

Ownership in Making Puppets

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Abstract

Based on preliminary findings from two puppet making and prototyping workshops, an emergent importance of ownership is identified among participants. The workshops center around puppet construction and performance but differed in population and design. We identify key mechanisms of the observed feeling of ownership in the different populations and lay out directed design choices to further support such ownership effects.

Introduction

The *Prototyping Puppets* project is a collaboration between the Center for Puppetry Arts, and the Digital World & Image Group at the Georgia Institute of Technology. It targets informal STEM education through an educational design in which students learn basic prototyping skill through puppet building workshops. Instead of a fixed solution, *Prototyping Puppets* provides a workshop scaffolding. Here, we do not cover the STEM related parts of the project but report on aspects of the diverging use of the original designs to identify elements of co-design and co-creation. We trace moments in which the puppet construction process turned into instances of personal sense-making as users connect their expressions and meaning-making with the objects they imagine, generate, and perform.

We argue that the key element of “ownership” emerged and exemplify this through referencing two different workshops with different target populations (puppeteers, middle school students). The goal is not the presentation of the complete workshop evaluations but a discussion of the specific notion of ownership, its relevance to the creative process, and the ongoing design of the scaffolding that supports the workshop structure.

Ownership is a critical issue in co-creation (Harwood and Garry, 2010) as well as in education, where it has been identified as an important means for student motivation and engagement (O’Neill and Barton, 2005) next to related topics such as identity and agency (Shanahan, 2009). Evoking ownership is closely connected to meaningful levels of agency and autonomy in a given project. Accordingly, to support a feeling of ownership among students, Stefanou et al. outline three different forms of autonomy

(organizational/ procedural/ cognitive) (Stefanou *et al.*, 2004) that exemplify strong agency of participants including decision-making, own media choices, and self-referent evaluation standards. The *Prototyping Puppets* project did not apply these means a priori, however, this paper identifies some observations regarding emergent feelings of ownership that can be traced back to Stefanou et al.

Puppets and Creativity

Puppets are liminal objects. They are active bridges between the animate and inanimate worlds and as such they have transcended many fields of the humanities. “They have been powerful conservators of social values, but also political subversives” (Blumenthal, 2005). This particular in-between status of puppets infused them with a lasting cultural heritage. Eleven forms of puppetry are currently recognized by the UNESCO as intangible cultural heritage and there are numerous national collections of puppets and performative objects. They reflect that puppets remain cultural cornerstones - often banned by political and/or religious powers due to their subversive nature. Puppets have proven to be at times highly personal, yet widely loved in different cultures (Bell, 1999). Puppets provide and shape cultural identity. But they are also engineering feats capable of producing complex expressions through unique designs and technical operations.

Puppets as functional objects have been adapted in Computer Science in a range of fields, including HCI (see e.g. (Shiratori and Hodgins, 2008; Gupta, Jang and Ramani, 2014)) and robotics (see e.g. (Martin *et al.*, 2011)). More importantly for the project at hand, puppetry has been used in education, both within the digital domain (Marshall, Rogers and Scaife, 2004) and in non-digital context (Bernier and O’Hare, 2005). Recently, the making of puppets itself has been combined with STEM education (Pepler *et al.*, 2014). This responds to a growing role of crafting and traditional materials in tangible interaction design, where they have become more prevalent (Rosner and K., 2012; Zoran and Buechley, 2012). Puppetry’s combination of a culturally rooted yet technologically complex art form stands at the crossroads of the physical and digital and offers a powerful entry point to design educational experiences that combine both worlds. This ability

can serve as a cornerstone to address ownership in the puppet making process.

Prototyping Puppets

Prototyping Puppets applies a bottom-up construction philosophy that encourages thickly authentic learning (Shaffer and Resnick, 1999) by engaging students in the construction of puppet objects that emphasize the dual qualities outlined above. They remain accessible cultural artifacts and familiar objects but also include technology and an own expressive framing. The project aims to re-connect basic prototyping and construction to a culturally familiar environment via an experiential learning approach. It is closest related to Pepler's work (Pepler *et al.*, 2014). Like Pepler, it targets education of students through a craft-inspired prototyping approach and it focuses on basic craft materials and practices (see also (Buechley and Perner-Wilson, 2012)). The project is set up to be expandable to grow eventually from basic circuitry to more complex electronics (e.g. we have experimented with motors and speakers) as well as more complex conditions in the design (e.g. parallel circuits and logics).

In its current stage, the project's main components consist of the design, implementation, and evaluation of workshops that combine narrative scaffolding, mechanical puppet construction, electronic circuit building, and testing of the newly build puppets in a performative play session. The ultimate target audiences are early middle school level students.

In the final version of the project, students will participate in workshops that allow them to first develop a basic storyline together with the workshop instructor. Then, they will build the puppets that embody the characters in this setting and that will include simple electronic circuits as part of their functionality. These puppets will be based on designs provided by the research team but can be adjusted in details to the needs of the new story. For example, they can be decorated differently or their functionality can be adjusted. Finally, students will perform the story they helped to develop with the fully functional puppets. In doing so, they create their role in the narrative through traditional puppet play as well as use of the electronic functions embedded by themselves in the performing puppets.

Role of Workshops

In the first stage (year 1/ 2016-17) of the project, the team has conducted a range of pilot workshops to gradually optimize the puppet designs as well as the educational approach. Here, we report on the emergence of the question of ownership through two different workshops: one with expert puppeteers (n=6), the other with a group of middle school students (n=8 + 2 instructors). Each group of participants offered own suggestions to adjust our designs, materials, and practices. Their participation and commentary supported the development process and operated as a form of co-design, as defined by Sanders and Stappers, who see this also as a "specific instance of co-creation" (Sanders and Stappers, 2008).

The goal here is not to provide a full evaluation of these workshops, but to briefly trace the notion of ownership as an important element in both of them.

The audiences in both workshops differed widely in their expertise in puppetry. The experts were recruited from highly experienced puppeteers, directors, and educators. They had not only practical experience in the design, construction, and handling of puppets, but also about the field's history and context. The student audiences were not specially trained or prepared for the workshop but were recruited from an afterschool program at the school as well as their robotics club. None of the students had any particular puppetry experience. The format of both workshops also differed: the expert workshop (3 ½ hours, conducted at the Center for Puppetry Arts, Atlanta) was aimed to test different designs with puppet experts for possible optimization; the student workshop (3 hours, conducted in the research group's lab at the Georgia Institute of Technology) offered the full educational framing including story-creation and performance. The expert participants were divided into 3 teams of 2 participants each. In contrast, all student participants collaborated in a single group effort. We do not claim any direct comparison between the workshop results or populations. Instead we trace the emerging quality of ownership that was observed despite those differences.



Figure 1: student participant showing off her shark puppet

First Recognition of the importance of ownership happened in early pre-tests of the principal puppet making approach. Even in the earliest probes that largely served as preliminary proof-of-concept events, students connected to their puppets. Whenever student participants built puppets, they asked to take them home. This also applies to the here discussed student workshop. In the student workshop (n=8, all female, 7th grade middle school students) students noted strong connection to "their" puppets and mentioned the creative freedom as a key reason for this. As one participant noted "The best aspect of this workshop was getting to use our creativity without restrictions."

The students' ownership interest was the result of their personal investment in the puppet as technology but also as a cultural artefact. Students generated the puppets but also their context, the story, as well as their expressive moment,

the performance. This combination of story development, puppet and character making, and final performance that define the framing of the workshop managed to support a strong notion of declared ownership.

Professional Embodiment was observed particularly in the workshop with expert puppeteers (n=6, 5 male/ 1 female). Puppeteers are trained to bring a puppet to life. Their professional expertise allows them to engage with an inanimate object to infuse it with life through an active performance. Puppets have a presence, what Frank Proschann called “material image” (Kaplin, 1999), that carries elements of life. The “coming into being” of puppet objects “capable of existence” (Jurkowski, 1990) is encapsulated in their performative moment and professional puppeteers enter this performative moment with extreme ease.

The workshop with the puppeteers did not include story building exercises or final performances. The participants all had a long track record of successful performances and puppet development and were likely to excel in such tasks. Instead, the workshop focused on technical optimization and exploration of different designs for puppet builds. Even though the focus was on technical feasibility and puppet technology, the participants brought their creations immediately to life by “playing” them. The nature of the puppet as performative object almost naturally took over and led to impromptu performances.



Figure 2: expert puppeteers spontaneously playing puppets in improvised character

In one extreme case, a puppeteer remained in his puppet-character even during the technical post-review interview about the workshop process itself. Here, the nature of the puppet as expressive object through performance shaped a dynamic ownership relationship between puppet and puppeteer - one that has been discussed in puppetry in various forms - including shamanistic traditions. Without diving into details of such perspectives, it is clear that this transcending moment of combined performances and shifting ownership of expression hinges on the nature of the performative puppet object. “At this moment the technical questions simply evaporate: they are each other, so it is no use asking who is really pulling the strings” (Wilson, 1999). In that way, puppetry production is always co-creation between the object and the subject through performance and dynamic controls/ authority.

Supporting Ownership through Workshop Design

Originally, ownership was not a design criterion for the *Prototyping Puppets* project but it has emerged as a central value for its development. Key mechanisms that we can identify in this early phase are:

1. Combination of narrative, making, and performing
2. Embodiment (mainly through performance)
3. Co-ownership of expression between puppet and puppeteer

These manifest in the project through its particular field (puppets as performative objects) but also through our educational design.

Based on these observations, the project adjusted some design parameters to support this emerging ownership further. This includes particularly adjustments to the role of the workshop instructor. Originally, the role of the workshop instructor was seen as that of a facilitator of the mainly technical learning experience. Namely, to support the technical implementation of puppets that combine mechanical construction with basic circuit building. As the different stages of the workshop showed combined effects in increased expressions of ownership, the instructor’s role and educational material was adjusted in later workshops to support these effects further. Some key changes are:

Instructors are advised to shift into a stage manager role near the end of the workshop. That means, that they become engaged not just with the building process but also facilitate rehearsals, staging, and ultimately the performance. Their set goal is to encourage rehearsals and puppet-puppeteer embodiment toward the final performance. This is targeted to support inexperienced puppeteers to gradually accept the dynamics of the puppeteering situation that we traced in the expert workshop. They are positioned to encourage student puppeteers to control their puppet and bring it “to life” in the context of the collaboratively developed story.

Instructors are advised to explain the main educational content upfront during a the building phase, but to not touch the puppet as the student is building it. Instead, the making process becomes a form of awakening of the puppet through the hands of the student. This is a tradition that is present in puppetry (e.g. in Wayang Kulit) as part of the performance ritual. Here, it is used to focus control and ownership of a particular puppet on the student(s). It is intended as an indirect form of empowerment supporting stronger ownership (O’Neill and Barton, 2005).

Future directions might focus on the story development and encourage personal and socially relevant narratives, applying techniques from performance art (Boal, 2000) to increase the connection of participants/ co-creators to the narrative framing. In addition, we observed bonding through shared creation. As one student participant noted: “I wasn’t really good friends with some of these people [other participants] before this, but now I feel like we [claps hands] we are bonded.” Improved teamwork and collaboration opens up new educational opportunities, such as targeting near-peer tutoring more effectively.

Fostering a feeling of ownership has emerged as a key component of the co-design practices briefly discussed here. We notice that it transcends different layers from material making to immaterial performative expression and argue that it can be used as a powerful tool for successful educational design.

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