Threat Forge: Using a Narrative Game to Explore Future Societal Challenges

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Abstract: The current world is in a state of volatility, uncertainty, and complexity, characterized by the emerging challenges to democratic systems across multiple domains. Preparing to meet these complex challenges requires tools that help to build resilience and adaptability. While serious games and wargames have a long history of being applied to this goal, they often limit the player agency and creativity. This case study introduces *Threat Forge*, a narrative co-creation game designed to explore potential futures by integrating game mechanics with techniques used in future studies. It explores how the structure of this game enables players to engage in meaningful discussion of concepts as defined by frameworks like DIME and PMESII even when they have not received direct training in these frameworks. The results of a formal playtest using the CORGIS survey, as well as thematic analysis of the discussion and observation of play are presented. The results show that the type of challenges that player experiences within the game are consistent with designing a game to encourage a serious and deep reflection on complex issues. In addition, they show that the discussion was consistent with frameworks used to discuss conflict. The play-testers felt that the game was a useful method of structuring a discussion on complex issues. In conclusion, narrative co-creation games offer an important addition to the field of serious games that will need to be subjected to further study and investigation.

Keywords: Serious games, Narrative co-creation, Resilience, Wargaming, Future studies, Game Based Learning GBL

1. Introduction

Democratic societies are under an unprecedented amount of strain. Challenges to the established order threaten the coherence, functionality, and legitimacy of democratic states. The challenges exist across a wide range of domains, including the Political, Military, Economic, Social, Information, and Infrastructure (PMESII) (Kodalle and Ormrod, 2025). Addressing these threats requires governments and industries to be able to anticipate, understand, and respond to complex, contradictory, and often novel situations systematically. Among the tools best suited for addressing this, games — especially serious games and wargames — have long served as methods of building resilience, addressing social tension, and preparing for the unknown. Examples stretch back in history from the tales from Herodotus' history of the Lydians playing games to combat starvation (McGonigal, 2011) to the exaltation of games as tools for learning to deal with the unexpected in the *Book of Games* (1283) (Alphonso X *Book of Games* Home Page, no date). In more modern times, games have been used to prepare for disasters (Comfort, Boin, and Demchak, 2010), engage with business planning (Bradfield et al., 2005), and even to think the unthinkable and examine thermonuclear war (Kahn, 1984).

The vast majority of serious games have been characterized as message broadcasters (Ifenthaler, Eseryel, and Ge, 2012); that is, games in which the primary purpose is the delivery of specific information. This places the player in the role of the recipient of knowledge, either created or curtailed by the game designer, rather than in a position of collaborative co-creation and exploration of the problem space. This is readily apparent in the wargaming subset of serious games where the two most prevalent formats — rigid and freeform — despite their differences in goals, execution, and adjudication methods, both rely on prescripted scenarios that guide or, in some cases, constrain the player experience (Perla, 2023; NATO, 2023). While the focus this provides helps to maintain the clarity and manageability of the design, it also limits the agency of the player.

Agency, which can be described as "the capacity of actors to make practical and normative judgments among alternative possible trajectories of action, in response to the emerging demands, dilemmas, and ambiguities of presently evolving situations" (Emirbayer and Mische, 1998, p. 971), can be viewed as essential in producing engagement in a game system. To put it simply, if the player's choices do not have any bearing on what is happening, the player will become disinterested and disengaged.

This default assumption that serious games or wargames require a well-crafted narrative to teach (Naul and Liu, 2020) places a great deal of strain upon the game designer. It implies that the most valuable insights must be embedded in the game's construction, rather than emergent from engaging with the game.

Given these limitations, there is a need for new approaches to supplement traditional wargaming methods that retain the strategic focus of wargames while increasing player agency and the ability to co-create the scenario

space. One potential approach to explore the effects of increased agency would be the adaptation of cooperative narrative co-creation games into the field.

Narrative co-creation-based games like *Fiasco* (Morningstar, 2011), *The Quiet Year* (Alder, 2013), and *Microscope* (Robbins, 2011) stem from the exploratory game design work done at The Forge (White, 2020). They were created in response to more traditional roleplaying games, which emphasized either game balance and tactical optimization (gamerist models) or internal consistency and accuracy of simulation (simulationist). In contrast, the narrativist games sought to place participatory and collaborative gameplay at the heart of the game's structure. These games serve as scaffolds for the creation of stories and exploration of problems and decisions.

Co-creative games have gone on to be defined as having three common features: the players decide what exists and does not exist within the shared game world; the game is open enough to be adapted to the players' desires; and finally, a system of moderation exists within the game to define how content is added (Acharya and Wardrip-Fruin, 2019). These three elements dramatically increase the players' ability to make judgments and take actions within the game world.

Given their co-creative nature, such narrative games may be ideally suited to address the fundamental tension between scripted narrative and the need for agency in the creation of the scenario that is prominent in the two traditional wargame types (Perla, 2023). The construction of the narrative as a co-design process brings more voices into the discussion, allowing for better scenario creation. The narrative process can accommodate the uncertainty of wicked problems (Swain, 2007) and, in fact, provide valuable information towards defining the nature of the problem. In contrast with traditional wargaming methods, which deliver information to the participant, narrative games extract concepts from the participant.

The purpose of this study is to explore the utility of a game-based approach to conduct an analysis of potential futures. This would bridge an existing gap in traditional wargaming traditions as well as present a novel and engaging method of conducting this type of work. This study will achieve this aim by presenting a case study of the use of *Threat Forge*, a narrative co-creation game designed to explore potential futures.

The key research questions to address the aim were defined as:

- Can *Threat Forge*, a narrative-based game, facilitate structured discussion across multiple domains of conflict, represented by established analytical frameworks such as DIME and PMESII — even if the players have no formal training in these frameworks?
- How well do the challenges presented in the game mesh with the purpose that the game is designed to accomplish, measured by the CORGIS (Cognitive, Organizational, Reflective, and Game-based Interaction Survey) instrument? (Denisova et al., 2020)

2. Game Description

Threat Forge is a narrative co-creation game for 2 to 8 players developed to explore the pathways to future states. The design of *Threat Forge* drew inspiration from the mechanics of *Microscope* (Robbins, 2011) and integrated them with the process of backcasting and future studies. Backcasting is a methodological approach used by intelligence services and industry; it begins by identifying a future state and asks participants to project backwards to identify how such a future may come about (Vanatta and Johnson, 2019; Robinson, 1990). *Threat Forge* allows for a process of backcasting to take place in a game environment, complete with generating the associated flags and gates that are made in the traditional process.

Serious games are made up of two often competing goals: the ludic or player goal, and the intended learning outcome (defined by the designer) of engaging with the game. The ludic goal of *Threat Forge* is to explore the construction of a narrative with fellow players. It uses narrative and player uncertainty (Costikyan, 2013) to engage the player. The learning goal of *Threat Forge* closely aligns with the ludic goal, as through the co-construction of the narrative, players are led naturally to discuss complex multi-domain issues and explore their understanding of these challenges.

While it has been noted that "the essence of gameplay is the challenge/action relationship" (Adams and Rollings, 2010), the type of challenge that a game produces can support or inhibit the gameplay. The four types of challenge—performative, decision-making, emotional, and cognitive (Denisova et al., 2020)—have to be carefully considered in the game design. A game designed to promote serious reflective engagement with these complex issues, like *Threat Forge*, requires more cognitive and decision-making challenges to ensure that the debate is meaningful. In contrast, the more standard performative challenge found in computer games, with

their emphasis on quick responses, would not allow time for reflection and debate central to the learning goal. Another example is that the player must have some emotional space to consider the moves that are being made. The player must be emotionally invested in the discussion to increase engagement, but not so much that it will interfere with producing a coherent narrative.

During play, participants take turns creating and placing cards representing potential major events onto a timeline that initially consists of a starting point (present day) and an end point (the final future state the events culminate in). The cards are produced by the player and have a simple sentence describing the event, as well as an arrow in the top corner to denote if the event detailed increases the probability of reaching the end state or decreases it. By placing their card before or after any existing event card, players gradually construct a chain of events. They can also elaborate on how individual major events occurred: further cards can be added underneath the top-level events to explore incidents that contribute to the larger-scale event.

The most profound way in which *Threat Forge* diverges from *Microscope* is in the establishment of the scenario to be discussed. In *Microscope*, this is fully open, and the players engage in a negotiation before the start of the game to establish the narrative they wish to tell. In contrast, *Threat Forge* defines the start and end point of the timeline, as well as the setting, before play begins. The players are then allowed free rein to explore inside the defined space. This is done to help keep the discussion on point and relevant to analysis.

3. Methodology

The playtesting of a serious game, to establish its engagement and its utility as a tool, requires a mixed-methodological and pragmatic approach to be taken. The design and development decisions for Threat Forge have been outlined above. This process of design involved many iterations of informal and formal playtesting. Several of the playtest sessions included a diverse audience from security and military fields these sessions are not reported on for a mix of confidentiality and security concerns. Instead this paper describes a formal playtest using graduate students that was conducted using the game on April 8th, 2025.

3.1 Pilot Scenario

The pilot scenario assigned for the formal playtest was the lead-up to the invasion of a small Western democracy by a larger, more aggressive authoritarian state. This focus was selected due to its relevance to current political issues and its perceived ability to raise questions across multiple societal domains.

3.2 Population

The game was played by three playtesters, two male and one female. All of the play-testers were postgraduate students studying Digital Learning Games at Tallinn University. None of the participants had active military experience or had been employed by the military. The selection of non-military perspectives was intentional, as the study wished to see if the game promoted dialogue around key issues without the participants being aware of them.

3.3 Ethics

Full and informed consent was received before the game started or any data was captured. Each participant was provided with a cover letter outlining the nature of the research and the procedure for withdrawing from the research at any time.

3.4 Data collection

- **Audiovisual recording**: The playtest session was recorded using both a video and backup voice capture. This was done to allow for post-session analysis of participation and dialogue.
- **Survey Instrument:** Participants completed the CORGIS (Cognitive, Organizational, Reflective, and Game-based Interaction Survey) immediately after the session using a seven-point scale for fine-granulation of results. This 30-item Likert scale survey measures levels of challenge in four domains: cognitive, decision-making, emotional, and performative. (Denisova *et al.*, 2020)
- **Hotwash and Group Feedback**: Following the survey, a structured debriefing session was conducted based on van den Hoogen, Lo, and Meijer (2016). Participants were asked to reflect on their experiences, identify learning moments, and suggest improvements.
- **Artifact analysis**: The final state of the created timeline was photographed to ensure accurate recording of the narrative and strategic outcomes developed during the game.

3.5 Data Processing

The data from the CORGIS survey was anonymized. Patterns in high-scoring and low-scoring items were identified and highlighted in the results and discussion.

A combination of the recordings and the artifacts produced by the game were analyzed to allow for each move inside the game to be isolated.

To assess how effective the game was in eliciting structured discussion of complex societal issues, each move generated during gameplay was retroactively categorized using the DIME and PMESII. frameworks. These two frameworks were selected as they are widely used in military education in either the design of wargames (Dixson *et al.*, 2015) or as frameworks found in military doctrine (Kodalle and Ormrod, 2025). The application of these frameworks to the emergent narrative produced by *Threat Forge* allowed for judgments to be made about the quality of the discussion being produced.

4. Results and Discussion

4.1 CORGIS Results

Table 1: Combination CORGIS (Denisova *et al.*, 2020) scores and in game observations in support

Challenge Dimension	Mean score (1-7)	Game observation
Cognitive	5.16	Players paused frequently to consider plausible events.
Decision Making	4.66	Players discussed the placement and knock-on effects of proposed events.
Emotional	4.5	Players referenced real-world issues and examples in the discussion.
Performative	2.2	Players took their time and engaged with each other while making their moves.

Table 1 provides an overview of the average scores generated by CORGIS as well as observations made during play that put the numbers into context. A deeper analysis of the findings is presented in the following sections.

High Scoring Elements

Consistent with the design of the game, the most prominent type of challenge identified via CORGIS was cognitive (5.16 / 7 average) followed by decision-level challenge (4.66 / 7) and Emotional challenge (4.5 / 7).

Another important finding is that the cognitive challenge section was also the only section to score higher than 6.3/7 on individual items.

The most highly rated elements from the survey as a whole was in the cognitive elements, Item 10 "I had to think actively when playing the game" (average score 7/7). Three other items scored highly on the survey. Item 7 "I had lots of different things to think about at once in the game" (average score 6.66 /7). Item 6 "I felt challenged when playing the game," and item 9, "I had to constantly keep track of what was going on in the game," both scored 6 /7 on the CORGIS scale.

While the decision-making challenge elements scored the next highest, only 1 item scored as highly as the four taken from the cognitive challenge elements. "The game made me think hard about my decisions." Item 5 in the decision-making scale scored 6/7.

The emotional challenge had three Items scoring highly: Item 3 "I invested much thought into the game" (6.3/7); Item 5 "The game made me think about real-life issues" (6.3/7); and Item six "Playing the game was stimulating" (6/7)

All of these results paint the picture of a game that was engaging and required the player to invest cognitive resources to understand and take part in the game.

Low-scoring elements

Also consistent with the design of the game, performative challenges (2.2 / 7) were identified as being the least present in the game, with no element scoring higher than (3/7).

Of the other challenge types, certain items also scored lower than the average. In decision making, one item, "There were some decisions in the game that I regretted," scored 1.6/7. Whereas in Emotional challenge two items scored low "The things that happened in the game made me sad" (2.3 /7) "The game involved making moral choices that I didn't agree with" (2/7) the low scores from these areas suggest a game in which the player was comfortable making the moves and did not experience meaningful regrets during play.

The lowest scoring item in cognitive challenge, "I had to memorise a lot of different things when playing the game"(3/7) suggests a game that does not cognitively overload the player.

The results of the CORGIS Survey are consistent with the types of challenges the game was attempting to leverage and consistent with the intended learning goals of the game. The game was cognitively challenging, requiring careful thought and planning while not cognitively overloading the player. The players reported emotional distance in that there were no decisions regretted, and the game, although discussing difficult topics, did not have any moves that made the player sad. It also becomes clear that the game requires the player to take time and consider carefully the implications of each move. The results were supported by observations made during play, which are summarized in Table 1.

4.2 Thematic Analysis

Despite the participants not having familiarity with DIME or PMESII, the analysis showed that players produced concepts that mapped to the frameworks. This suggests that Threat Forge can act as an effective scaffold to support valuable discussions.

DIME framework

The most common move type made within the DIME framework was diplomatic (10 moves in total), which is consistent with the nature of the scenario being discussed. The types of moves made varied from an awareness of the importance of external alliances to the application of sanctions on foreign governments to apply pressure. The Economic sector was also widely discussed (5 moves in total), it was often viewed as the precursor to more heavy forms of conflict. These ranged from the discussion of changes in energy supplies to the discussion of new technologies like quantum computing and their potential influence on society. Direct military action was discussed but was placed later in the timeline, with 4 out of 5 of the moves occurring within the last three events. This showed a clear concept of events escalating up to an active military conflict.

The area least discussed in the Dime framework was information (3 moves), which dealt primarily with propaganda efforts and other informational warfare activities. The number of moves may disguise the importance of the information sphere as the very last serious move was a false flag operation that provided the justification for the invasion.

Several moves were made that did not fall within the DIME framework. Specifically, a long discussion of the internal pressures of ethnic tensions and how this could contribute to the instability leading up to an invasion was not covered by this framework. This is why the author also analyzed the moves using the PMESII Framework.

PMESII Framework

The political, military, information, and economic results have been discussed above.

The game revealed a distinct focus on social and ethnic tensions as an area in which conflict could be fomented. This falls under the social categorization of PMESII (7 moves in total). The players identified the risks associated with policing and civil rights as potential points of conflict. The largest amount of discussion within the game centred on these social issues as players negotiated where they would occur.

The final component of infrastructure was the least discussed by the player (2 moves), the discussion was about a projected cyberattack on the banking system of the smaller country and the physical moving of border markers. It is unclear if the lack of discussion of this area is due to player bias towards other areas or that the players just had not reached a full discussion yet.

All of the moves made within the game had parallels with real-world events, which were often cited by players during their discussions. This shows a willingness to engage with and bring understanding to the game.

Players, even without prior training in these frameworks, naturally considered elements from all aspects of them. This highlights that the game format is consistent with encouraging thought across multiple domains of conflict.

4.3 Observation and Hotwash

During initial rounds players, were hesitant as they began to explore the game space. This may have been due to them being aware of being recorded or uncertainty with how to begin in such an open-ended game. Once several rounds had been completed, the conversation and discussion started to come more easily. During the debrief players recognized this pattern in themselves and suggested running the game on multiple occasions to familiarize them.

Participants identified the game as a method of brainstorming that helped to construct logic chains. They agreed that the game would encourage participants to think about the world and how situations might develop into the future.

After the game had concluded, participants also spontaneously began suggesting other potential topics that they would like to explore using the game. They were particularly interested in the effect of technological changes on the world and suggested running the game again on this topic. Another suggested area was looking at projecting environmental impacts.

The game was thought-provoking enough to have participants spontaneously engage in discussion with the researcher even several days later at a social event that they were all attending.

4.4 Limitations

While the results are promising, the limited scope of the pilot in both size and audience must be recognized. Further work would be needed with larger and more diverse audiences to confirm the findings.

5. Conclusion

In a modern world that is marked by its volatility, uncertainty, and complexity, games can offer a method of building resilience and exploring problems. While traditional games have focused on explicitly defining the problems for a player, narrative co-creation games like Threat Forge allow for a more open scenario. This helps to facilitate deeper engagement and discussion of the key issues.

The results of the formal playtest above also show that the discussion generated was consistent with the PMESII and Dime frameworks. Showing that a wide range of topics can be elicited from the game and that the game produces focused and meaningful responses from the player, even in the absence of formal instruction in the frameworks.

The limitations of this study - its small size and narrow audience- suggest the need for broader testing and validation. Further studies could explore the use of the method to explore different scenarios, such as the impact of technological changes, climate change, or disaster preparation. Further work with different populations may help to extract underlying assumptions in the population or highlight different priorities in focus. Finally, longitudinal studies could reveal the impact of playing games of this sort on planning and preparation.

In conclusion, Threat Forge demonstrates that narrative, co-creative games can serve as a useful addition to both traditional wargames and those engaging in future studies, by offering a method that is both engaging and productive in the discussion that it produces.

Ethics declaration: No ethical clearance was required for this study and the study conformed to the ethical guidelines of Tallinn University.

AI declaration: Ai tools, including Grammarly and ChatGPT4, were used to check the spelling, grammar and phrasing of the above work.

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