

‘Thinking through’ games in the classroom: Using analytical game design to play with and investigate historical datasets

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ABSTRACT

In this contribution, we outline the notion of analytical game design (AGD) and explain our use of this design process in a classroom setting to playfully trigger insights into game history. Using the Nandeck card game design software, we created a set of playing cards out of a large database of Commodore 64 games. Students were then asked to prototype simple games with this card deck which fostered discussions on and allowed insights into the notion of (Commodore 64) game history and canonization (matters of exclusion and inclusion). ADG thus allowed students, few with a design background, to actively ‘think through’ games about the subject matter at hand. In this contribution we will discuss our experiences and findings of these practice-based classroom exercises .

Keywords

Analytical game design, data, card games, teaching, game canons

INTRODUCTION

This contribution elaborates on and applies Analytical Game Design (Werning 2019) as a critical practice-based game research framework, demonstrating its practical applicability in academic education, specifically in the context of working and ‘playing’ with data. Existing approaches that employ game co-creation such as “constructionist gaming” (Kafai & Burke 2015), “game-media literacy” (Caperton 2012) and “gaming literacy” (Zimmerman 2008), which compares the playing/making to reading/writing, have mostly been discussed in the context of younger learners, e.g.

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empowering children to express themselves through the ‘language’ of games. As we will explain more thoroughly below, Analytical Game Design (AGD) distinguishes itself from these earlier propositions by a) focusing on the process rather than one ‘complete’ game as output, embracing multiplicity, unfinishedness and “playgicism” (as defined by Raymond Federman, cf. e.g. Amerika 2007), and b) conceptualizing the epistemic and socio-technical implications of the game prototypes as intermediaries in the research process by drawing on and combining object theories from cultural studies and the social sciences.

As a contribution to the Teaching Games workshop, we aim to demonstrate how AGD can be employed to facilitate exploratory and playful learning (according to Mitch Resnick, quoted after Kangas 2010) about cultural data in humanities classroom contexts. More specifically, we report on educational experiments with a datasets on Dutch Commodore 64 videogame history.¹ The AGD techniques used in-class stimulated discussions about the dataset the ‘stories they tell about the national history of C64 games’. Below, we show how different game prototypes designed by the students highlighted different games, connections, game characteristics, and trends in the dataset but also led to critical perspectives about the underlying issues of national game histories and game canonization.

CONTEXTUALIZING PARLOR GAMES AS ‘TOOLS’ TO ANALYZE DATA

In the classroom experiments, we made use of playing cards since the “hardware” of cards facilitates a lot of familiar game mechanics. This allows students to quickly try out different prototypes with the dataset. However, playing cards were also specifically chosen because the use of card games, and in fact other parlor games or other analogue game genres, have historically been used as tools to learn about (cultural) data. Popular word-based parlor games in the 18th and 19th century stimulated creative engagement with language and literature; for instance, the “similarity game” required players to find one similarity and one dissimilarity between randomly chosen terms, while the “story game” challenged players to construct a narrative based on these terms (Kühme 1997, 271ff.). Also, *Obake Karuta*, sets of collectible cards in use from the Edo period (early 17th century) until the first decades of the 20th century, depicted Japanese folklore and legendary creatures, tasking players with recognizing and taxonomizing these tales that shaped popular culture.² Similar to collectible cards depicting athletes or popular franchises like *Pokémon* that they inspired, these games make players intimately familiar with cultural data. Consequently, Nathan Altice (2014) defined “the playing card as platform”, i.e. as a container of specific data types with material-semiotic properties that structure access to and interpretation of these data, citing more recent examples like the *Iraqi Most Wanted* (U.S. Defense Intelligence Agency 2003) or the *Archaeology Awareness* (United States Department of Defense 2007) sets of playing cards.

Yet, contrary to these more well-known institutional uses of card games to teach data, we are more interested in bottom-up use cases, e.g. the creation of *Magic: The Gathering* (Garfield & Rosewater 1993) cards to ‘parse’ popular culture and discourse or the grassroots design of *Wikipedia* games³ to play with the ordering of encyclopedic knowledge, because these intrinsically involve game co-creation. Even more, rather than as simple teaching tools, these playing cards and parlor games should be interpreted more broadly as “symbolic form” (Manovich 1999; Paul 2007), i.e. as increasingly internalized ‘ways of seeing’ and interpreting the world. These playful

¹ Cf. <http://gb64.com>.

² Cf. <https://boardgamegeek.com/thread/146144/anybody-played-obake-karuta>.

³ Cf. https://en.wikipedia.org/wiki/Wikipedia:Wikipedia_games.

appropriations can be regarded as digitally ‘augmenting’ earlier card and parlor games and will serve as inspiration for the AGD experiments at hand.

Thus, while “data games” (e.g. Erickson 2013) have so far primarily been used to ‘gamify’ traditional data analysis, using playing card game mechanics as motivational affordances, we focus on game co-creation to develop exploratory techniques for ‘small data’ analysis, i.e. to discover new ‘stories’ in our game historical dataset, which could for instance be used complementary to those identified using more established (e.g. visualization) techniques.

FROM PARLOR GAMES TO THE CLASSROOM

Before elaborating on our use of AGD to adapt card game mechanics as a means of analyzing and teaching game history, the main characteristics of the framework will be briefly established and contextualized. Existing frameworks for practice-based game research and education include “experimental game design” (Waern & Back 2015), “constructionist gaming” (Kafai & Burke 2015), “critical board game design” (Zavala & Odendaal 2018); others focus on games as “executable thought experiments” (Schulzke 2014) or “philosophical artifacts” (Gualeni 2016), but do not address games systematically with a pedagogical focus. To position our framework alongside these concepts and to emphasize its unique contributions, we emphasize the processual nature, the unfinishedness and the multiplicity of AGD below.

First, all aforementioned approaches inherently focus on the creation of one game as the research ‘result’. For instance, Zavala & Odendaal rightly advocate “codifying theory into game mechanics”, i.e. to ‘translate’ concepts - in this case about the role of interfaces and algorithms in app design - into corresponding game rules (2018). Yet, the authors created one ‘finished’ game, stating that the project “would hopefully result in a publishable critical board game for algorithmic literacy”. Even Loring-Albright (2015) demonstrates his notion of “critical modification” by creating one more reflective ‘version’ of the popular *Settlers of Catan* board game to address the game’s alleged disregard for native peoples in its procedural representation of colonization.

This ‘product-oriented’ approach emphasizes the experimental game as a “knowledge object” (e.g. Kalthoff & Roehl 2011) rather than the process itself, similar to how e.g. audiovisual essays as outcomes of practice-based film studies, which (Grant 2016) describes as “performative research”, in the end often follow the logic of arthouse film (e.g. being tailored to festival exhibition) rather than educational processes. Zavala & Odendaal themselves concede that “the emergence of critical play [as defined by Mary Flanagan] did not seem to occur naturally” as players struggled with the randomness of in-game events; yet, committing to one final game prevented both the authors and players (as potential co-designers) from exploring what constrains the potential for critical play and how it could be unlocked differently.

From an Analytical Game Design perspective, we approach our in-class experiments as playable ‘vignettes’, inspired by unfinished - and precisely therefore conceptually productive - forms of theory-led design such as the Kuleshov experiments (cf. e.g. Prince & Hensley 1992). This unfinishedness, like the lack of characterization and plot in the editing experiments of reflective practitioners like Kuleshov, prevents the player from adopting an immersive disposition, like a finished game published in a box would, and encourages them to adopt a co-creative stance instead. Instead, we aim to use the ‘gaps’ in the procedural rhetoric of our experiments - which we consider as ‘productive irritations’ - to keep the co-design process playful in itself, i.e. constitute an invitation to play and to keep redesigning the original prototypes.

This playful process can be understood in terms of bricolage, i.e. using earlier prototypes as ‘ready-made’ material, but also, more specifically, in terms of “playgiarism”, a technique which literary author Raymond Federman described as “remix[ing] the different sources and versions of his own personal narrative to form [w]hat he terms a playful self-appropriation”. Adapting this originally literary technique to scholarly production can help prevent both educators and learners from becoming too enamored with any particular prototype-as-model they devised. For instance, Gualeni (2016) usefully frames experimental games as “self-reflexive virtual artifact[s]” and most importantly brings in “defamiliarization” as a concept that - similar to playgiarism - originated in the context of art but can be productively adapted to game research methodologies. Yet, his argument again focuses on one sample game, *Necessary Evil*, rather than aiming to provide a framework, applicable in a concrete educational setting, which helps understand the interplay of theoretical and practical rationales in an ongoing design/learning process. Therefore, we focus instead on creating networks of interrelated game prototypes, i.e. the educational benefits come from the interstices, from identifying characteristic differences and incongruities, rather than from any one prototype.

Thus, the goal of AGD is not just the creation of knowledge objects to learn with but to actively ‘think through’ games about the subject matter at hand. For instance, while playing a complete prototype may generate new insights, interim design stages also shape the learners’ interpretation of the data and the underlying themes. To address these epistemic implications of the prototypes in the educational process, we draw on concepts like Hubert Damisch and Mieke Bal’s “theoretical objects” (Bal 2013, 52) and Ewenstein and Whyte’s “epistemic objects” (2009), which similarly address the interpretive impact of objects in “knowledge work” (8) processes and are “characterized by lack and incompleteness” (9).

USING AGD TO TEACH GAME HISTORY AND THE LOGICS OF CANONIZATION

Our in-class experiments took place in an undergraduate game studies course at the end of 2018. In this specific case, the focus of the AGD experiment was triggered by the recently published canon of Dutch games which had caused quite a bit of controversy on the types of games selected (Glas & van Vught 2019). The sociocultural history of games had been part of one of the course weeks for years, and within that week we were keen to explore the history of Dutch games with the students to see how designing, modifying and playing a historical dataset of Dutch games would highlight certain games, genres, trends, relationships (etc.) thereby playfully creating our own canon of Dutch games. Because it was impossible to create a dataset of all Dutch games, we decided to export information on all the Dutch Commodore 64 games we could find in the online database [gamebase64](http://gamebase64.com)⁴ and import that into *Nandeck*, a card game design software that can automatically generate cards with different characteristics corresponding to the data in a csv file. This resulted in a card deck of 100 Dutch C64 games all of which included the title and a screenshot of the game and had data on year of release, genre, size, programmer, designer, and music.

Once the deck was distributed to different smaller groups in class, students were free to design any type of game with the deck that they could think of. This resulted in testing a wide variety of familiar card game mechanics and oftentimes modifying these to fit the hardware that they were playing with. Here, we see how the constraining principles of our predefined card design, which in itself was of course constrained by

⁴ See <http://gb64.com>.

the information available in the database, encouraged certain types of mechanics which in turn fostered certain insights into the dataset.

For example, many prototypes used some kind of matching mechanic on the basis of one or more of the data points on the cards. Students thus thought up mechanics familiar to them from games like *Memory*, *Dominos* or *Halli Galli*, trying to match genre data or years of release. For these games to function properly, the data points should be limited in range and appear often enough to allow for more matching. This already led to some discoveries by students. While for instance GB64 uses a total of 177 genre categories, students soon noticed that this wide range was based on 13 main genres which allowed them to see prominent trends but also outliers in Dutch game history on the basis of these 13 predefined genres. Hence, matching games on the basis of genres showed how easy it is for games to get ‘lost’ if they do not fit in the most dominant genres of a certain time period, or if the database contained the wrong or even missing data for particular obscure titles. So while the matching mechanic allowed students to see dominant genres and also fruitful years of release in the history of Commodore 64 games, it also made them aware (oftentimes by literally having to discard certain games from the deck) how sticking to certain genres or types of data excludes certain games from the course of history. As such, it allows access to the politics involved in canonization (cf. Staiger 1985) through playful interaction.

Conversely, mechanics similar to those in *Crazy Eights*, made the outliers in history incredibly valuable i.e. more canonical. In order to make these prototypes work, students first went looking for similarities between the “rare” cards to establish which cards could function as jokers (to skip a turn), twos (to pick up two) or eights (to change suits which in this case were genres again). This immediately shows the importance of multiplicity in AGD. While the matching mechanic forced players to completely discard of historical outliers, the *Crazy Eights* mechanics triggered players to search out these cards and actively look for similarities amongst them. This not only provided a completely different view of the history of C64 games (and the canonical games in that history), the comparison with other mechanics also instilled in the students a clear awareness that the history of games is not a singular, linear (teleological) process but instead consists of a more genealogical process with multiple trajectories, trends, and cross references.

Other game prototypes explored different design strategies using what could be called “narrative sense-making” (Cunliffe & Coupland 2012) or “narrative inquiry” (Kim 2015), with students interpreting and comparing stories that emerge from playing with the data as a main goal, like a variation of *The Metagame* (Zimmerman 2012) where players had to argue why their games were a better or more logical historical match than those of other players. This allowed players to make unsuspected matches like linking themes or colors visible in the screenshots of the game to other data, or creatively filling in the blanks when faced with missing or confusing data.

Although our experiments did not allow for modifications in the hardware of the card deck, these examples, which we will explore further and more in-depth during the workshop, aptly showed us the importance for continuous modification in all layers ranging from hardware to interface design or from game goals to manipulation rules. After all, an important implication of continually modifying the games used to ‘analyze’ the data is that it minimizes the risk of “simulation resignation” (as defined by Sherry Turkle, quoted after Bogost 2006, 106), i.e. the unreflected belief in a game as a model of ‘reality’. In our case it also defies the idea that a canon is a model of history. In our prototyping session, some games seemed naturally more important than

others, whereas the use of different data points would have laid bare how selection choices are in fact the result of earlier arbitrary choices in the canonization process.

CONCLUSION AND OUTLOOK

By discussing our experiences with Analytical Game Design approaches to historical game data sets, and sharing some of the strategies and prototypes during the workshop, we aim to highlight the importance of ‘thinking through’ games and game design within a classroom setting. This is especially important in educational programmes (as ours) which do not have design as part of the curriculum. Analytical Game Design allows for reflection on data and rules, and how manipulating them allows for new insights. While the case study discussed in this abstract includes playing cards, the framework itself and its principles are medium-agnostic. There is more to explore though when it comes to experimenting with playing cards through datasets and software like Nandeck. We are for instance currently exploring using Github Gists to document and fork prototypes as CSV files for the datasets as well as structured text files for the Nandeck code and game rules. This additional step will help make the network of game prototypes retraceable and inspire the targeted creation of new vignettes. The auto-ethnographic dimension of AGD is also something we want to emphasize more in classroom settings. Specifically in academic educational contexts, the procedural focus of AGD may help make the researcher/learner’s subjectivity accessible to critical inquiry as students are asked to reflect on choices made. This allows for more attention for the situatedness of students’ knowledge, something which remains difficult to operationalize (e.g. Lang 2011) in scholarly and higher educational practice. While there remain many avenues for further experimentation and finetuning, our first classroom experiences with ‘thinking through’ games by having students design them engaged students with the history of games in a more critical manner. The use of the C64 game cards worked well to foster discussion on dominant and alternative historical narratives, put the focus on what makes a game stand out in a large dataset and showed how important metadata is in such a process. Analytical game design showed students that game history and the underlying data is neither neutral nor fixed, but something much more complex when played around with.

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