Augmented Tabletop Games Workshop

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Abstract
This workshop gathers researchers and practitioners interested in augmented tabletop games: physical games that include digital augmentation. Participants will compile ways of knowing for this unique research space and share their methods of research, demonstrating, where possible, through a research gaming and prototyping session. Post-workshop, we will assemble an online compendium for findings, which will include video sketches recorded during the workshop and an annotated bibliography.

Author Keywords
Tabletop games; digital augmentation; tangible interaction.

ACM Classification Keywords
K.8.0 [Personal Computing]: Games

Introduction
Much of the pleasure of tabletop games derives from their physicality [14]. Wooden cubes, cardboard chits, dice, miniatures, and social rituals keep these games firmly inside a physical space that cannot be fully replicated by a computer. This lack of replicability rests within a simple premise: rules are not codified by computation and are thus open to wildly varying interpretation and change [15]. We believe that there is a space between computationally mediated games and the tabletop that offers designers a

range of new opportunities (e.g., Figure 1). Through this workshop, we will explore the means through which designers can augment physical gameplay, without sacrificing the pleasures that players experience at the tabletop [18].

Augmented tabletop games (ATGs) have long been a staple of the analog design environment, though augmentations were limited. Throughout the 1980s, board games controlled by video recordings included on a VHS cassette created new ways to interact between players and the board. More recently, in *Space Alert!*, players respond in real time to problems aboard a spaceship provided by audio files included with the game; in *Golem Arcana*, players use a Bluetooth stylus to play a physical miniatures game using a mobile app; in *Live Game Board* players can enhance the interactive abilities of a paper board with augmented reality.

Extensive research has looked at ATGs [3–5, 8, 11, 22]. The use of computer-assisted devices such as mobile devices, head-mounted displays, and wearable computers aim at different goals, such as increasing physicality, shortening calculations, introducing new mechanics, and increasing sensory experiences.

Social interaction and immersion in gameworlds have been key components of more recent work in this space. Based on the game *i-dentity* [7], *Department of Hidden Stories* [20] examined play as a lens that may transform our perception of each other and the space [19]. Moreover, *Musical Embrace* [9], *Shape Destroy* [6], *Balance of Power*, and *Bundle* [12] are games that emphasize co-presence and physical touch as game mechanics. Tanenbaum et al. considered wearable devices as an important element for fostering the experience of character identification and bond to the imaginary worlds [16].

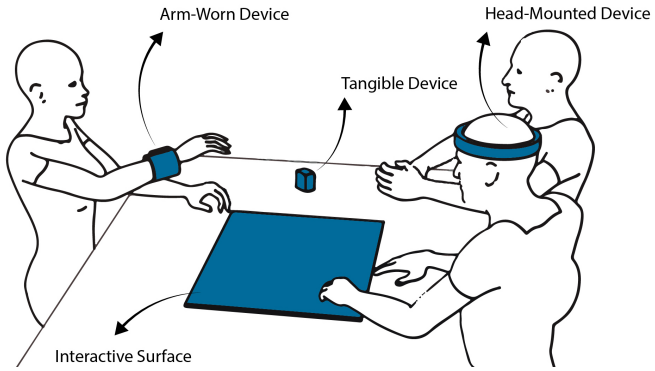

Figure 1: One vision of an augmented tabletop gaming setup for a board game including an interactive surface and sensor-equipped tangible devices and wearables. Image ©2016 Oğuz Turan Buruk.

Beyond improved player experience, some projects have combined the physical and the digital experiences in commercial products. We observe that many products use the reverse approach by increasing the materiality of smart devices like touch-screen tablets or game consoles instead of enhancing the conventional tabletop environment (e.g., *Skylanders* [17], *Zombie Burbz* [21]).

There is also substantial conceptual and pragmatic overlap in this area with research into tangible and embedded/embodied interfaces (TUIs). Starting with the work of Ishii and Ulmer [10] the field of TUIs has devoted almost 20 years to solving the interactional problems of hybrid physical/digital environments. Systems like Tangible Viewpoints [13], *Futura* [1], and EventTable [2] are especially relevant as tabletop TUIs. Many technical challenges involved in creating ATGs have been tackled in the TUI community, albeit towards different ends.

Objectives and Expected Outcomes

The major components of the proposed workshop begin with an opening discussion, followed by participant presentations to get a sense of the scope of work being undertaken in this research space. We follow with a discussion of ways of knowing: how to evaluate ATGs. After lunch, a novel two-hour research gaming and prototyping session will enable participants to experience and discuss research within this space and facilitate collecting video sketches. We close the workshop with a discussion of practicalities.

Participant Presentations. A set of participant presentations will identify areas of research. The length of the presentations will be short (dependent on workshop attendance and set in advance). The goal of this session is to establish a sense of the existing work in the space of augmented tabletop games and point the way forward.

Ways of Knowing Session. Research in augmented tabletop gaming is interdisciplinary, including game studies, anthropology, human-computer interaction, psychology, sociology, etc. Each field brings its own ways of knowing: techniques for studying systems, play, experience; data sources; analysis methods; etc. We expressly frame this session as "ways of knowing" to be inclusive when it comes to generating knowledge. This open-floor discussion will enable participants to identify the ways of knowing that have worked for their research (and those that have not). This session will be recorded and used to establish best practices in our online compendium.

Research Gaming and Prototyping Session. The research gaming and prototyping session will offer participants an opportunity to undertake and/or participate in ATG research at the workshop. We design this part of the workshop to be open to a number of activities, including, but not limited to, participatory design sessions, prototyping, research on gameplay activities with tabletop games, and/or miniature workshops (within a workshop).

Although it will not be a requirement, we request that potential participants propose their own projects for the research gaming session. We are open to a range of entries, from nascent and/or exploratory projects for which a small group of experts is ideal, to established projects in need of data collection. In the session, participants will split into small groups that will play together.

As part of organizing the workshop, we will curate entries for the research gaming session based on the number of submissions and interest from participants. In addition, the organizers will bring a sample of their own work, as well as materials to facilitate prototyping in the session. Materials will include commercial board games and pieces (e.g., miniatures, dice), cardboard, and pens, ensuring there is sufficient material for the event.

Participants who bring games will be able to use this session for data collection and the workshop organizers will use it as a time to collect video sketches [23]. Video sketches will be recorded from participants while they are playing games and will focus on identifying new means for designing and evaluating augmented tabletop games. The resulting videos will be included in the online compendium.

At the conclusion of the research gaming session, we will discuss observations and findings.

Practicalities of Research Session. The final session will be an open-floor discussion of the practicalities of undertaking augmented tabletop games research. Participants will share experiences publishing and seeking funding. We expect this session to produce a list of high-quality venues for publication, and a framing for how best to seek funding.

Planned Activities & Schedule

09:00–09:30: Opening discussion by the organizers.

09:30–11:00: Introductions and presentations by participants.

11:00–12:00: Ways of knowing session.

12:00–13:30: Break for lunch.

13:30–15:30: Research gaming and prototyping session.

15:30–16:00: Brief presentations of observations from research gaming sessions.

16:00–17:00: Practicalities of research session.

18:30: Dinner.

This session will be audio-recorded and used to develop the online compendium.

Outcomes. This workshop will build an ATG-research community and provide source data for an online compendium consisting of ATG ways of knowing, practical considerations, video sketches, and an annotated bibliography.

Organizers' Backgrounds

The organizers are interested in research in the field of augmented tabletop games and include a mix of junior faculty and senior students. All have expertise in game and interface design, as well as research interests in the value of play in design; wearables, augmentation, and physicality and how they influence immersion; identity transformation through games; the historical connections of games and the military-industrial complex; and facilitating social bonds through play.

Planned Solicitation and Expected Attendance

We will develop a website at https://pixl.nmsu.edu/atgworkshop to promote the workshop and maintain materials. To participate in the workshop, potential participants will send whitepapers that address research interests in augmented tabletop gaming and what materials they will bring to the workshop. We will coordinate with authors to arrange the research gaming and prototyping session, which will include the set of games to be played and which participants will be assigned to each session, based on interest and availability. We expect there to be at least 15–20 participants, although fewer of those will bring systems.

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