Scaffolding Role-Playing: An Analysis of Interactions with Non Role-players of All Ages

Popular abstract: This paper explores the relationship between nature and culture during a series of scaffolded live action role-playing (larp) activities designed as part of a science, technology, engineering, art, and math (STEAM) summer program for indigenous youth. As a linked construct, nature and culture implicitly ground much of human activity, figuring centrally in core ontological and epistemological frameworks (Bang, Warren, Rosebery, and Medin 2012) and human cognition and development (Medin & Atran 2004). After forefronting cultural stories as the launch of activities, scaffolded larp practices were used as one series of activities of a multiple site, multiple year design-based research study. The STEAM programming was designed to explore the complex connections of indigenous culture, knowledge systems, philosophies, and relational epistemologies with perspective taking (Galinsky, Ku, & Wang 2005). Larp was used to add embodiment of non-role-players through degrees of immersive practices. This paper focuses on the larp finale of the 5 activity larp series at the Seattle site. Preliminary analysis of the video recordings, both handheld and point of view, demonstrated that children took up multiple perspectives of the complex systems of local plants and animals. The participants role-played those relationships with nuance and understanding of how those plants and animals interact and relate. Those interactions also characterized the three layers of role-play that were taken in steps when physical representations of the non-human characters were lacking as a part of the design (Fine, 1983; Bjork and Holopainen 2003).

Gabriel de los Angeles
University of Washington
gabe.delosangeles@gmail.com

1. INTRODUCTION

The divide between natural worlds and cultural worlds has affected the ability of Western science education to engage students from marginalized communities and women (Bang and Marin 2015). The nature-culture divide holds not only environmental implications, but political implications (Massey 1992) and educational ones (Dehghani, Bang, Medin, Marin, Leddon and Waxman 2013; Bang and Marin 2015). Continuing to develop work on nature-culture relations, the construct of ArtScience was employed in 2013 to explore indigenous ways of knowing as an alternative to normative forms of science ideologies and practices.[1] This paper explores the gamification part of an indigenous STEAM program (Science, Technology, Engineering, Arts, and Mathematics), which was part of a larger ongoing study. This article explores the use of educational live action role-play, or edu-larp, and the interactions between young and adult participants in the larp finale activity of 2015 program specifically. The program's main goals were to increase children's understanding and reasoning about complex ecological systems with a pedagogical commitment to perspective taking, which research shows increases ecological understanding (Bang, et al., in press).

Gamification across education has been spreading steadily since its inception in 2002 by Nick Pelling (Marczewski 2013). One method of gamification, edu-larp, is seeing increased usage (Bowman and

Standiford 2015). Edu-larp in particular was selected as a method for exploring play and learning as a model for expansive learning (Engstrom 2010) and embodied cognition (Wilson 2002). Bowman and Standiford (2015b) describe edu-larp as "an educational role-playing exercise in which participants adopt a new role for a long period of time in a bounded, fictional scenario that may or may not resemble mundane reality. Some edu-larp scenarios contain rules or win conditions, but not all" (1). This method fit ideally within our outdoor education models that were already in place. The following frameworks are necessary to understand the design of the study and the larp activity.

1.1 Nature-Culture Relations and the Nature-Culture Boundary

Bang and Marin (2015) describe nature-culture relations as a linked construct that grounds much of human activity and figures centrally in core ontological, epistemological, and axiological frameworks across social and scientific domains. Bang and Marin explain that "dominant constructs of nature-culture relations have typically positioned humans as distinct from and a part from the natural world" (531). Therefore, dominant constructs of nature-culture relations within Western culture worldviews tend to create more opaque and impermeable boundaries between nature and culture, even to the point of people vs. nature. This division is especially reinforced in science education, where "dominant constructions marginalize or silence the heterogeneous 'hives of activity' involved in living

and making sense of the world, including those of contemporary biological science, in which complexity, relationality, and environmental variation increasingly figure in explanatory accounts" (Bang, Warren, Rosebery, and Medin 2012, 304).

1.2 Bleed and Learning Transfer

The divide between nature and culture is not the only boundary involved in the design of the edu-larp activity. *Bleed* is a phenomenon in the practice of role-playing. The term was popularized by the Nordic larp community, specifically from a style of freeform role-playing called jeepform, where games were designed for high intensity emotions and difficult situations. Bowman (2013) describes bleed as the "phenomenon of the thoughts, feelings, physical state, and relationship dynamics of the player affecting the character and vice versa" (Bowman 2013). The boundary between the player and character specifically become more transparent and porous, allowing for visibility of each other and for knowledge, skills, emotions, and cognitive spaces to be shared within the same physical body.[1]

Bleed in larp literature has been connected with catharsis, which is experienced in both positive and negative ways (Montola 2010; Bowman 2013). At the surface, bleed appears to be another form of learning transfer, which is the process and the effective extent to which past experiences affect learning and performance in a new situation (Ellis 1965). It is important to note that while bleed sounds similar to transfer, Ellis's notion of the transfer of learning of past experiences in education tends to pertain to specific to skills and content knowledge (McKeough, Lupart, & Marini 2013), not affective phenomena as in the case of bleed. Bleed in this edu-larp activity was not utilized to encourage players to cry or break barriers within themselves. Bleed was used as a mediating artifact for perspective shifting, specifically to deepen respectful, reciprocal, and responsible relationships with plants and animals without anthropomorphizing them.

2. CONJECTURES

A main pedagogical strategy of the camp was to engage youth in perspective taking as more than human others to deepen respectful, reciprocal, and responsible relations with our lands, waters, and communities. The larp finale expanded this perspective taking with embodiment to helping position participants within the perspectives as plants, animals, and eventually, humans. Two conjectures

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[1] For more on the types of and effects of bleed as a phenomenon, see Bowman 2015a.

about the dynamics of interest and learning are described below.

Conjecture 1: Role-playing can enhance nature-culture relations.

In taking on the perspectives of more than human actors in a natural ecosystem setting, a participant can enhance nature-culture relations. Role-playing, while an imprecise vehicle for the cognition of a more than human actor due to practices of anthropomorphism, can be ideal for positioning human participants within the natural world. Having enacted the ecosystems as more than human others, human actors are given a space to respect the ties a plant or animal has within ecosystems. Bleed can carry over into a participant's activities outside of the edu-larp activity though *bleed-out*, when the emotions, thoughts, relationship dynamics, and physical states of the character affect the player (Bowman 2015a).

Conjecture 2: Role-playing allows for grasping the standpoint of another being and also shifts the angle from which you view a scenario, system, or community.

Role-playing puts you in the headspace and experiences of another person or being as a role. This role adoption is a form of perspective taking, which Galinsky, Ku and Wang (2005) describe as the cognitive capacity to consider the world from another individual's viewpoint. The adoption of a role of another person or being also changes the mental landscape of how a participant views an idea, a system, or a community. This shift in perspective is what Bang, et al. (in press) describe as changing positioned viewpoints to observe from multiple directions. The authors further explain that that these multiple perspectives are important to human social development and healthy relational interactions. Shifts in perspective taking allow participants to see the relationships a being has from multiple directions and create a more full picture of the reciprocality another being has with others.

3. CONTEXT AND DESIGN

The second year of the program took place in Discovery Park in Seattle, WA in areas surrounding the Daybreak Star Indian Cultural Center. This area was originally territory for the Federally unrecognized Duwamish people, a Lushootseed speaking Coast Salish tribe. The site of the larp finale took place around a large pond. Participants of the program ranged in age from 4 to 60, with 31 young people attending the camp that were ages 4 to 16, and staffers and participating family members from their early 20s to 60. Participants were from the Seattle

urban native community. All activities were designed from the lands in which they were situated as well as cultural stories, song, and language.

The edu-larp activity was designed no differently, starting from the Grandmother Cedar story as told by Roger Fernandez (Appendix B), a S'klallam storyteller who learned the story from Master Storyteller Johnny Moses of the Tulalip tribe. The edu-larp consisted of five exercises: non-human actor embodiment of one type (cedar) in small groups; isolated but varied small group types (a multitude of local plants); intersection of those group types in pairs and trios; intersection of those varied types in small groups with environmental scenarios described by a staffer; and then finally a full role-play with participants and staffers alike within a setting (see Appendix A).

The setting of the finale was bounded mainly by Roger Fernandez's telling of "Moon the Transformer" and influenced by others told during the program. Participants were divided up into specific groupings to represent salmonberry, fireweed, sword fern, horsetail, yarrow, nettle, and cedar and started out in their isolated groups. Participant goals were to have at least ten different experiences about which to discuss afterward. The main drive of external change within the setting was Moon the Transformer. The character of Moon the Transformer used the mechanic of tapping someone on the shoulder and said, "I harvest you," to plant participants. These players were taken back to a space where they were transformed with facepaint into other plants, animals, seasons, elements, and eventually, humans.

4. RESEARCH QUESTIONS

As a design-based research study (Brown 1992; Cobb, Confrey, Lehrer and Lehrer 2003), the research question is nested into the second year's overall program question: How can we live in respectful, reciprocal, and responsible relations with our lands, waters, and communities? The research question for this paper is: How can edu-larp, as a form of agent-based modeling of more than human actors, deepen respectful, responsible, reciprocal relations with our lands, waters, and communities?

5. RESEARCH METHODS

The data presented in this paper comes from a larger design-based research study where youth -- working with educators, scientists, and artists -- expand their knowledge on complex systems, ecosystems in particular. Following the first year, edu-larp was introduced to the program as a gamification method for agent-based modeling of local complex

ecosystems. Agent-based modeling, when combined with embodiment, has demonstrated enhancement of reasoning from the perspectives of more than human actors (Danish 2014). This paper focuses on the west coast site in Seattle, WA, specifically the finale portion of the larp series.

5.1 Data Collection and Analysis

Throughout most of the larp scaffolds and finale, both point of view (POV) cameras and handheld cameras were the mainstay of data collection. POV cameras were placed mostly on staffers, then later on young participants. The video was analyzed using grounded and interaction analysis methodologies (Glaser, 2009; Derry, et al. 2010; Jordan & Henderson 1995). Video reviewing was organized by activity and then by scaffold. The grounded framework of the analytic memos was constructed with multiple viewings and write ups. The data for this paper were selected for interaction analysis based on relevancy to the conjectures and questions and emergent to the analytic memos.

6. FINDINGS

Preliminary analysis of data demonstrated that children took up multiple perspectives of the complex systems of local plants and animals and role-played those relationships with nuance and understanding of they interact and relate. Those interactions also characterized the three layers of role-play that were taken in steps when physical representations of the non-human characters were lacking as a part of the design (Fine, 1983; Bjork and Holopainen 2003). The data showed that immersive moments were interrupted by lack of physical representation of the diegetic setting, turning the layer of identity discovery into an emergent mechanic. The following section will look at a single set of interactions caught on a POV camera worn by C, a participant of the program.

6.1 Complex Ecological Systems Reasoning

C, a young person who has been transformed into a deer, is in search of food. They are told that deer do not eat stinging nettle, so in every encounter with nettle, they turn away and look for what they believe is more edible fare. At every encounter looking for more food, C starts with "What are you?" Eventually, C finds a group of sword fern characters and begins to eat them, one by one. On the third sword fern that they try to eat, N says, "Nuh uh, I-I'm a little tiny spore and I-I attach onto you." C here takes up notions of what is edible and not based on knowledge

of the food chain of herbivores and what has less defenses to their deer character.

6.2 Multiple Nuanced Perspectives

In the excerpt, N takes up a perspective of a sword fern spore and travels on C as a deer. Among a grouping of full sword fern plants, N's perspective of a spore shows how participants not only viewed the movements and lifecycles of full plants, but also the perspectives of how those same plants move in the ecosystem.

6.3 Interrupted Immersion

C, like in many other excerpts, asked the question, "What are you?" due to a lack of physical representation of what the plants look like. Transformations involved facepaint; initial plant participation did not. While this lack can be considered a design flaw, it elicited interactions as an emergent mechanic in the question, "What are you?" This question demonstrates 1) an interruption of immersion and 2) an encounter with the rules and mechanics layer of role-play theory (Fine, 1983; Bjork and Holopainen 2003).

7. GENERAL IMPLICATIONS AND CHANGES FOR DESIGN ITERATION 2

Edu-larp demonstrates advantages, when combined with traditional outdoor education methods, for engaging indigenous youth in learning STEAM. With a focus of perspective taking embedded into nature-culture relations and culturally-based stories, embodiment of those perspectives and stories is an important activity to help deepen the content knowledge of the program on many levels. The phenomenon of bleed, which blurred the lines between characters and players, helped blur the lines between nature and culture when people role-played a more than human ecosystem. In the next iteration, blurred boundaries of the larp by utilizing perspective taking practices throughout the program will be more pronounced. Interaction across the nature-culture boundary will inherently be tied to further interaction across the social and diegetic boundaries.

However, the larp will need specific design changes. First and foremost is to improve physical representation for all more than human characters to improve immersion. The designers hope to lessen the cognitive load of figuring out what a character is by have enough symbolic representation to simply encounter someone, fall into conversation, and play. The larp also needs to emphasize death and rebirth

as a cyclical system, such as a limit on the amount of lives before a player is transformed into another being to further focus on the multiplicity of experiences within the complex ecological system. Time and seasons also should be brought into representation so that players can encounter changes of environment. Further designs would emphasize the shared experience across the board of player vs. environment scenarios rather than just player vs. player interactions, which were the focus of the first iteration.

Building science education programs that expand the boundaries of perspectives while embedded in cultural ways of knowing can be both engaging and bridging for people of many different communities. One does not need to look further than offerings of pop culture references within classrooms that instructors use to engage students. However, not all cultural references engage students equally. Where nature-culture relations and indigenous populations are concerned, there is a need for more culturally responsible designs that allow not only players and students to see themselves reflected in a game setting, but also their cultural ways of knowing, being, and doing. By taking the perspectives of more than human actors and seeing how those agents interact with one another in a setting, students can begin to respect others, see relationships of reciprocity, and have their encounters bleed into their everyday lives as responsibilities to the lands, waters, and communities that they live in, with, and around.

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APPENDIX A: Larp Scaffolded Design

Day 1

Scaffold 1: Loose larp embodiment exercise

Location: Main field by the path to the rest of the park

1. Go over the embodied moves from Grandma Cedar story with repetition

    a. Do the moves a couple of times

2. Start to incorporate embodied moves of other parts of the web

    a. Some staffers go out of their way to step into the deer, bird, wind, and sun roles in an improv of embodiment

    b. Repeat the moves a couple of times

3. Begin question thread of what kinds of other activities would we do as cedar

    a. (Script) We're going to think like our plant relations. We will think and move as if our plant relations moved in our scale of time. Plants, after all, do move, grow, eat, drink, sleep, and feel, just in different scales from us. So just like in the Grandmother Cedar story, this is what we were doing, moving as if we were Grandmother Cedar and her grandson. Let's keep going with that, I want us all to think and be creative and imaginative. "So how would a cedar drink water deeply from the land?"

    b. "What do cedars do at night? How do they sleep?"

    c. "How do cedars make more cedars?"

    d. When it becomes apparent that an idea is difficult to do, ask "How can <Insert X>"

        i. Linguistic pivot to acknowledge what the kids said about including a fantastical or difficult to represent embodiment.

Day 2

No larp on Day 2.

Day 3

Scaffold 2: Other new identities

Location: Lower field with the berries next to the parking lot

1. Rethread previous experience with embodiment

2. Explore the 6 out of 7 plant identities as framed by groupings

    a. Cedar

    b. Fireweed

    c. Nettle

    d. Salmonberry

    e. Sword Fern

    f. Yarrow

Day 4

Scaffold 3: Intersections of identities

Location: On the hike to the beach for low tide

1. Rethread previous experience with different plants

2. Create intersection of two groups

Scaffold 4: Intersections of identities with scenes

Location: Main field by the path to the rest of the park

1. Rethread previous experience with intersections of identities

2. Create environmental and storied interactions relevant to their locations. Place groups near to their actual plant growth locations.

Day 5: Larp Finale

Location: Lower pond of the three filtration ponds

Eel Grass introduced as an NPC staffers only

Land/stone relatives

Plant groups: Salmonberry, fireweed, sword fern, horsetail, yarrow, nettle, and cedar

Rules: Many lives

Out-of-game calls: Game on, off, hold

Focuses: Reciprocity, respective, giving/receiving (not taking), balance, many experiences, try to understand one another

Story setting: Creator am I; Moon the Transformer/ Changer preparing the world for the people to come

Props: Facepaint sticks, spritzers, out-of-game headbands

Changer goes in for harvesting plants ("I harvest you") and transforms them (apply facepaint and send back in) into everyone about which we have heard stories: 4 seasons, sun, moon, 4 elements, deer, raven, squirrel, coyote, sparrow, eagle, bear, wolf, rabbit, human

Participant goals: To have at least ten different experiences to talk about afterward

Designer goals: Moments of immersion, not "full adult immersion"

APPENDIX B: "The Grandmother Cedar Story"

Il tout de too hawk (A long time ago), there was an old Grandma Cedar tree. She was really, really big and really, really old. One day, a little tree was growing right beside her. It was her Grandson. Her little Grandson was growing right by Grandma and she was very happy. That little tree was growing and growing.

But one winter, there was a **big storm**. The wind was blowing so hard it was bending that little tree. It was bending the tree so hard it was going to break if the wind kept blowing it. So Grandma put her branches in front of him to block the wind. Can you all put your hands like this to block the wind? Grandma is blocking the wind so the wind doesn't hurt that little baby tree. Well, she protected him and that little tree grew bigger and bigger and bigger.

One day in the summer time, like now, it was really, **really hot.** The sun was so hot that poor little tree was too hot. That poor little tree, it was hurting him. What did Grandma do? She put her branches over her little Grandson, to make shade. To protect him from the sun. Can you all put your hands like this? To make shade for that little tree. He grew bigger and bigger and bigger and at night.

The **deer would come to eat** the little green parts of the tree. They loved to eat the little green parts of the tree and that were growing. What do you think Grandma did? She waved her branches to scare away the deer. Wave your branches like this. And they ran away. She protected her Grandson again and he grew bigger and bigger and bigger and bigger and sometimes he was alone.

His little heart was sad because **he was alone.** Grandma would use her power and she would call the little birds to come. So call the birds to come, like this. Come here, birds. The birds would come and they would fly around his tree, sit in his branches. They would sing to him; they would talk to him. Grandma took care of him. Then he grew and grew and grew. Now, he was bigger than his Grandma. He was a really big Cedar tree.

One winter, a big storm came and the wind was blowing really, really hard. Poor old Grandma; she was so old now. She couldn't fight against the wind anymore. The wind was pushing her and pushing her and she was going to break and she would die. Do you know what he did? He put his branches in front of her to block the wind, to protect her from the wind.

Then, it was summer time. The sun was so hot that it was hurting Grandma. What do you think he did? He put his branches over her to make shade, to protect her.

Then the deer would come at night and even Grandma had little green buds that they wanted to eat and they were coming up to Grandma and she as so old, she couldn't stop them anymore. What do you think he did? He chased the deer away. He waved his arms and he chased the deer away.

Then Grandma was old now. She was so old and all of her old friends were gone now. She would feel sad that her friends were gone. She was all by herself and she would feel sad that her friends were gone. Do you know what he did? He called the birds to come to Grandma, he used his powers. They sang to him, they used his branches, they talked to him, and she didn't feel so alone anymore. Then Grandma said, "Grandson, you don't have to worry about me anymore. I am really old now. Let me go. Don't worry. You take care of yourself." And he said, "Grandma, when I was little, you protected me from the wind, you protected me from the sun, you protected me from the deer. When I was sad, you called the birds to me so I wouldn't be alone. Grandma, when I was little, you did these things for me and now that I am old, I will do these things for you. Grandma, I will take care of you now, like you took care of me."

Des hoites. (Haboo).

BIO

Gabriel de los Angeles is a Snoqualmie tribal member, co-founder of n.d.n. players (ndnplayers.com), and doctoral student in Learning Science and Human Development at the University of Washington. His research interests are adult learning, development across the life course through play, and learning in informal environments. His work combines his love of fandom, games, and game culture with nearly two decades of experience with non-profit, fan-created events and community organizations around the world; his academic work in Learning Science & Human Development and equity & equality; and his background in indigenous knowledge systems, philosophies, and methodologies.