries around tasks can encourage groups to make decisions promptly rather than "persisting in an endless cycle of brainstorming and discussion." Here, we recognised a trade-off between the value of sharing knowledge and expertise via protracted discussions and the value of affirmation, rapid decision-making and momentum. We sought a dynamic we have witnessed in the theatre exercise "Yes, And", where improvisers accept creative advances made by their fellow actors, implicitly accepting the logic of the world

they are co-creating, and building upon it with further advances without hesitation. This dynamic can be useful in learning and research spaces, allowing participants to take creative, intellectual and emotional risks (Ali & Cech, 2017).

We also envisioned activities as being similar to chapters in a novel, in that each requires effective scene setting and makes use of techniques such as cliffhangers, questions, revelations, surprises and mysteries to create momentum. To set the scene for our activities, we adopted a structure of *describe* (laying out the conceptual background)*, demonstrate* (offering a brief example), and *deliver* (handing over to participants to try for themselves). We paid particular attention to transitions between activities. The memoirist Isaac Babel argues that thinking about units of writing such as paragraphs and chapters can let you "quietly change the rhythm", offering "a flash of lightning that shows the same landscape from a different aspect" (Prose, 2012, p. 63). This is an effect we wanted to harness, yet transitions are often clunkier in digital environments, where researcher-facilitators need to do technical tasks such as set up Powerpoints or move participants between breakout rooms. Where possible, we created the sense of a cliffhanger at the end of an activity by giving participants a short timeframe and counting down to the end of the activity in order to keep up the pressure. Rather than letting discussions come to a natural pause or peter out, we often chose to move onto the next activity, while participants were still engaged in the final stages of their conversations. This made them more eager to get back to their group and continue the conversation, often refocused or reframed by the subsequent activity instructions. Here, we made a deliberate decision to go against the workshop feedback that asked for longer time slots for some activities. In cases where we saw participants had in fact completed the bulk of the activity, even if the conversation had not been resolved, we opted to keep the shorter length.

Conclusions

Creative foresight workshops within digital environments offer opportunities to harness the knowledge of transdisciplinary experts, because they are cheap and easy to mount, without the overhead requirements of international travel. Nevertheless, some aspects of the digital environment hinder elements necessary for creativity such as playfulness and mess. These often create additional cognitive load for participants and so it is important for facilitators to develop specific strategies for addressing these challenges and to design workshop activities specifically for the digital environment in order to harness its advantages (greater capacity for notetaking and recording) while mitigating its weaknesses (participant distraction and fatigue). Careful planning and workshop design are vital. Activities that work in a face-to-face environment cannot necessarily be carried over in their same form, even with the integration of advanced digital tools.

Our research describes how attending to the support systems for discussion, the structure of the intellectual work, and the speed of activities can be used to develop digital workshops that sustain some of the momentum and creative energy of the face-to-face environment. This is important because these workshops benefit from participant 'buy-in', a willingness to contribute their time and expertise to work together on difficult tasks. We have demonstrated how these have been applied within our own workshop template but argue they could be transferred to new workshop models. We also discuss how techniques drawn from SFF writing can be particularly useful in this context, because they offer easy-to-grasp strategies for worldbuilding, scenario creation and audience engagement.

Appendix

A detailed script and set of workshop activities are published as follows:
Marshall, H., Wilkins, K., Bennett, L. Anderton, J., & Ivanova, K. (2023.
Project Ursula speculative fiction techniques for technology foresight: facilitator handbook.
What If Lab; The University of Queensland. https://doi.org/10.14264/c6a0989.

Here, we provide a runsheet for the workshop as well as a selection of prompts to aid scenario generation.

Co-Create

Activity description
Participants work together to suggest features of the world in ten or twenty years in the future and then participate in a poll to decide which they will adopt for their scenarios.

Sample introductions for participants
To make the most of this workshop, we want to ensure that everyone shares common ground for imaginative scenario-building. We've been briefed ahead of time about how *speculative* we can get with our forecasting today, which has helped us to broadly designate some parameters for the world as we'll know it for the next few hours: namely, that we're still here on Earth, in Australia, in the near future. To generate scenarios this afternoon, we'll ask you to cast your imaginations 10 years forward (give or take a couple of years) in order to keep our projections within the useful realms of probability or possibility. Working together for the next twenty minutes, we'll designate some fundamental aspects of this near-future version of the world that will lay the foundations for our remaining activities.

As science fiction and fantasy writers, it's second nature for us to think of the fundamentals of world-building while imagining new stories – because the shape of the world (or worlds) in which our stories take place influences how our characters behave, and their behaviours drive the plot. So when we think of world-building, it's more than whether the world is fantastical or realistic, whether it's recognisably our own planet or somewhere in a galaxy far, far away… It's about the environment, the economy, social structures, religion / ethical / moral codes, politics, cultural similarities and differences, technology, legal systems – in other words, all of the many factors that underpin and influence our existence now, and in the years to come.

The version of Australia we're going to brainstorm together today will have limitations and, hopefully, possibilities you may not have thought of before. To keep things manageable, we're going to focus on three aspects of the world for this workshop: environmental, political and social, and economic (all things that will not only affect human experience on Earth, but which will also influence – and be influenced by – technologies like the one we're discussing).

For each of these aspects, we will follow a three-step process of *question*, *brainstorm*, and *poll* in order to generate the parameters for our near-future Australia. We've got limited time today, so I want to encourage you to be spontaneous in your responses to our questions: brainstorm without inhibition. Go with your gut feelings, go with the first things that come to mind, go with as many ideas as you can. Don't hesitate.

To begin setting the parameters of our shared world, we will consider the big picture: the environment. Suggest as many (brief) answers to the following question as you can within two minutes. You can either raise your hand or write your response in the online chat. We have provided one possibility: brainstorm more on your own and respond without self-editing. There are no wrong answers!

These ideas will all be collated into a poll in real time, which will appear on your screen after we've finished brainstorming. Please select the two options you're most keen to explore in this workshop. The two most popular choices will influence the shape of our fictional future world.

Examples of questions
How might climate change action affect Australia over the next 10 years?
In 10 years, which groups and/or nation(s) will have the most power?
What might happen to Australia's economy over the next 10 years?

Note: These could be modified to address a different timeframe.

Notes for facilitators

Using free polling software online (e.g. Slido.com, Microsoft Forms), create multiple choice polls ahead of time and include relevant details for accessing them in the briefing material**.**

During delivery, use the 'chat' function and/or ask people to raise their hands and speak to make suggestions for world-building. This will give the notetaker sufficient time to add the participants' ideas into an online poll that can then be launched during the 5-minute period.

When the poll has been completed, encourage the participants to spend several minutes reflecting on the choices they have made and thinking about this world. It may be useful for them to take a moment to visualise an image of this world. For example, if they have suggested that inhabitant will abandon the coasts as flood risks increase, then they might imagine a desolate house on an eroding beach. This will help them to immerse themselves more deeply in the storyworld and remember its central parameters.

Deliberate

Activity description

In small groups, participants respond to prompts designed to explore sociological, technological, economic, environmental, legal and ethical dimensions. These prompts are deliberately open-ended, encouraging a range of possible responses while providing enough structure to allow participants to work quickly. Each set of prompts corresponds to a dimension of the external environment drawn from a STEEPLE analysis, allowing participants to select prompts aligned with their subject areas. Participants will also develop worst case scenarios to be used in the next activity.

Sample introductions for participants

In the previous exercise you began to sketch out the parameters for the world. This is important because the world– or the setting, as we would think of it in storytelling terms – offers different affordances and limitations, risks and opportunities. It shapes the needs of the people who might use the technology and indeed those who might develop it as well. In this exercise you'll begin to develop scenarios by working in small groups and using prompts.

You'll respond to three of the prompts of your choice and begin jotting down some notes. You'll use one of these scenarios for the next activity where you'll be developing it further. Go through as a group and respond to the prompts that seem most interesting to you or where you might have a bit of expertise. Try to keep your imaginations within the realms of the plausible. It might be useful here to think about trends you've observed in the real world and how they may progress over time. Make sure also that you ground these in the world we've discussed as a group, thinking about how it might provide new opportunities and risks for its inhabitants. Once you've come up with some ideas for three different scenarios, I want you to imagine a worst case version of one of them.

For example, you might choose to answer the following question: A person or group manipulates a vital piece of technology for their own purposes. Who are they and what are they trying to accomplish? You come up with: *'Robin Hood' hackers use weaknesses in metaverse profile photos to exploit a crypto currency, devalue and siphon off money which they 'donate' to a 'good cause'.* And a worst case version would add: *The hackers donate the money to eco-terrorists who use it to disrupt national energy infrastructure. When a severe heat wave strikes, hundreds die as a result.*

Notes for facilitators

Below, two versions of a prompt are given for each heading. In practice, a group would be given a complete set of seven prompts, one corresponding to each STEEPLE domain. This allows variety within a workshop where multiple small groups are completing scenarios.

Socio-cultural prompts

- A group of people use a virtual existence technology to create a new form of artistic expression. What makes their work so unique or popular?
- A unique adaptation of a virtual existence technology has a negative impact on how people communicate. What is it, and how has it changed the way communities interact?

Technological prompts

- A person or group manipulates a vital piece of technology for their own purposes. Who are they and what are they trying to accomplish? Who might be most affected?
- The development of a second new technology threatens to change the nature of a virtual existence technology. What is this new technology? Who is introducing it?

Economic prompts

- A group of people does not have access to a virtual existence technology. Why? How might they gain access or what sort of rival system might they turn to instead?
- Some element of a virtual existence technology threatens to lead to massive inequality. What is it? Which groups are most affected? What might those without power try to do to gain it?

Environmental prompts

- A virtual existence technology raises new questions about sustainability. What real-world considerations are being neglected? What will happen if they are not addressed?
- A virtual existence technology creates a new kind of scarcity. What nation or group has the necessary resources to address this? What might they want in return?

Political prompts

- The users of one metaverse become hostile to the users of another metaverse. What is the source of their disagreement? How might either side escalate the conflict?
- The rise of a virtual existence technology produces a change in the way people feel about democracy in Australia. Why does this change happen? What might the consequences be?

Legal prompts

- A grass roots movement arises to expand the laws governing a virtual existence technology. What do they want to protect? Who might oppose this law and why?
- A powerful corporation seeks to strike down regulations governing a virtual existence technology to give themselves a commercial advantage. How will the law be changed? Who else might take advantage of the change?

Ethical prompts

- A powerful idea with important ethical implications spills over from the virtual to the real world. What is the idea? Who is advocating for it? What important thing might change as a result?
- There has been a major medical breakthrough because of a virtual existence technology. What was it, who lays claim to it and how does it affect the way society operates?

Refine

Activity description

This follow-up activity asks small groups to develop their worst-case scenarios in more detail by plotting out critical

junctures (framed as 'plot points'). Participants can select from a range of plot points which they will organise into a timeline that shows the sequence of cause and effect, telling the story of what went wrong. Each plot pointed will be tagged with a date to encourage participants to think logically about the progression of events.

Sample introductions for participants

This exercise combines two approaches. One is plotting. Often when people are asked to come up with a story or narrative, they make the mistake of simply listing events. What storytellers know is that plots exist in chains of cause and effect. That means that writers are always thinking about how one thing may lead to another, how this node here may branch out into many other nodes, how to sort through those and come up with the right balance of interesting and plausible possibilities. The second approach is called a pre-mortem, and this is based on your chosen worst case scenario. Research shows "prospective hindsight—imagining that an event has already occurred—increases the ability to correctly identify reasons for future outcomes by 30%."(Klein, 2007). So rather than what we might usually do, which is imagine a story forwards in time to make it go right; we start by imagining it already did go wrong. This way, when we reflect later, we can think about what kind of resources, mitigation, and resilience we can build into a system in advance. But don't do the reflection yet. For now, we are going to have fun by coming up with a story.

You'll find a menu of plot ideas. In your groups, I want you to come up with the story of how the disaster happened. Choose 3 or 4 items off the plot menu and arrange them in the story space. Then, make them into a story… you'll need to write this down but it doesn't have to have too much detail. Flesh out each of the plot points (e.g. if you choose "a tiny thing was overlooked" you will turn that into something specific like, the cybersecurity team each thought the other person was going to fix a hole in the system and over time hackers developed an exploit that threatened to bring everything down). Once you've fleshed a plot point out, look at how you can link it to another *in a chain of cause and effect*. Add details like names and so on if you like, but do keep an eye on the time. Given we have 35 minutes, that's about 7 minutes for each plot point and some extra time for editing and note taking. Nominate somebody to write it all down so that in the next activity another group can follow your story and give you some feedback. Crucially, give your story a title. It's not a story until you have a title!

Notes for facilitators

This activity is best completed with a digital tool that allows participants to work collaboratively such as Google Docs, OneNote or Miro. The instructions may need to be modified depending on the tool. The tool should allow for the participants to be able to able to write down notes viewable by other groups and construct a timeline out of the following plot points:

- Somebody made a BIG mistake
- Corruption went unnoticed
- The general public found their own, unexpected uses for the technology
- A system wasn't properly maintained
- The world changed, but the underlying assumptions of the technology didn't
- Money ran out
- Something completely out-of-the-blue, never-before-seen happened to the world
- Somebody with a lot of power downplayed a problem
- A tiny, seemingly insignificant thing was overlooked
- Everyone lost interest because something better came along
- A decision led to an unintended consequence
- An outspoken group came to prominence with strong view that undermined the way the technology was viewed
- A plot point of your choice

Follow-up

These activities allow the small groups to create detailed worst-case scenarios within a shared set of parameters. In the final activities, which we have not included in detail, groups are firstly asked to share their scenarios and comment on plausibility and then secondly to analyse their scenarios for signals to watch and risk mitigation. Our full suite of activities also includes a template that can be used to collect information from the scenario notes generated within the workshop for later analysis and creative write-up.

References

Ali, O & Cech, N. (2017, April 8). 'Yes, and' as teaching-learning methodology. *Teaching and Learning in Higher Ed*. https://teachingandlearninginhighered.org/2017/04/08/yes-and-as-teaching-methodology/

Bell, W. (2005) Creativity, skepticism, and visioning the future. *Futures, 37*(5). 429-432. https://doi.org/10.1016/j.futures.2004.10.002

Caillois, R. (1961). *Man, Play, and Games*. M. Barash (Trans.). Free Press of Glencoe.

Choi, B. C. & Pak, A. W. (2006). Multidisciplinarity, interdisciplinarity and transdisciplinarity in health research, services, education and policy: 1. Definitions, objectives, and evidence of effectiveness. *Clin Invest Med. 29*(6). 351-64. 17330451

Cole, A. & Singer, P. Invisible Force: Information Warfare and the Future of Conflict. (2020). Army Cyber Institute at West Point. https://threatcasting.asu.edu/sites/default/files/2020-06/Invisible_Force_%5BWEB%5D_0.pdf

Defence Science and Technology Laboratory. (2017). SciFi Feasibility Assessment FY1718. DAACR HS&TW Task Annex: Science Fiction in Support of Horizon Scanning and Futures.

Finn, E. & Wylie, R. (2021). Collaborative imagination: a methodological approach. *Futures*, 132, 102788. doi:10.1016/j.futures.2021.102788

Gee, J. P. (2005). Semiotic social spaces and affinity spaces. In D. Barton and K. Tusting (Eds.), Beyond Communities of Practice: language, power and social context (pp. 214-232). Cambridge University Press.

Gudowsky, N. & Peissl, W. (2016). Human centred science and technology—transdisciplinary foresight and co-creation as tools for active needs-based innovation governance. *European Journal of Futures Research*, *4*(1). https://doi.org/10.1007/s40309-016-0090-4

Hall, K. L., Vogel, A. L., Stipelman, B., Stokols, D., Morgan, G. & Gehlert, S. (2012). A four-phase model of transdisciplinary team-based research: goals, team processes, and strategies. *Transl Behav Med 2*(4), 415-430. https://doi.org/10.1007/s13142-012-0167-y

Javenpaa, S. L. & Leidner, D. E. (1999). Communication and trust in global virtual teams. *Academy of Management Review*, *10*. 791-815.

Klein, G. (2007, September). Performing a Project Premortem. *Harvard Business Review*. https://hbr.org/2007/09/performing-a-project-premortem

Le Guin, U. K. (1976). Is Gender Necessary? Redux. In U. K. Le Guin (Ed.) Dancing at the edge of the world: thoughts on words, women, places (pp. 7-16). 1989. Grove.

Liveley, G., Slocombe, W., & Spiers, E. (2021). Futures literacy through narrative. *Futures, 125*, 102663. https://doi.org/10.1016/j.futures.2020.102663

Marshall, H., Wilkins, K., & Bennett, L. (2023). Story Thinking for Technology Foresight. *Futures* 146 (February), 103098. https://doi.org/10.1016/j.futures.2023.103098

Miles, I. (1993). Stranger than fiction: How important is science fiction for futures studies? *Futures, 25*(3). 315-321.

Monroe, E. C. (2021). The components of a successful transdisciplinary workshop: rapport, focus, and impact. In A. J. Bowers (Ed.) *Data visualization, dashboards, and evidence use in schools: data collaborative workshop perspectives of educators, researchers, and data scientists* (pp. 350-365). Teachers College, Columbia University.

O'Byrne, W. I. & Pytash, K. (2015). Hybrid and blended learning: modifying pedagogy across path, pace, time, and place. *Journal of Adolescent and Adult Literacy*, *59*(2). 137-140.

Piirainen, K. & Lindqvist, A. (2010). Enhancing business and technology foresight with electronically mediated scenario process. *Foresight*, *12*(2). 16–37. https://doi.org/10.1108/14636681011035735.

Prose, F. (2012) *Reading like a Writer: a guide for people who love books and for those who want to write them*. Union Books.

Ryan, M. (2021, April). Thinking about strategic thinking: developing a more effective strategic thinking culture in Defence. *The Vanguard Occasional Paper Series, 1*. Canberra: Department of Defence. https://defence.gov.au/ADC/Publications/the_vanguard_number1.asp.

Ryan, M. & Finney, N. K. (2018). Science fiction and the strategist 2.0. *The Strategy Bridge*. https://thestrategybridge.org/the-bridge/2018/8/27/science-fiction-and-the-strategist-20.

Ryan, M.-L. (1980). "Fiction, non-factuals, and the principle of minimal departure. *Poetics*, *9*. 403–422.

Ryan, M.-L. (2015). "Transmedia storytelling: industry buzzword or new narrative experience?" *Storyworlds: A Journal of Narrative Studies, 7*(2). 1–19.

Samuelson, D. N. (1993). Modes of extrapolation: the formulas of hard SF. *Science Fiction Studies*, *20*(2). 191–232. http://www.jstor.org/stable/4240249

Sangster, M. (2007). Reflecting on pace. *Mathematics Teaching Incorporating Micromath*, *204*. 34-36.

Schulz, K.-P., Geithner, S. Woelfel, C. & Krzywinski, J. (2015). Toolkit-based modelling and serious play as means to foster creativity in innovation processes. *Social Science Research Network, 24*(2). 323-340. https://doi.org/10.1111/caim.12113.

Schwarz, J. A. (2008). Assessing the future of futures studies in management. *Futures, 40*(3). 237-246.

Shamsuddin, A., Sheikh, A., & Keers, R. N. (2021). Conducting research using online workshops during COVID-19: lessons for and beyond the pandemic. *International Journal of Qualitative Methods*, *20*. https://doi.org/10.1177/16094069211043744

Spaniol, M. J. & Rowland, N. J. (2018). Defining scenario. *Futures & Foresight Science*, *1*(1). https://doi.org/10.1002/ffo2.3

Stenros, J. & Montola, M. (2019). Basic concepts in Larp design. In J. Koljonen, J. Stenros, A. S. Grove, D. A. Skjønsfjell & E. Nilsen (Eds.), Larp design: creating role-play experiences (pp. 16–21). Landsforeningen Bifrost.

van Dijk, J. W. A. (1991). Foresight studies: a new approach in anticipatory policy making in the Netherlands. *Technol. Forecast. Soc. Change, 40*(3). 223-234.

Vavoula, G. N. & Sharples, M. (2007). Future technology workshop: a collaborative method for the design of new learning technologies and activities. *International Journal of Computer-Supported Collaborative Learning*, *2*(4). 393-419. *ProQuest*, https://doi.org/10.1007/s11412-007-9026-0.

White, G. (2013). *Audience participation in theatre: aesthetics of the invitation.* Palgrave Macmillan.

Woodyatt, C., Finneran, C. A. & Stephenson, R. (2016). In person versus online focus group discussions: a comparative analysis of data quality. *Qualitative Health Research*, *26*(6). 741–749. https://doi-org.ezproxy.library.uq.edu.au/10.1177/1049732316631510

Zaidi, L. (2019). Worldbuilding in science fiction, foresight, and design. *Journal of Futures Studies, 23*(4), 15-26.