Rapid Think Tanks (RTTs): A Collectively-Intelligent Methodology for Collective Deliberation

Ezequiel Lopez-Lopez,[1] **Ulrike Hahn,**[2]

[1] Center for Adaptive Rationality, Max Planck Institute for Human Development, Berlin 14195, Germany
[2] Department of Psychological Sciences, Birkbeck, University of London, Malet Street, London, WC1E 7HX, UK
lopez@mpib-berlin.mpg.de, u.hahn@bbk.ac.uk

Abstract

Collective deliberation is a complex process wherein a diverse group of individuals come together to discuss, debate, and collectively reason through topics or decisions, emphasizing inclusive dialogue and pooling collective intelligence. However, this method often encounters inefficiencies due to organizational, representational, and logistical challenges. These inefficiencies are evident across varied scenarios from offline policymaking to online workshops. To enhance these processes, we propose the Rapid Think Tank (RTT), a machine-assisted approach that leverages knowledge engineering and Large Language Models. Conducted mostly asynchronously online over a few days on a Reddit-like platform, RTTs efficiently distill expert inputs into tangible outcomes. Particularly effective for ambiguous problems with clear desired results, RTTs are modular, encompassing convergent and divergent phases, and culminating in post-processing for refined outcomes. We posit that RTTs could offer greater democracy, transparency, and efficiency than traditional deliberative methods.

Introduction

Expert deliberation is a collaborative process where domain experts convene to dissect, analyze, and offer recommendations on complex issues within their realm of expertise. Such deliberations are vital in sectors like healthcare policy, government regulation, climate change, and engineering. Typically, these processes encompass stages like preparation, framing, evidence presentation, discussion, consensus building, and documentation. However, the vast array of variations in their application has impeded the development and broad adoption of a unified methodology adaptable to various contexts. Instead, numerous methodologies, such as the Delphi method, Nominal Group Technique (NGT), and Brainstorming Sessions, each with their specific advantages (McMillan, King, and Tully 2016; Diehl and Stroebe 1987), have emerged. Yet, they all face challenges, including maintaining diversity, objectivity, transparency, and addressing logistical constraints(McMillan, King, and Tully 2016; Humphrey-Murto et al. 2023; Toole, Hallowell, and Chinowsky 2013; Paulus and Brown 2007; Boddy 2012).

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Given the lack of uniformity and the challenges encountered, there's an evident methodological and technological gap. This calls for a perspective that views the shared stages (i.e., preparation, framing, evidence presentation, discussion, consensus building and documentation) of most deliberation processes as building blocks, that form a flexible, configurable workflow. This modular approach offers the potential for a tailored configuration to the distinct requirements of the specific deliberation scenario. Such unitary blocks represent well-defined tasks that might be technologically and methodologically supported and augmented to address the challenges and friction points mentioned above.

Existing tools such as natural language processing (NLP), large language models (LLMs)(Tang et al. 2023), knowledge engineering and online deliberation platforms can revolutionize expert deliberations(Baba, Amanuma, and Iwami 2021). For example, LLMs excel in summarization and concept extraction, while NLP can discern sentiment and entities. Knowledge graphs built from these technologies, paired with online deliberation platforms, have the potential for widespread official use, even in traditionally offline contexts.

Crisis situations like COVID-19 and climate change underscore the need to optimize deliberative processes (Morgan 2014; Hemming et al. 2018; Bosetti et al. 2012; Rhinard 2019). The IPCC reports (Intergovernmental Panel On Climate Change (Ipcc) 2023), essential for global climate discussions, demonstrate this with their intricate multi-year cycle. Although they represent global expertise and thorough scrutiny, their prolonged duration and resource demands spotlight inefficiencies. The extended time, sometimes up to 7 years, coupled with pressing climate concerns, points to potentially more efficient procedures without sacrificing integrity.

In this work, we present the current state of our proposed methodology Rapid Think Tanks (RTTs), which emerges in this light as a novel approach, aiming to fuse traditional expert insights with contemporary technological prowess. Through RTTs, we seek to offer a next step towards more effective expert deliberations, to ensure more inclusivity, efficiency, flexibility and rapid outcome production.

Rapid Think Tank (RTT)

We present the Rapid Think Tank (RTT): a modular methodology designed to enhance expert deliberation by harnessing the collective intelligence within the group. Employing machine-assisted frameworks, RTTs enable a structured asynchronous discussion that addresses the topic in sufficient detail to produce a final report in significantly shorter timeframes. The RTT consists of a series of stages where, after a first framing step, refinement (synchronous) and discussion (asynchronous) steps alternate in short loops aiming a convergent set of items that are consesuated by the group. Let's consider the following case study as depiction of the process.

Case Study: *SciBeh's Virtual Workshop 2023*

To showcase the RTT methodology, we utilized Scibeh's Virtual Workshop 2023 titled "Collectively Intelligent Science Communication - Lessons Learned for a Post-COVID Era" as a case study (see Figure 1). This workshop serves as an exemplary collective deliberation scenario. Through a blend of thematic discussions and hands-on participant engagements with collective intelligence tools, the workshop endeavors to craft superior communication strategies centered on three pivotal themes: *evidence communication vs. science communication*, *combatting denialism in COVID-19 and climate change*, and *building trust in science*. The anticipated outcome is to refine a broad definition and formulate communication strategies that resonate with these three core themes.

Preparations Incorporating RTT's emphasis on swift deliberation, we condensed its primary stages into a two-day plan with two short synchronous sessions up front. The concluding post-processing phase might stretch out, depending on participant feedback availability. The technologies used were *Zoom*[1] for synchronous interactions, *Miro*[2] boards for brainstorming sessions at *RTT refinement* steps and *talkyard*[3] (an open-source *Reddit-like* platform) for asynchronous discussions during *RTT discussions*. Ahead of the workshop, participants highlighted past deliberation challenges such as unstructured dialogue, dominant voices, and unclear objectives. Responding to these concerns, we initiated our RTT implementation with a framing step to foster mutual understanding of the topics. The whole RTT process is supported by the availability of the deliberation feed (in our case, from *Talkyard*) and the possibility of processing it with knowledge engineering, NLP-, and LLM-related techniques.

Application of RTT Addressing a problem that is both open-ended and ill-defined requires a structured approach. Given that delineating the problem's boundaries is itself an integral part of the solution, we apply the following steps:

1. **Framing the topic**: The objective here is to establish common ground and context for all participants. This is achieved by providing expert online presentations pertaining to the three workshop tracks. Participants are encouraged to engage with these experts during the Q&A sessions. The insights gleaned during these interactions will serve as foundational content, priming discussions in the subsequent stage.
2. **Divergent phase**:
   (a) **RTT refinement**: Starting with the inquiries from the framing sessions' Q&As, this phase seeks to transform themes into precise questions. Through collective deliberation in breakout rooms, facilitated by tools such as Miro boards, participants and moderators coalesce over a 30-minute brainstorming session. The overarching aim is to pinpoint a central question around which subsequent discussions can orbit.
   (b) **RTT discussion**: The refined question serves as a focal point for asynchronous discussions the following day. This step's objective is to tease out various facets of the problem, initiating distinct threads for each. Embracing the explorative nature of this phase, participants are encouraged to probe the topic exhaustively, setting the stage for subsequent refinement and collaboration.
3. **Convergent phase**: This stage aims to distill the broad discussions from the initial day into a more targeted dialogue with clarified objectives. Depending on the progression of the previous day's exploration, goals may be recalibrated.
   (a) **RTT refinement**: Here, participants will sift through the emergent concepts, selecting or amalgamating them into more actionable discussion points.
   (b) **RTT discussion**: A renewed asynchronous dialogue commences, concentrating on the problem facets identified in the prior refinement stage. This convergent phase is designed to hone in on key areas, paving the way for actionable outcomes.
4. **Post-workshop report compilation**:
   (a) **Final contributions**: participants are notified about the closure of the asynchronous deliberation process and offered the chance of final contributions to the topics.
   (b) **Collaborative filtering**: ideally, the deliberation platform offers the feature of down- or up-voting contributions. In our case, participants didn't spontaneously engage with this feature and irrelevance is measured as a lack of activity in suggested items.
   (c) **Deliberation extraction**: Extracting key points and consensus from the deliberation platform into structured reports.
   (d) **Review**: A collaborative review of the aggregated content to ensure coherence and relevance on the drafted reports.
   (e) **Report Generation**: The culmination of the workshop's efforts, this step produces a comprehensive report detailing findings, insights, and recommendations.

[1] https://zoom.us/
[2] https://miro.com/
[3] https://www.talkyard.io/

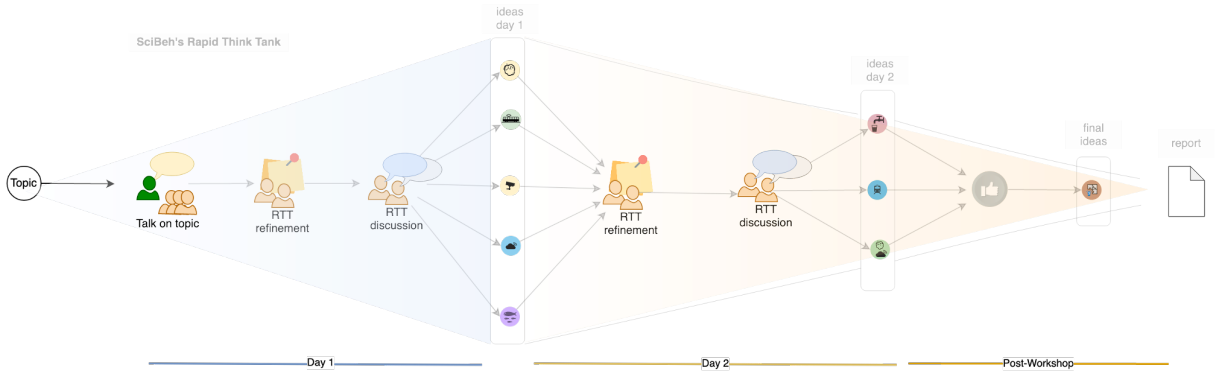

Figure 1: Configuration for *SciBeh's Virtual Workshop 2023: Collectively Intelligent Science Communication - Post-COVID Lessons*. Beginning with a broad topic and diverse participants, the workshop required initial *framing* of the context. Aimed outcomes were strategy reports on three themes: evidence vs. science communication, combatting COVID-19 and climate change denialism, and building trust in science. The core deliberation spanned two days, with post-processing taking weeks due to participant availability. Central to this were two structured phases: the divergent (blue) and convergent (yellow) stages. Each is initiated with a synchronous brainstorming session, followed by asynchronous discussion on *Talkyard*. Post-convergence, discussions were filtered and semi-automatically processed with GPT-3.5 into draft reports, refined in the subsequent post-processing phase.

Outcomes As a result of the RTT, a first report draft for each of the three thematic tracks was sketched after the core days of the workshop and it was refined during the following weeks, guided by the moderators of the three tracks, who were present during the whole development of the track. In the generation of these reports, the discussions were extracted from the deliberation platform (*Talkyard*) as a series of discussion threads and semi-automatically processed into a document using prompt-engineering with GPT-3.5[4] for consolidation, summarisation and structure, later reviewed and edited by moderators and participants. The result is, on one hand, a raw summary of the process included in the *meta-report*, and three reports on the emergent topics[5]: "How and under what conditions could scientists collaborate with non-scientists to communicate science and evidence?", " What do we need in order to allow people to create effective support mechanisms for families and friends of denialists? ", "What could be the features of a tool that offers trustworthy science communication, and how can collective intelligence methods be included?". These reports can now be used for further development as projects or to start a new deliberation process focusing on the design and implementation of such proposals.

Conclusions and Future Work

Feedback from participants was encouraging, with many expressing a sense of inclusion and active engagement throughout the deliberation. The self-selected group dynamics fostered an atmosphere of collaboration, though there's potential for enhanced interactions with a deeper understanding of each other's expertise. The methodology was widely appreciated, with brainstorming stages standing out for their effectiveness. While balancing structured interactions, group familiarity, and diversity of expertise presented learning opportunities, instances, where recognized authorities took the lead, were counterbalanced by other sessions where equal expertise paved the way for fluid conversations. The asynchronous nature of the forum saw more active participants take initiative, but this also highlighted the pivotal role of clear objectives and adept moderation. Some sessions ventured beyond their primary focus, bringing in diverse perspectives. As the deliberation evolved, we noticed an increasing engagement from a dedicated subgroup of participants. RTT's collective approach underscores its potential, emphasizing the value of ensuring everyone's voice is acknowledged and valued.

In summary, the RTT methodology underscores the potential of combining existing technologies to facilitate efficient expert deliberation. The presented RTT case study showcased promising outcomes, hinting at areas for improvement. With tools like GPT evolving, we anticipate further enhancements to this approach. We aim to expand the RTT's testing grounds to validate its universal efficacy. While it shares some challenges with methods like the Delphi and NGT, the RTT reduces typical friction points, such as unstructured dialogue or dominant contributors. Establishing a comprehensive metric to gauge these elements and a deeper dive into related and relevant literature remains a priority.

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[4]https://platform.openai.com/docs/models/gpt-3-5

[5]https://osf.io/qa78z/

[6]https://www.scibeh.org/

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