GAMING ANTHROPOLOGY: A SOURCEBOOK FROM #ANTHROPOLOGYCON

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This booklet is also available at anthropologycon.org.

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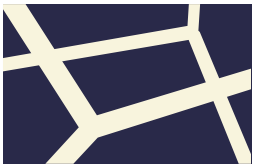

Making Space for Meaningful Play in Anthropology

ANASTASIA SALTER

In the summer of 2016, something weird happened in public spaces. Groups of adults, teenagers, and yes, occasionally children, roamed the streets with their mobile devices clutched at odd angles, gaze fixed on their screens—ok, that part might not sound so unusual. But what they were looking at was: the newly-rendered three dimensional bodies of familiar Pokemon superimposed over video feed from their camera, awaiting capture in the "wilds" of cities and suburbs. The game was briefly so popular as to crash servers and fuel op-eds commenting on this latest gaming outbreak. Observing the phenomenon, "Geek Anthropologist" Nick Mizer noted "The fact that the water tower by my house is a gym shapes my experience of both the water tower and the gym. The location of the gym shapes its social meaning, too, like with the prestige of being a leader at The White House gym or the social activism of putting Clefairy in at the Westboro Baptist gym."[1] Furthermore, the game's own internal mechanisms reflected strong divisions along racial lines: an Urban Institute study of the game's landmarks found more than twice as many interactive spots in neighborhoods that are majority white when compared to those that are majority black.[2] Given the ongoing challenges of inclusivity in gaming (which remains a design space dominated by white men), it is not surprising that the games that play a major role in current cultural discourse are frequently built with such embedded assumptions and inequities.

This is an extreme recent example of something games have always excelled at: transforming spaces and people's relationship to those spaces, and one another. In doing so, these games also have the opportunity to either recreate or challenge existing institutions, structures, biases, and systems. Ian Bogost refers to this persuasive potential of games as procedural rhetoric, a form of argument that is tied to processes and interaction.[3] Bringing games into the practices of a classroom—and a discipline—can offer a compelling way to engage with and challenges existing models. Commercial videogames engage procedural rhetoric in systems that are rarely transparent about their biases and assumptions, but nonetheless such games have become popular tools in the classroom, as Kurt Squire observed during the rise of popular simulation games both in and out of academic settings.[4] Trevor Owens notes that even a flawed model

[1] Nick Mizer, "How is Pokemon Go Changing Our Relationship With People and Places," July 22, 2016: https://thegeekanthropologist.com/2016/07/22/how-is-pokemon-go-changing-our-relationship-with-people-and-places/

[2] Shiva Kooragayala and Tanaya Srini, "Pokemon GO is changing how cities use public space, but could it be more inclusive?" August 2, 2016: https://www.urban.org/urban-wire/pokemon-go-changing-how-cities-use-public-space-could-it-be-more-inclusive

[3] Ian Bogost, *Persuasive Games: The Expressive Power of Videogames,* MIT Press, 2007.

[4] Kurt Squire, "Cultural Framing of Computer/Video Games," *Game Studies* 2.1, July 2002.

such as the science and technology system in the Civilization series can "invite players to think more deeply about their own understanding of science and technology."[5] However Gerald Voorhees observed that many of the mechanisms underlying the game's cultural depictions amount to a choice of aesthetics, limiting the game's rhetorical impact.[6]

Indeed, commercial games always present a challenge for educational adoption because of their adherence to game design's need for balance: if a game is designed for competition, and winning is integrated as a primary mechanism, the rules and systems of a game will reflect the needs of the system rather than a procedural representation. The board games that may form some student's impressions of processes of colonization and expansion—such as Settlers of Catan (Mayfair Games 1995), Dominion (Rio Grande Games 2008), and Scythe (Stonemaier Games 2016)—as well as "historical" games, which frequently center on war—usually forefront Western perspectives and assumptions, offering reductionist rhetoric in the service of the experience of play.

As educators, we have the opportunity to challenge this discourse through game design that forefronts procedural rhetoric and sidelines mechanics of competition and "victory" in favor of reflection and understanding. For instance, Michael Baran and Michael Handelman's Guess My Race game (2011) uses a simple quiz mechanism to reflect the cultural and social construction of identity assumptions. Brenda Romero's Train (2009) challenges players to consider their complicity in the systems and resist the "rules" that served horrors such as the Holocaust. Often games of this kind are gathered under labels such as "serious" or "persuasive," but a better term for them perhaps is "meaningful," as suggested by Katie Salen and Eric Zimmerman.[7] By examining existing approaches to physical educational games in anthropology in related disciplines, ranging from the Reacting to the Past series (started by Mark Carnes) to Cards Against Anthropology (designed by Matthew Durington's students), we can better envision our own games that serve as systems of inquiry. The games that emerge from these conversations and rapid prototyping can likewise serve as starting points for conversations that span disciplines and invite students to consider the games (both labeled and unlabeled) that structure the spaces and institutions that surround them.

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[5] Trevor Owens, "Modding the History of Science: Values at Play in Modder Discussions of Sid Meier's CIVILIZATION." *Simulation & Gaming* XX(X) 1–15, 2010.

[6] Gerald A. Voorhees, "I Play Therefore I Am: Sid Meier's Civilization, Turm-Based Strategy Games and the Cogito." *Games and Culture* 4; 254, 2009.

[7] Katie Salen and Eric Zimmerman, "Game design and meaningful play." *Handbook of Computer Game Studies.* 2005.

Making Board Games in the Classroom

ANASTASIA SALTER

I just got home from THATCamp Games II at Case Western Reserve University, where we played and made a lot of games. In the past I've talked about making games for the classroom-musing lots of technologies (Inform 7, inklewriter, Twine, Scratch), but games don't require any computing power to be great. Physical board and card games can be powerful systems of representation and more immediately accessible for exploring something in a classroom. This might bring back made memories for some of us of classroom jeopardy—but when the mechanics of the game fit the content, it can be much more powerful than that.

During THATCamp Games II I taught a crash course workshop in making educational board games. Here's the full Prezi from the workshop. The same basic process can be used for designing a game for a lesson or in asking students to make a game, which itself can provoke a different way of thinking about an idea. Here's an overview of the process we used:

PHASE ONE: IMAGINE

1. Brainstorm an educational objective
2. Choose a central mechanic
3. Clarify your theme and concept

Most of us learned through board games at some point—even if it was the foundations of capitalism in Monopoly, a reductive version of the American dream in the Game of Life, or just color recognition from Candyland. But board games can address much more complex topics: Pandemic models cooperative disaster response to the spreading of infectious diseases; Eco Fluxx poses questions of environmentalism through a changing rules system; and there's even an Umberto Eco: The Name of the Rose board game.

A straightforward goal—a purpose behind the game—works best when it can clearly be connected with the game. One of the teams during the workshop chose creative thinking and connected it with competitive challenges, as seen in the prototype above for "Think. Build. Tell." These mechanics can then be interwoven with a theme, ideally in a way that strengthens both. For instance, a rebranded version of Monopoly may have a new "theme", but it doesn't really change gameplay—while moving a strategy game to a different era often rewrites all the rules.

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PHASE TWO: MAKE

1. Imagine your game space metaphor
2. Design your system and pieces
3. Prototype your playable design

There are lots of ways to think of game boards, but all of them have to represent something complex in a simple way. Most of them do that through using a visual metaphor—Monopoly simplifies the city to a single block, Sorry uses complete abstraction, The Game of Life conflates movement through space with movement through stages of life. One way to jumpstart game design thinking is to take all the pieces of a game box and throw away the rules, then imagine a new ruleset that makes all those pieces work together. This helps us explore how all the pieces of a physical game combine to form a system—it's a lot more transparent than most video games.

The most important part of this rapid building is using cheap, totally destructible materials. I'm a big fan of Crayola markers, poster board and construction paper. With these supplies it's usually impossible to make anything that looks "good"—especially if you forgo rulers—and that means there's no cost to "failure."

PHASE THREE: REVISE AND REPEAT

1. Playtest your game concept
2. Revise and eliminate "unfun"
3. Rewrite your rules and materials

Just like in any creative exercise, games need to reach an audience. With board games, that's especially tricky, because the players have to provide the "engine" that makes the game go by interpreting the rules—there's no computer to keep track of how things work. Playtesting and getting feedback helps us understand what's working and what isn't "fun"—or helpful to our goals for play. Usually, this process gets repeated over and over as the idea takes shape. You can see one of the rulesets for a game created during the workshop and refined by Sanjaya Gajurel: "Collaborative Play Against Global Warming."

FINALLY…SHARE YOUR GAME!

No board game goes anywhere without players. A game made (and played!) in class might seem to be a failure at meeting certain goals, but the very process can be a learning experience.

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Lessons from Reiswitz: Embracing Uncertainty in Anthropology Game Design

NICHOLAS MIZER, PH.D.

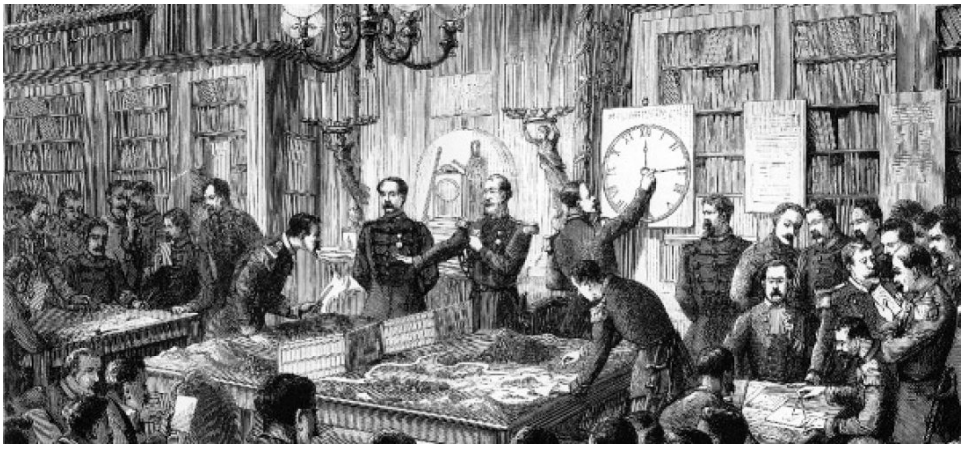
By definition, serious and educational games have purposes. Often, if they are intended for use in a course, the purpose of the game will be tied to a learning objective. The purpose of *Cards Against Anthropology*, for example, "to put students in the ethical position of asking themselves and their colleagues, 'What would they do?' in certain tricky situations that they may face during research in a fun class activity" (Cards Against Anthropology). In a course, this would tie to a learning objective like "students will be able to identify ethical guidelines for behavior in anthropological research." By their very nature, learning objectives tend to favor measurable, predictable outcomes. To measure the effectiveness of a science game about mitosis, we could easily test the students afterwards on the stages of the process. If they correctly identify the stages, the game is likely successful in its purpose.

But what about games which seek to teach less easily measurable outcomes, like empathy for the marginalized or intercultural understanding? These outcomes are marked by uncertainty. As Geertz put it:

> Cultural analysis is intrinsically incomplete. And, worse than that, the more deeply it goes the less complete it is. It is a strange science whose most telling assertions are its most tremulously based, in which to get somewhere in the matter at hand is to intensify the suspicion, both your own and that of others, that you are not quite getting it right (1973, 30).

If we are to design games that communicate anthropological concepts, this sense of uncertainty Geertz references should be a central feature of the learning and play experience provided by our games. In some sense, uncertainty is a factor in nearly every game. A poker player does not know what the next card will be or what cards their opponent holds, and a chess player does not know what move their opponent will make next. Yet this uncertainty of process is notably different than the uncertainty of success inherent in developing cross-cultural understandings of the other. While a chess player may not know the next move their opponent will make, if they move a bishop to attack a knight, they have a certainty based in the rules of the game that the bishop will successfully take the square.

I would like to suggest that in order to develop games that communicate the uncertainty of anthropological encounters we should turn to the mechanics of uncertainty and limited knowledge found in many tabletop role-playing games (TRPGs). Ironically, given most



anthropologists' stance towards war and conquest, these mechanics derive from the traditions of wargaming developed in 19th century Prussia. In these games, players would use either miniature figurines or board game pieces to represent military troops, with both movement and combat simulated through rules that varied in complexity depending on the game. Two important developments in this tradition can provide guidance for creating immersive, engaging experiences of uncertainty in anthropology games: the use of chance to simulate the outcome of contingent events, and the use of a referee to create situations of asymmetrical knowledge and improvisational flexibility.

While a chess player always knows that an attacking piece will succeed, a wargamer only knows the odds of success. This approach finds its origin in the approach of a wargame developed by Georg Heinrich Rudolf Johann von Reiswitz in the early 19th century (Peterson 2012, 222). Reiswitz argued that the use of probabilities was essential to immersion in the simulated events:

> If, therefore, we were to give fixed results for fire effect we would arrive at a very unnatural situation….Only when the player has the same sort of uncertainty over results as he would have in the field can we be confident that the *kriegspiel* [i.e., wargame] will give a helpful insight into maneuvering on the field (quoted in Peterson 2012, 231).

Although Reiswitz's goal was to train young officers for war, in TRPGs this principle is used to immerse players in the uncertainty of their characters' actions. Similarly, TRPGs extend the use of chance and uncertainty to the generation of the world and situations of the game. This is often done through the use of tables that allow for random or semi-random combinations of elements, whether character traits or the layout of a dungeon complex. Like characters in a TRPG, anthropologists rarely understand the situation we are walking to into in our fieldwork, and we never know if a particular attempt to gain understanding will succeed.

The second bit of the wargaming tradition that can prove helpful in anthropology game design is the use of a referee to manage both the resolution of game mechanics and the maintenance of asymmetrical knowledge between the players. This was also introduced into wargames

by Reiswitz, who tasked the referee (or umpire) with "providing a natural and interesting scenario which will allow for either side to gain its objective" and with serving as an intermediary between the "orders" given by players to their simulated troops, giving them only the information that would be available to an actual commander of those troops (Peterson 2012, 229–230). Like the introduction of chance, this served to provide an immersion in the uncontrollable and unknown aspects of the simulation. In *Dungeons & Dragons* this role became that of the "Dungeon Master," who, as in Reiswitz, prepares the scenario beforehand and performs three main tasks during play:

> First, through dialog with the players, the dungeon master interprets the actions of characters and reports the known state of the world; second, the dungeon master maintains secret information about the world that characters must explore; and third, the dungeon master executes the system, performing or overseeing all dice checks necessary to decide events in the game (Peterson 2012, 605).

The introduction of mechanics of uncertainty can increase the complexity of the rules, which can be a problem when introducing students to a game. Similarly, if a game is intended to represent a specific cultural situation, students are often unlikely to have the knowledge or skill to represent a culture accurately or ethically. This tradition of referees and Dungeon Masters, with the intrinsic asymmetry of knowledge, fits the classroom dynamic well. Lastly, utilizing a referee in game design allows for improvisational redirection into unexpected learning outcomes when the players inevitably try out an approach or express an interest not anticipated by the initial game design.

When designing anthropology games intended to communicate the uncertainty and incomplete knowledge inherent in cultural knowledge, we should choose mechanics that encourage experiences of uncertainty. Chance-based simulations of outcomes, random generation, and improvisational referees were all developed in the wargaming and TRPG gaming traditions to provide those same types of experiences. As one gamer put it, "like the oracles of old, dice aren't prophets; they're invitations to look at the world in a different way" (Maliszewski 2008).

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Teaching Anthropology of/through Games

KRISTA HARPER, PH.D.

Society—and social science—is starting to take games seriously. Game designer Eric Zimmerman recently proclaimed the 21st century to be the "Ludic Century." Jane McGonigal argues that "reality is broken," and games may be the solution for social problems. New journals such as *Game Studies* and *Games and Culture* have gained footing, and MIT, NYU, and many other universities now offer degree programs in Game Studies and Design. In education, the shift to active classroom pedagogies has led to the development of the field of "game-based learning" (GBL). In the gaming world, "serious games" and "games for change" have grown in popularity, so that players can explore topics like disaster recovery and mental health through games. Can students learn complex anthropological theories by playing, studying, discussing, and designing games?

I developed my course on "Anthropology of/through Games"as a platform for exploring game-based learning in anthropology. I use tabletop, card, and computer games to explore themes in social, behavioral, and cultural theory such as play, gender, language, symbols, economic exchange, and power. Most weeks, I integrate short-format games into classroom teaching--including low-tech icebreakers, critically modified board games, live-action roleplaying (LARP) games, to interactive digital stories and video games. As homework, students read texts, play games, and post questions and read/play responses on our course blog. We learn about the basic elements of game design by inviting local game designers as guest speakers. As a culminating project, students work in small teams to develop a game based on an anthropological concept, and they present and playtest these games at our own "AnthropologyCon" game night at the Du Bois Library on the UMass campus.

I initially thought of my course syllabus in terms of three major units: 1) "Theorizing Games," 2) "Ethnography of Games," and 3) "Cultural Anthropology through Game Design." Each unit culminates in an assignment where students apply what they have learned: a critical game review, a mini-ethnography of a game and its players, and the final team game design project. After the first unit, my students and I reframed this process as completing quests and "leveling up" to greater capabilities in our playful course.

In this reimagining of the course, students develop a richer conceptual vocabulary for defining and analyzing games cross-culturally and identifying issues of power and representation to become "game critics." Drawing from the work of anthropologists Johan Huizinga and Roger Callois, we attempted to develop a working definition of games that could be applied across different cultural settings. We read Aubrey Anable's feminist analysis of gender

and "affective labor" in casual games like Diner Dash. Afterward, we played Evan Torner's LARP, Something to Drink with That, Sir? in which players perform the encounter between an airplane passenger, a flight attendant, the flight attendant's emotions, and her emotional labor. We played Greg Loring-Albright's game First Nations of Catan, a "critical modification" of the premise and rules of Settlers of Catan that puts indigenous people back on the map. Our discussions helped us understand how games work at the micro-level, in terms of narrative and mechanics—what game scholar Ian Bogost calls the "procedural rhetoric of games." Students capped off the unit by writing a critical review of a game of their choice.

Having gained critical tools and lenses, students were ready to become "game ethnographers" themselves. We read ethnographic texts by Bonnie Nardi, Thomas Boellstorff, Thomas Malaby, Geoffrey Snodgrass, and Natasha Schull to learn how anthropologists investigate player experience and cultures of gaming and incubated new questions. Students' micro-ethnographies investigated how cheating is tolerated and punished in online Pokemon Go! Communities, how male and female players experience competitive play in League of Legends, and how Huizinga's concept of the "magic circle" can be applied to airsoft battles.

By the end of the semester, students are ready to apply what they have learned as "game designers" who think critically about representations and power, the "procedural rhetoric" of game mechanics, and player experience. I assign each small team an anthropological article from a list I compiled of "game-ready" texts and developed game concepts linked to the theoretical and ethnographic content. We learn to connect cultural values and game rules using Mary Flanagan's Grow-a-Game card game, and we do low-tech "gamestorming," sketching out basic game ideas using markers, stickers, post-its, and game tokens. We study games that have been produced by and for indigenous communities, such as Eramat! and Never Alone to understand the ethics of game design and the politics of cultural representation within games. As teams move further into their own designs, they consider how to match the anthropological concepts to game narratives, mechanics, or goals.

Students produced compelling, playable games modeling complex anthropological ideas. Tyler Caldwell's and Caleb Miller's card game Garage Sailing takes on Mauss' theories of gifts and exchange via Gretchen Hermann's ethnography of garage sales. Each player has a secret identity ("parent," "nerd," "antique collector," "fashionista") that shapes the value they attribute to other people's junk as they bargain hunt, haggle, and dump. At the AnthropologyCon with my class, players flocked to the game's kitschy aesthetic and frenzy-inducing "Shiny Objects" cards. Jasmine Skye Gulick's and Cassie Schau's game Sign (based on C.S. Pierce's article "What is a Sign?") was another runaway hit. Using three types of cards—likeness, index, and signifier—players cooperatively create a mini-system of symbols. To end the game, the group creates a new sentence or story using the symbols. One playtester exclaimed, "It's like Mad Libs on steroids!"

What do students learn from games and game design that they could not have learned from more traditional assignments? Russell Francis delineates a four-part model for successful games-based pedagogy: situated practice, critical framing and analysis, overt discussion, and practical production or design. Situated practice of games—especially role-playing games—provides students with "embodied empathy" and perspective-taking. These are important

critical thinking skills, as is game analysis so that students begin to see how game designers represent or misrepresent people and events. Annika Waern writes of game analysis as a "signature pedagogy" and a critical media skill. Overt discussion of games ensures that the immersive play aspect of games does not devolve into "edutainment" and gives students opportunities to push back against the coercive aspects of "procedural rhetoric" in games. When student teams produce their own games, they re-apply theories and learn firsthand about the decisions designers make when representing a cultural phenomenon or historical event in a game.

In my course, all of us gained greater critical awareness of games, elementary design skills, and anthropological insights—the stated goals of the course. But we also acquired a new lens on our own creativity and self-awareness as learners. In the words of one student:

> "The game design process worked great for us as an approach to analyzing an article. We could actually express our interpretation in a way that users would *experience and feel*, rather than just read and imagine. Games are a great vehicle for affective learning."

Many students were excited by the challenge of identifying a central conceptual problem and pairing it with an appropriate mechanic so that players could learn anthropological concepts through the gameplay. One student reflected on her learning through the game design assignment:

> "In essays, I have to express my own understanding, but in this case I had the opportunity to construct and guide someone else's. This felt much more freeing and interesting to me, since I know how I think, but I had to try to open up my brainstorming to create a mechanism that could contain many different thought processes and still provide an opportunity to understand the concepts."

These students' comments sum up something I grasped intuitively: games are a powerful experiential and empathetic medium for learning.

Teaching cultural anthropology of and through games was a transformative experience for me as a social scientist and educator. Before teaching the class, I worried that our focus on games might descend into "edutainment." Instead, each class session of "Anthropology of/through Games" brought a sense of anticipation, excitement, and surprise. Analyzing, playing, and designing games opened up creative ways for students to do what anthropologists do: to unpack theories, to identify holistic interconnected systems, to try on other people's perspectives, and to understand both stated norms and improvised, embodied practice.

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Serious Components: The Materiality of Play

MARC LORENC

As a child of the 90s, I was surrounded by a sheer multitude of board games embracing the tactile nature of components and things. Games such as *13 Dead End Drive, Fraidy Cats, The Grape Escape, Shark Attack, Mall Madness, Dream Phone, etc*. all made components central to the gaming experience. From setting an automated figurine of a shark on a track, to pushing a switch to cause a statue fall on your opponent's piece, objects help create and maintain a space of play. As an archaeologist studying materiality theory, I am interested in how components (defined here in the broad sense as any other object materialized for the sake of the gaming experience) do the social work of play in tabletop games. Specifically, what affordances (Gibson 1979) do components have and in what ways can they structure the experience of play. Through materiality theory (Miller 2005, 2010), I am interested in exploring ways that components can structure certain experiential aspects of gaming while also allowing for the player to materialize a sense of self into the field of play. Using insights from anthropological theory and method, game design that embraces materiality opens exciting avenues for play.

In this article, I will explore various ways in which game designers can take components seriously in structuring the gaming experience. Using materiality theory, I will engage three key areas: 1) Materials, 2) Play Space, 3) and Component Design. Through this exploration, I will demonstrate how tackling the adage "objects shape us as much as we shape them" can be a productive design element that results in a reflexive and immersive gaming experience. It is my hope that the conversation started in this article can result in a diversity of games that take materiality seriously in design and play.

SERIOUS COMPONENTS

MATERIAL: WHY DOES THE CHOICE OF MATERIALS MATTER?

Common board game components range from various uses of paper (cards, sheets, and cardboard pieces), to higher quality materials such as wood, plastic, resin, and/or metal. Depending on the game, factors such as cost, production, and distribution, influence design choices and the materials selected. Often, games use components as a way of translating or symbolizing various game mechanics (i.e. pieces used as markers to signify score, claims on territory, amount of resources, etc). Few game categories, with dexterity games, a notable exception, engage with materials in non-conventional ways. What if game design bridged this gap and took materials seriously as both constitutive and essential to play? What can be achieved in

game design through the use of various non-traditional components? How can game design utilize the ephemeral nature of certain components? What kind of games can be imagined if we moved from the comfortable familiar to the destabilizing strange? These questions are central to my exploration of why material choice matters.

I am interested in exploring games were material components are essential to shaping the social space of play. A recent example of such work can be seen in GeoLino's M*eltdown: Save the Polar Bears Before the Ice Melts*. In this game, players engage the pressing concern of climate change by navigating a polar bear family through a melting landscape. The board itself is made of various sizes of ice cubes that are actively melting throughout the game, shaping both a sense of urgency and uncertainty in navigating a shifting landscape. Through such an experiential form of gaming, players can explore the effects of global warming on an intimate level.

Considering intimacy, what is lost when we use paper as a substitute marker and what can we gain by using non-traditional game materials? What if we approached play as craft, using materials like play-dough or clay, that allow players to materialize various components and extensions of oneself into the play space. Or if a game utilized various elements such as water, earth (sand, dirt, mud), fire, and air to demonstrate the ephemerality or permanence of a game mechanic. By taking materials seriously, various anthropological subfields and concentrations can engage with materiality in productive ways, exploring the dialectical relationship between humans and objects. Consider the following thought exercises: What if an archaeologist designed a "text unit in a box game", or if food anthropologists engaged with "food as components", or if those studying water politics used actual water in their game. What would these games look like? What particular design decisions can we make that pushes past "gimmicky" towards "productive" use of materials? How can these decisions shape play space?

PLAY SPACE: HOW CAN WE SHAPE PLAY SPACE USING MATERIALITY THEORY?

Play space is wide and varied in games. Often played on a gaming table (kitchen table, coffee table, at a bar, etc.) tabletop games utilize a flat foldable board, no board at all, a 3D playscape, a personal player board, and/or a shared constructed board (such as those created through tile building games) to name a few. Depending on the game type/ mechanic, the play space is designed accordingly to fit the needs of the game. For example, European worker placement games, heavy in content and analysis, use markers to denote a variety of things such as score, income, territory, and of course the selection of actions. One can say that a board and numerous components are essential for successfully translating this mechanic into the play space. What if we were to imagine other play spaces for such games? How can we manipulate the play space in a certain way to emote a particular reaction or experience?

In keeping with our earlier discussion of materiality theory, I envision play spaces as living arrangements, constantly shifting and influencing the player's decisions. One game style I particularly enjoy that best demonstrates this concept is tile-building games. In tile-building games, players build the board either as a shared space (i.e. Carcassone) or as their own (Kingdomino). The sprawl of tile building games reflect and materialize individual choices, allowing the player to shape the play space while simultaneously materializing oneself into the game via individual design decisions. By co-constructing a "living board", players can create

certain affordances and shape the actions and decisions of others. The living board mechanic can be useful in teaching concepts such as obduracy (Law 2003) and consequences to design elements. For instance, imagine a game exploring systemic racism, gentrification, and urban renewal projects making use of the "living board" mechanic to engage notions of constraints and consequences (both intended and unintended) behind design decisions. Using materiality theory, one can translate social landscapes into play spaces, creating experiential aspects that exemplify the palimpsest like qualities of design. By materializing a particular infrastructure or design element in our games, we can make components stubborn and difficult to move or work around. Such design choices can create affective pedagogical moments otherwise difficult to obtain.

COMPONENTS: HOW CAN DESIGN AFFORD CERTAIN INTERACTIONS?

Working off insights from James J. Gibson (1979), objects and environments afford certain interactions. This extends to the realm of tabletop games. We have already seen how the material choice and structuring of play space can lead to interesting design questions. What if we extend this to components themselves? How can components engage with human creativity and spontaneity and what would they look like if designed through materiality theory? I often ask myself why we love "all the bits and pieces" (Rogerson et al 2016) and what we can do with that feeling. The sheer number and quality of components has increased in the last 10 years (just look at any Kickstarter tabletop game and explore the discussions concerning stretch-goals and miniatures). What if our anthropological understanding of what objects mean to people (Miller 2010) was extended into the game space? What if we switched the in-game drive for accumulating multiple components as an indicator of quantity, power, or wealth, with anthropological explorations of human and object relations? What if we turned inalienable possessions (Weiner 1992) or the burden of self-creation (Miller 2010) into game mechanics? What if objects were imbued with shared meaning and value that developed over the course of play (i.e. Kula)? What would components look like then? How would they structure play differently? Affordances allow for deep gaming if set within broader anthropological contexts. Games that embrace materiality theory therefore allow for the exploration of complex topics and experiences by centering the dialectical relationship between humans and objects. Rather than limiting ourselves to markers, tokens, or meeples, what other ways can we imagine the material and how can these speak to broader social processes?

CONCLUSION

I am admittedly a novice in game design, let alone serious scholarly discussion of play. However, I play a lot of games and enjoy trying to translate anthropological knowledge through them, developing mechanics that push possibilities through the medium. As an archaeologist engaging with materiality theory, I see tabletop games as the perfect medium to explore complex thoughts and feelings that people attach to space and objects. If we take components seriously, not only as symbolic markers standing in for something else, but as an essential part of the gaming experience, game design can engage and create new experiences central to

anthropological inquiry. It is my hope that by embracing materiality theory, we can explore the dialectical relationship between humans and objects in fascinating, experiential ways, developing in the process an anthropology of/ through games.

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Griefing the Anthropological Way: Developing Anthropology Hacks for Tabletop Game Environments

SAMUEL GERALD COLLINS, PH.D.

The driveway to our house had a weird polygon shape that would later tax my high school driving skills. But is also had four slabs of equally-sized concrete at its center, a natural site for foursquare. We played the game enthusiastically during elementary school with the kids from my street, but, as it probably does for many people, the game began to get boring. Of course, there are many variants of foursquare that inventive children have introduced over the decades, but these were somehow inadequate for us. Instead, we began adding squares: 6 squares, 8 squares. Finally, we were adding squares on the other side of the street, making it nearly impossible to play for more than a few moments at a time. After some futile attempts to hit the ball (and after running down the street to retrieve it), we would end the game. We had effectively destroyed it.

Games, as Sniderman (2006) demonstrates, are riven with unwritten rules, improvisations, and unspoken understandings, not just about the game, but about the attitudes and behaviors that support the game. "Or, to say it another way, we are never playing only one game" (Sniderman 2006: 483). Rather, "the game" is the most visible enactment of an assemblage of rules of play, and its "success" depends upon some balance between all of these performances in the context of "fun" and "fairness" (Taylor 2009). As aficionados of home rules know, this precarious balance can be upset in many ways. Like our foursquare games, other rules around the edges can overwhelm and, ultimately, undermine play. Endless arguing over multifarious rules can have the same effect—to some degree, "fun" depends upon being able to articulate some rules while suppressing others. If every game implied in any one performance of play intrudes on the foreground, then play itself is pushed aside in the pursuit of rules for their own sake.

But does it go without saying that "play" and "fun" are the goals of games? Or, to be a little fairer, that "play" and "fun" can only be defined in certain ways? A few years ago, I became interested in the ways some online game players would try to ruin the game for others through "griefing," "willfully antisocial behaviors" exhibited by players of multiplayer games (Dibbell 2008). Many of these "pranks" trade on racism and misogyny and game companies have understandably taken steps to ban players exhibiting these behaviors. But, as I commented then, the problem of griefing or pranking in games is not just that people are ruining the "fun," "it's that the victims of their pranks believe that they're playing one game, when in reality they're part of other gaming logics of which they know nothing" (Collins 2014).

This realization that we aren't playing the games we thought we were deserves some serious attention. Indeed, serious games have been an important, critical intervention in bringing

the submerged and sublimated dimensions of game-playing to the fore. When, for example, sociologists introduce variants of Monopoly in order to help students better understand structural inequality and racism, they are simultaneously articulating the inequalities at the core of Monopoly as it's played today (Fisher 2008). That is, the game (although originally conceived as a critical intervention) celebrates untrammeled greed and structural inequality, yet these "rules" are not part of the instructions. Instead, in a Foucauldian way, they form the "table" upon which this tabletop game unfolds. Similarly, efforts to develop and mod games through what Sens calls "queer worldmaking" are simultaneously an exposition of heteronormative and cisgender rules that are among the panoply of unarticulated games that proliferate in the shadows of the "official" rules (Sens 2015). I think there are many reasons to believe that these modded games are better, and that, for example, "The Game of Queer Life" represents substantive improvements over the staid "The Game of Life". Nevertheless, this improvement comes at the cost of all of these heteronormative games percolating through the original rules. And we can imagine that challenging these rules would make the game less "fun" for heterosexist people. But I think it's worth a little griefing.

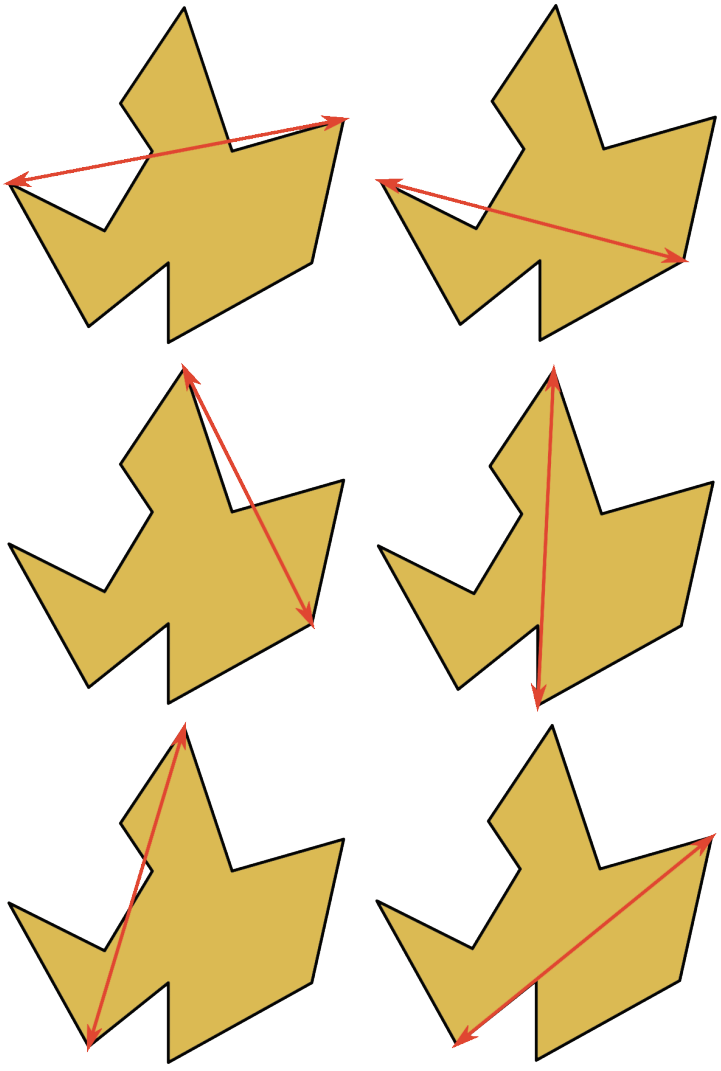
HACKCARDS

"Anthropology Hackcards" are cards introducing a "side game" into an existing tabletop game in order to demonstrate anthropological concepts, to highlight submerged game mechanics and, ultimately, to up-end a game. The cards are a process that begins in the anthropology classroom with students formulating their own cards in the course of studying.

Each card consists of an anthropological concept and abstract graphic, followed by a short definition and suggestions for implementing the card in a tabletop or card-game environment. The abstraction here is quite deliberate. While it is tempting to use terms like "potlatch" or "kula" for concepts, these terms refer to actual cultural institutions, and the intent here is not to reduce complex formations and practices to reified play. Rather, effective Hackcards allow players to feel around the edges of abstract, anthropological concepts in a way that evokes their critical potentialities. As the above examples suggest, "implementation" can include changes to players, to the distribution of resources, to temporalities and to game mechanics. Everything, in other words, is up for grabs, including the ultimate reason for play.

After everyone has made a few cards, it's time to begin. Small groups of students sit down with traditional, table-top games, and are each dealt 1 (random) card. They begin their tabletop game and complete 4 complete turns (that is, each player has the opportunity to play four times). After that, players can introduce their hackcards, beginning with the first player on the fifth turn. The hackcard is in play for (at least) the next full turn plus one player, before another can introduce a different hackcard and thereby change the rules again. But it's not so easy. While each hackcard includes suggestions for implementation, a given player's success depends upon their ability to implement their card in the context of this particular game. In other words, playing the card means explaining how the rules will change, and change in such a way that the other players can agree effectively represents the concept (the professor can be the ultimate referee on these judgments). It may not, therefore, make sense for players to use

MOIETY



The division of society into two, unilinear halves, each united through exogamous marriage patterns.

1. Divide players into 2 groups. Each half pools their resources.
2. Divide the players into 2 groups. During each turn, exchange something between the two groups.
3. Exchanges can include materials or positions.

Figure 1 Moiety *(Polygon pattern courtesy of Wikimedia commons)*

LEVELLING MECHANISMS

Methods used by people in more egalitarian societies to undermine hierarchical authority. These include criticism, ridicule, outright disobedience and various social sanctions (Boehm 1993).

1. Use one of these strategies to "level" competition by undermining the leader.
2. Break the rules in ways that disadvantage the most powerful.

Figure 2 Levelling Mechanisms (*Photo credit, Sharon & Nikki McCutcheon, Wikimedia Commons)*

their hackcards right away; they may want to wait until a crucial stage in the game maximizes the utility of the card. Nevertheless, the goal of this side-game is for each player to play their card. After that, the games are over.

DISCUSSION

There are numerous opportunities for frustration here. These include: arguing over the implementation of concepts, de-railing game-play, and, in general, gutting opportunities for fun through awkward grafts of anthropological concepts onto familiar game worlds. And there is a high probability of confusion. But this is precisely the point. Unlike fields like economics and political science, anthropology is not a great fit for table-top games. But this is precisely because table-top games, like much of the social sciences as practiced in the United States, rest on assumptions about self-interested competition that anthropology has shown to be hegemonic and culture-bound (Fehr, Fischbacher and Gachter 2002). Gamification itself implies certain perspectives on games and other elements of life, perspectives that the findings of

anthropology may directly contravene (O'Donnell 2014). When we try to force them together, a good deal of confusion will occur—but this could be a salutary discombobulation, leading to the interrogation of both games and gamification.

CONCLUSIONS

When we introduce anthropology into play, then anthropology rules come to the fore, ones premised on critique and de-naturalization. When cards are played that undermine ideological assumptions about individual rationality, self-interest and "natural" competition, the game swiftly changes—perhaps in ways that fail to satisfy any of the players. The truths of anthropology include the realization that life can and, perhaps, should be conducted differently, and these rules may undermine the raison d-etre of play—or at least call it into question.

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APPENDIX: OTHER TERMS AND CONCEPTS FOR HACKCARDS

Contagious Magic
Uxorilocality
Usufruct
Trickster
Symmetric Alliance
Symmetrical Schismogenesis
Sanction
Balanced Reciprocity
Positive feedback
Heterotopia
Exogamy
Direct exchange
Patron-Client Relations
Liminality
Ascribed status
Reverse dominance
Fetish
Heterotemporality

Teaching Somewhat Serious Games

MATTHEW DURINGTON, PH.D.

I will never forget the moment in 2014. It was a great theory class and the students were engaged in the topic. If we were going to design a game for the teaching of theory in anthropology what would we create? The carpentry necessitated that we all start naming our favorite games growing up. Aunt Gladys made sure that my favorite games were Gin Rummy and Poker. I also contributed Battleship, Clue and Boggle as games that I enjoyed but I quickly admitted that once Mattel came out with handheld electronic sports games, and the first Atari 2600 was released, my game time turned to screens more than board and card games. Maya Mehta shared that one of her favorite games was Cards Against Humanity. This is the moment. I then stated, "What is Cards Against Humanity?" At that point, the class began to relish the fact that I was turning increasingly red in the face as they described the game, the scenarios and the response cards that put friends in edgy situations that were also shockingly embarrassing to talk about. But, also hilarious and not safe for all situations. As described by its creators, "... Cards Against Humanity is a party game for horrible people. Unlike most of the party games you've played before, Cards Against Humanity is as despicable and awkward as you and your friends." (https://cardsagainsthumanity.com/)

I am biased to the awkward moments in ethnography when anthropologists are put into sticky situations and ethical dilemmas. These moments are often the crux of fieldwork and their successful navigation can determine the success or failure of that endeavor. In addition, these often become epiphanies for the anthropologist and the reader. They are also great teaching moments. Why not move these uncomfortable situations and conversations into a game? Why not make Cards Against Humanity into Cards Against Anthropology? For the next several weeks we designed Anthropology Games and this teaching unit has become a permanent part of my curriculum.

For this iteration in 2014 we used the recently created Game Design Kit from MIT. (http://web.mit.edu/mitstep/blogs/carole/2014/11/05.html), an early comprehensive design kit that also comes with curricular components, cards and other support pieces. It was a great entrée into bringing game prototyping into the classroom. Since then the number of game prototyping tools has proliferated and we have into other curricular enhancements through mobile app prototyping tools (Collins and Durington), and discussed how to integrate game design into apps (Savage Minds). Additionally, we have also ventured into speculations about mobile apps and ethnography (Anthropology Now).

Cards Against Anthropology premiered at the American Anthropological Association in Denver in 2015. I gave out 10 prototypes at a panel dedicated to gaming and anthropology (link) and also spread the word to the meeting through key colleagues and a new twitter handle @anthrocards that has since gained steady followers. The game is also free online (https://www.anthropologygames.com/) in the spirit of the Cards Against Anthropology creative commons license and open content ethos. In the last two years, the game has been played in dozens of classrooms, informal meetings and has been translated into another language. A superstar edition of the game will premiere shortly after the AAA meetings in 2017.

The game is played easily and puts players in the positions of anthropologists confronting ethical dilemmas in the field such as, "You are conducting fieldwork with suburban teenage heroin users and they ask you if you want to try it. What would you do?" Responses can range from, "Run.", "Grab your iPhone.", "Call your dissertation chair.", "Smoke it.", etc... Laughter often ensues, but serious conversations occur amid the frivolity. It is a serious game. Simply defined, serious games are games designed for other purposes than simply playing a game for entertainment where the objective is to have players consider different topics, some serious in nature. Games for Change continues to be a resource for serious games (http://www.gamesforchange.org/). The concept and idea has gained so much popularity that it is a huge component of curriculum design, the subject of conferences and emerging centers in university settings. I have personally used the game Spent (http://playspent.org/) to discuss privilege, politics and economics in almost every class I have taught since learning about it from Anastasia Salter (http://selfloud.net/).

For the last three years, I have taught a capstone advanced writing course at Towson University in Anthropological Theory. The objective is to present current material in the field that is rife with ethical quagmires and emerging methodologies to prepare our students for anthropology in the 21st century. But, the angst of teaching the intellectual heritage of the discipline and social theory is always lurking in my pedagogical guilt. The solution? Gamify the old white guys of the field. Below are a few examples of student prototypes. It should also be explained that every class is told that all prototypes are developed for sharing with the world, are meant to be open content and that there will be no income generation. When students really engage this ethos, the work really shines.

One of our best graduates, Sam Shelton (@sam_tweets_now) designed the game "Would you Rather?, Anthropology Edition" (http://www.samsheltononline.com/would-you-rather/), for my Visual Anthropology course devoted to multimodal technologies and methods in the spring of 2017. As she explains the game:

> "I chose to highlight my "Would You Rather?" game, because, frankly, it's the part of the portfolio I'm most proud of. Working on the game helped me destress a bit as I was working to complete a whole medley of final projects, and that's its exact point: to keep the anthropological wheels turning while also making room for a bit of fun in your day. Furthermore, I chose to present the game, because I thought it might be a nice change of pace for my classmates, who might be reeling from their own portfolio projects, and because gamification isn't something academia gets to see all that often.

The medium of a game, especially one as open-ended as "Would You Rather," means that I can incorporate dozens of unrelated anthropological theories, theorists and scenarios—Foucault, Berger, neoliberalism, capitalism, exotification—that would otherwise have no place together in the real world, in order to facilitate lively conversation between colleagues. Some of the scenarios are outlandish, but that's the point. What's an obvious decision to me might not be so obvious to someone else. The disagreements are what make the game fun. Maybe some of my classmates would actually rather be attacked by a literal bear than praise capitalism—who knows? Let's find out."

The instructions are as follows:

The game works best with three people, though the rules can be fudged according to your specifications if necessary.

DIRECTIONS

1. Each person starts off by drawing five cards.
2. For Player 1's turn, Players 2 and 3 each select one of the cards from their hand to act as one of the Would You Rather? options.
3. Players 2 and 3 present each of their cards to Player 1 at the same time. They then both draw a new card to add to their hand.
4. Player 1 has to decide which of the two scenarios they'd rather experience. (For example: Would you rather be chased by a literal bear or have to defend the merits of a capitalist society?)
5. Player 1 chooses and says why they chose whichever option.
6. The group will likely then—hopefully—debate the pros/cons/"I would haves" of the options. Used cards are collected in a discard pile.
7. Repeat as necessary.
8. There is no winner. The winner is academia.
9. For added fun, make up your own options using some of the blank cards.
10. For even more fun, everyone (over 21 years old) has to take a drink whenever a "Take a drink" card is drawn. The card is immediately discarded, and the player who drew it draws another.

Perhaps the best pedagogical point is step 8, "There is no winner. The winner is academia." Game cards are available here: (http://www.samsheltononline.com/wp-content/uploads/2017/05/ANTHGAME1.pdf)

I wonder if sometimes I am helping shepherd a cadre of students looking to destroy anthropology or mercilessly mock it. But perhaps that is what we need as a field. We deal with very sober realities and often transfix those onto our collaborators when explaining our work

to our students. It can make the average undergraduate feel that every population they learn about is mired in a constant state of tragedy. There is tranquility and there is levity as well, even in serious games and serious situations.

Please visit my website for more game prototypes for teaching anthropology: (https://www.anthropologygames.com/)

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The Virtual Museum of Human Evolution: Simulation and Physical Anthropology

EDWARD GONZÁLEZ-TENNANT, PH.D.

This contribution explores how video games can help anthropologists teach about human evolution. I am interested in exploring how a mix of 3D modeling and game engines (programs used to create video games) can produce enjoyable and immersive experiences exploring 6+ million years of hominin evolution. I examine this potential by discussing a forthcoming video game (*Virtual Museum of Human Evolution*) currently in development by Pond Hill Games (www.pondhillgames.com). This project incorporates my experience teaching large courses in physical anthropology at the University of Central Florida and using virtual reality to reconstruct the town of Rosewood, Florida (González-Tennant 2013).

FROM VIDEO GAMES TO EXPERIENCE SIMULATORS

The use of video games to teach archaeology is an active and long-term interest. Much of this work explores how scholars can utilize different 3D technologies to share their interpretations of the past. A recent review (Ellenberger 2017) examines the effectiveness of various approaches currently utilized by archaeologists, and divides them into two broad categories of virtual reality and augmented reality. Virtual reality (VR) refers to methods allowing users to experience 3D environments. Video games are a good example, and the growing affordability of VR headsets (e.g., HTC Vive) represents a major leap forward. Augmented reality (AR) situates 3D objects alongside non-virtual (aka the *real* world) objects and settings. A well-known example is the popular *Pokemon GO* mobile game.

Video games come in a variety of shapes and sizes. Traditionally, this includes first person shooters (FPS), role playing games (RPGs), and massively multiplayer online RGPs (MMORPG). The recent growth of indie games has given rise to new forms, including walking simulators. While I have discussed the potential of walking simulators for archaeology elsewhere (González-Tennant 2016), their potential for teaching physical anthropology has largely been ignored. Walking simulators eschew so-called classic game mechanisms like combat and score-keeping, and instead privilege storytelling and exploration.

The *Virtual Museum of Human Evolution* draws on this emerging trend to immerse users in a 3D environment reproducing a natural history museum. You can think of it as a *museum simulator*. When users begin the game they are in a large room with exhibits surrounding them. This room contains dioramas explaining basic aspects of field and lab work. From here users explore other rooms in the virtual environment. Each room is divided according to

Figure 1 View of Virtual Rosewood, a virtual reality application exploring the 1923 Rosewood Race Riot, available at www.virtualrosewood.com. (Source: Author)

Figure 2 First room of the *Virtual Museum of Human Evolution* showing an animated diorama of archaeological fieldwork. (Source: Author)

either genus (e.g., *Australopithecus*) or individual species (e.g., *Homo heidelbergensis*). Displays, interactive exhibits, 3D models of hominin fossils, reconstructed archaeological sites, and a non-player character (NPC) tour guide provides various ways of interacting with content.

BUILDING A VIRTUAL MUSEUM OF HUMAN EVOLUTION

Developing a virtual museum faces numerous challenges. The most obvious is the technical expertise required to create 3D models and virtual worlds; and the programming knowledge to place them within an interactive game engine framework. For most anthropologists, this challenge will be addressed by engaging other professionals. Another challenge mirrors that facing any museum designer, and centers on the selection of content. This in turn drives other decisions; room and exhibit design, creation of interpretive text, implementation of interactive exhibits, placement of virtually reconstructed sites, and so forth. The challenges of designing a virtual museum are shared by all museum professionals. A benefit of working with VR is that we can do things not possible in non-virtual settings, like building and programming a robotic guide.

While space does not allow an in-depth discussion of all the challenges, a primary one worth mentioning centers on creating 3D models of fossils. One solution is to create these models using photogrammetry; a process by which photographs of objects are analyzed by a computer which extracts accurate measurements to produce a 3D model. This technique has been used by both physical anthropologists and archaeologists (González-Tennant and González-Tennant 2016). Unfortunately, photogrammetry does not offer a viable solution for this project. Not only is gaining access to casts prohibitively expensive, the legal status of using them for commercial work is uncertain (Weinberg 2016). Another issue is the file size of photogrammetric 3D models, and while this can be adjusted, creating 3D models 'from

Figure 3 Robotic tour guide assisting users in the *Australopithecus* room. (Source: Author)

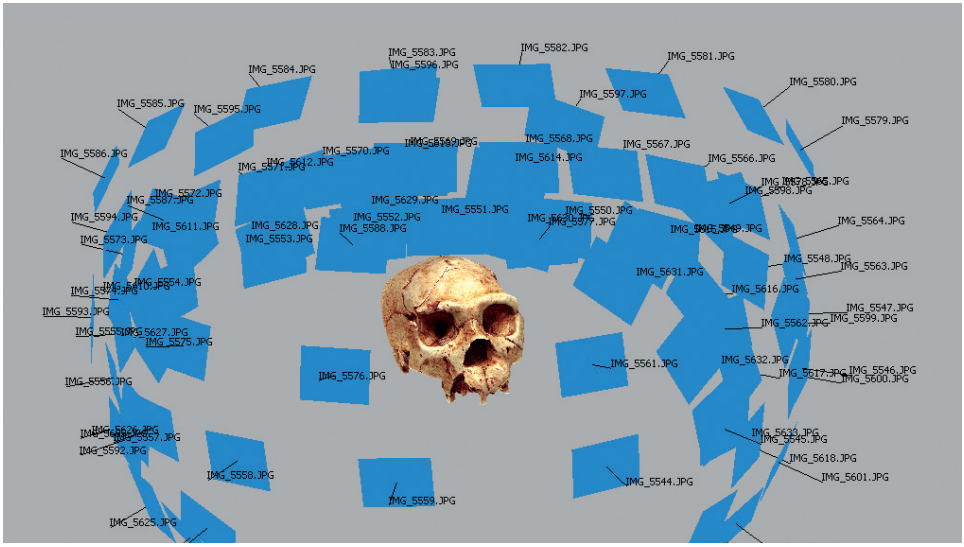

Figure 4 Photogrammetry model of *Homo heidelbergensis* cast. (Source: Author)

Figure 5 Hand modeled versions of *Ardipithecus ramidus* specimen showing three levels of detail necessary for maintaining smooth operation of the video game on different computer systems. (Source: Author)

scratch' or by hand became the primary method. While 3D repositories of fossils do exist (e.g., MorphoSource by Duke University), they expressly do not allow their models to be used for commercial purposes either.

TEACHING HUMAN EVOLUTION WITH VIRTUAL REALITY

The virtual museum is designed to accompany popular texts regularly used by college educators. The museum's content provides interactive ways to learn about anatomical trends between species (e.g., teeth shape and size), impact of climate change on hominin evolution and dispersion, type specimens (e.g., Mauer 1), important sites, and other content typically covered. The museum is also being designed to attract members of the public. The goal is to reproduce the experience of visiting a natural history museum for those who lack the means of doing so. Many of the individual fossils modeled for the virtual museum can also be accessed online at www.sketchfab.com/PondHillGames/collections/hominins and a guide for integrating them into entry level college classes found at www.pondhillgames.com/3d_lab.

The *Virtual Museum of Human Evolution* will be released commercially in early 2018 via the popular gaming platform Steam (www.steampowered.com). You can also follow the game's progress at www.pondhillgames.com. The first update following release will be a version compatible with popular VR headsets (e.g., HTC Vive) to further enforce the immersive experience. In addition, a selection of teaching materials will eventually be produced to assist educators in integrating the museum into their classes.

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Game Design as STS Research

JOSEPH DUMIT, PH.D.

ABSTRACT Game design offers a powerful pedagogical paradigm for engaging students in thinking and researching sociotechnical systems. Using the example of designing a game around fracking, this paper describes how game design grapples with emergent dynamic processes, and how students are drawn into becoming STS researchers.

KEYWORDS STS; pedagogy; game studies; capitalism

> *In late industrialism, as I've conceptualized it, disasters like [Flint Michigan] are everywhere, eminent and normal—and normal not only in Charles Perrow's sense, emergent from tightly coupled industrial systems like nuclear power plants (Perrow 1984), but emergent from tight coupling between natural, technical, political-economic, social, and discursive systems, all of which are aging, often over-wrought, ossified, and politicized... I began to think in terms of late industrialism in recognition of the limits of available critical constructs for explaining issues of particular concern within environmental politics...*
>
> —Kim Fortun[1]

STS PEDAGOGY

One of the biggest challenges in STS and social science pedagogy is providing students and citizens with a means of thinking analytically and critically about the interconnected world system within which science, facts, politics, and economics happen. Theories can seem to be too abstract, and yet, given an empirical problem, we all can be overwhelmed by how each aspect calls forth and relates to every other one. Even for experienced researchers, grappling with emergent dynamics at multiple scales seems to be an increasing challenge, as Kim Fortun explains in the epigraph above. One solution that Fortun has been pursuing in response

[1] The sentence continues: "[within] the complexity and current state of ecological systems; the complex relationship between ecosystem and human health, and between the health of humans, rats, mice, and other sentinel species; the longue durée in which environmental problems become manifest, and consequent governance challenges; the largely unregulated, much less maintained, aging of our industrial infrastructure; the emergence of new modes of high-risk industrial activity (deep-water drilling for oil, shale gas extraction through hydrofracking); the continuing productivity of industrial culture and desire, with high throughput of consumers who love and depend on toxic products; increasingly intricate interlacing of commercial interests in what counts as scientific knowledge; the sobering and funny role of language and language ideology in the making of the world (Fortun 2014; see also Fortun 2012).

to this is a collective database (AsthmaFiles), a strategy that was also used to organize against fracking's secrecy by Theo Colburn and described by Sara Wylie (TEDX). These bottom-up and crowdsourced approaches to knowledge creation are necessary because one key corporate strategy is the control, obfuscation, and deletion of information. Wylie's work on fracking raised the additional challenge of understanding how and why corporations act in a way that seems to be in no one's long term interest (2018). In this short paper, I want to offer an extra conceptual tool, one that works well at all levels, including undergraduate, graduate and community teaching: reimagining research challenges as a game.

By talking about games, I do not mean "gamifying" research or teaching—attempting to increase motivation through an additional layer of rewards (Bogost 2011; Walz and Deterding 2015). Rather, I want to engage in the process of imagining a new boardgame or digital game about some aspect of the research or the social problem students are studying. Games are interesting tools because they involve the game player creatively *within* a dynamic system, requiring them to make decisions under constraints.

Through playing the game, the player obtains a *feel* for the emergent dynamics that result from the various parts interacting. This includes emergent effects that may not be explicitly represented in the rules at all. Game designer and theorist Jonathan Blow explains that we use systems to answer questions about the world (he might have said models but that means something different in game design), and games are one means of using systems that we can listen to in order to learn about the world (2011). Fellow designer/theorist, Richard Terrell, builds on this:

> Of course it helps when the output is such that we can perceive and appreciate what's happening in the system. A spreadsheet and a graph can contain the same data points, yet a graph may be far more appreciable to more people. This is what Blow means when he talked about making emergence "appreciable to the senses." Feedback and form are clearly important parts of the way we learn and use systems (Terrell 2011).

In many games, the player gains this dynamic understanding precisely because their point of view is now situated within the game: as an avatar in a first-person video game, as a general in *Risk*, or as a type of real-estate investor in *Monopoly*. It is from this situated position that decisions are evaluated through anticipating possible futures that could play out within the dynamics of the game states and responses of the other players. We all understand this; the analogy is the basis of Bourdieu's (1990) theory of *habitus* as a "feel for the game" and the fact that one gains through the situated experience of negotiating a complex social system from a first-person perspective in which one's decisions matter.

Thinking about designing a game affords a fascinating possibility: the chance to try and represent the emergent dynamics of a situation we are interested in with as much depth as desired. Radical game designer Paulo Pedercini writes: "Games and simulations can simplify and mirror certain aspects of real world systems while maintaining their dynamic properties. By playing games and, even more so, by making games, we can promote this kind of literacy" (2013). Pedercini has done this through a series of classes, workshops, and fascinating games.

One of them, *Oiligarchy*, puts the player in the position of a multinational oil company. He explained his approach as one of anti-reductionism:

> The expressive and rhetorical potential of games lies in their ability to depict complex systems in an approachable way (rather than using narrative strategies)…The creation of this dynamic model, more than the user interaction, would discourage reductionist approaches to the problem…and hypothetically foster a new kind of holistic critical thinking (Pedercini 2008).

Creating a game about a topic can reveal for the designer and then the player how dynamic forms like structural inequality and ignorance are produced through interactions. Nicky Case points out that critical games are about "changing knowledge first; this is not gamification which is about changing behavior" (Case 2014). Though we must not think that knowing how inequality is produced is the same as thinking that it is bad. The designer of the original *Monopoly* game, Elizabeth Magie, wanted her *Landlord's Game* to teach about the evils of systems that reward monopolies (Pilon 2015).

Nonetheless, designing games with complex systems requires research that attends to dynamic properties. What happens when we frame research on an industry (or topic, issue, discipline, lab) as designing a game? Does the attempt to model the dynamic feedback among actors inform a more critical analysis of the factors that shape emergent phenomena? The freedom to add almost anything to a game during the design phase can suggest connections and relationships that might otherwise be overlooked or taken for granted. Designers become curious, asking, What effects are emerging here, and what are the various constraints on them? The world comes to be seen imploded in every object (Haraway 1997; Dumit 2014) in an interesting and not overwhelming way. In this manner, designing a game invites STS for its expertise in studying and addressing these questions.

FRACK: THE GAME

> *Embracing the abstraction is a willingness to take that critical first step of opening your mind to, at the very least, consider points of view other than your own.*
>
> —Richard Terrell

Inspired by Pedercini and others, I created an undergraduate class around designing a game about fracking and co-taught it with Whitney Larrat-Smith who was studying the Tar Sands. The premise provided to the students was simple: In the game you play a fracking company and the goal is to grow your company as big as possible, before the world ends. The subtitle is: "Taking it With You." The other subtitle is "The Game We Are Already Playing."

I began the class by asking the students: What do fracking companies do? The answers were predictably lackluster and focused on money, production, and advertising. I then went around the room and asked them: What superpowers would you want to have if you are a fracking

company and want to grow as much as possible? Here they collectively generated a much more expansive list of actual concerns: reducing regulations, keeping newspapers in line, producing friendly science, sabotaging other companies, absorbing competitors. Surprisingly, when I complimented them on their insights, they responded by asking: But can you really do these things?

Research involved figuring out the actors involved and how they interacted. Histories, popular accounts, documentaries, and news articles were first used to start to diagram the dynamics. What affected what and how? What counted as an event? What sort of feedback and contingency created each event? At the same time, what made it newsworthy? Who were the actors in the event? Who decides what is an actor? What forms of direct action came into play by all actors? In their analysis of news they noted how public relations worked to frame controversies in some ways rather than others. Through thinking about how news could affect various actors, especially companies, they began to see how the media was part of constructing worlds. Without introducing the terms, they began to formulate different theories of ideology, public relations, and visibility (in a Foucauldian sense). At this point they were asking for "theory" (of media, public relations, capitalism, etc.) to help them make sense of the concepts they were grasping toward, and when they read it, they read it critically, checking it against what they were observing in the world and asking whether it helped them design better analytics (game mechanics) or not.

In asking them to design a game in which the players would be fracking companies, I was asking them to step into the point of view (POV) of a company, to map the world that they live in, to figure out what corporations care about. Precisely by taking on the POV of a company and asking, "How could I influence this to make it friendlier to my goals," they began to see the news as intervening in the world rather than reporting on it. They could then read and understand Wylie's STS query, "Why are former MITEI head Moniz's supportive statements framed as 'policy recommendations' and not 'advocacy,' while Volz's dissenting statements are counted against him as advocacy?" (Wylie 2011, 321).

By assigning students to discover and read the grey literature that companies write to each other—e.g., *Oil and Gas News*, "Executive Oil Conference," OilPrice.com—they could see the topics as a map of matters of concern. This quickly brought up the issue of speculation over estimates. Controlling the PR on how much gas was in a shale and how expensive it would be to extract: this could have a far bigger impact on a company than anything else. Even before it was verified, these geologic estimates are the "future" contracted into the present share price, which becomes a fluctuating measure of the company's ability to maneuver. Accusations of under- and over-estimation were common. By contrast, activism and even regulation were relatively less important to companies than corporate buyouts and the relative state of other markets.

As they brought these insights to discussion, they could then debate how they could be abstracted into actions that a game player/company could take, and consequences for the state of the game. One week they read economic literature on shale exploration, speculative financing, fracking costs, pipeline costs, and market movements. They then had a discussion about the algorithms that could best reflect the complexities of these interactions.

As the students read critical analyses of fracking that traced corporate tactics they became increasingly intrigued with the power and reach of what Wylie calls "informatic techniques of

corporate disembodiment" (2018). These include the ways in which companies can literally erase their tracks in the world through exemptions to being surveyed or monitored by the EPA, non-disclosure agreements in lawsuits that prevent those who are harmed from telling their stories, and holding corporations that disaggregate actions. They also regularly hire former regulators, creating cozy relationships with the government agencies that are supposed to keep them in check.

GAME DESIGN BECOMES ANALYSIS

To embody the role is to reinvent it.

—Francesca Coppa

To sum up, by framing the class around how to design a game about fracking, students were freed up psychologically as well as ideologically. The idea that they were designing a game enabled them to feel empowered to read across technical fields with real purpose: what insights does this give me into what a company cares about and is capable of? What mattered for how a company made this decision? Rather than trying to get the "right" answer to these questions, they used mapping strategies to account for all of the potential actors or stakeholders in a scenario (reminiscent of Adele Clark's (2005) grounded theory approach). In so doing, they became quite hungry for STS theories, for cultural anthropological approaches, and for media studies critiques. Each of these gave them unique insights into the world they were designing, and helped them make their game better, in the sense of giving them better strategies for researching the game, better embodying the dynamics of world in it, and better positioning the player as a corporation in this case.

Trying to see all events from a corporate POV often produced a type of epistemological whiplash: students came to understand how it could be that the ways in which something they found awful, also "made sense"; that disasters were normal, in Kim Fortun's terms; that the destruction of the environment was an emergent outcome of the current relations of production. Their analysis of the grey literature made clear that companies and citizens often do not share worlds—in the sense that they do not care about or even notice the same things.[2] The actor networks that each makes up are not the same. This led to a deep discussion about multiple worlds and ontologies—concepts that the students were able to wrestle with because they helped them think through the game that they were making.

One week, I asked the students to research the ways in which people were protesting fracking. They were to analyze these and come to class prepared to share and defend what they thought was the most effective strategy. These included everything from lawsuits to newsletters to marches to celebrity sponsorship to films. Then we went around again and this time I asked everyone to imagine the best way, as a company, to counter or pre-empt these strategies. This activity was a bit disheartening, but it also brought to light the vast difference in economic

[2] They were chagrined to find that even energy executives such as Rex Tillerson could be trying to stop fracking locally at the same time that they were promoting it globally (Leber 2014).

power, the resources that the corporate side could bring to bear on a situation, the people it could mobilize, and the access it had to power structures like the state, media, regulatory agencies, lawmakers, and police. It could put the burden of proof on the protesters and cause them to take time, energy, and money and spend them defending their activities. These were all resources that were not spent on investigating or mitigating the damage that the industry was doing. This became another action that companies could use in the game.[3]

In workshops where I explain this approach to game design as research with faculty, graduates, and community members, I challenged each of them to make a map of all the actors in their field of concern, at multiple scales. Then, drawing on game design principles, I ask them to generate a list of verbs for each actor: what do they do? From this they can select points of view that they took for granted or avoided identifying with, and then they can start to draw the dynamic interactions taking place from that point of view. This then became a starting point for designing a game. Taking up, e.g., the petrochemical industry from the point of a corporation (or some part of a corporation) and its doings, provides a preliminary map of lines of force and interest, one that emphasizes the fragility of the corporation—how challenging its decisions are, how difficult the system is to maintain. This can be seen as an intellectual contribution to activism as described by Foucault:

> What's effectively needed is a ramified, penetrative perception of the present, one that makes it possible to locate lines of weakness, strong points, positions where the instances of power have secured and implanted themselves…(Foucault 1980, 62).

Psychologically, the "serious play" of designing of a game, seems to free our imagination to attempt to embody a complex dynamic sociotechnical system. Importantly, the game does not have to be finished to be useful. Collectively workshopping a game idea provides a format in which suggestions can be discussed for how they interact, and even incorporated without immediately having to ask if they are relevant. Game design is thus a method, a paper tool (Klein 2003) for thinking together about science, facts, politics, and economics.

By ignoring the serious play of games, the social sciences have left this rich terrain for teaching and analysis in the hands of economics and consumer culture. Game design is an underexamined and often ignored aspect of systems thinking and engagement with which the social sciences would do well to experiment. Whereas social and STS theory emphasize how emergent systems give rise to structures and events, designing a game scales the process down to the step-by-step speed of individual decisions, offering insights into how different systems interact. STS scholars can build on the work of critical game designers and theorists to understand the challenges of late industrialism.

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