

Evaluating Geography as Game Aesthetics for Engagement

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Abstract: There has been a growing interest over aesthetics in games for motivation and engagement of learners. We have previously argued how game aesthetics stimulate learners' critical thinking skills and proposed that aesthetics be considered for evaluation of digital games. Building further upon the notion we dwell on geography as an aesthetical element of games. Analyzing three distinctive games (a digital game, a board game and a game-based learning environment), we illustrate how geography of a game may reveal the core learning concepts and provide complexities for deeper engagement. It is often difficult for teachers to assess the aesthetic values of games that are not content specific. Our working example offers ways to establish and analyze the pedagogy. Using three different examples we elucidate how the social, cultural and physical landscapes of a game provide a socio-cultural context for the learners to understand the content or subject presented through the game.

Practical and Theoretical Foundation for the Working Example

It has been observed that teachers are often hesitant to use games for teaching, in spite of the

awareness that games are effective means of acquiring knowledge and skills, and this is because of the lack of proper pedagogical techniques or learning goals (Kirkland, Ulicsak & Harlington, 2010). One of the major hurdles faced with wider usage of games in classrooms is the lack of understanding of the effects of gaming environments on learning and a corresponding lack of theory and practice for their design and implementation (Shute, Rieber & Van Eck, 2012). Elaborating on the practice of learner centered design and constructivism in digital game-based learning, Shute, Rieber and Van Eck (2012) state how there needs to be a paradigm shift towards learners at play, as in entering a conceptual cognitive or cultural space where play occurs. Besides it has also been seen that construction of engaging activities to advance cognitive development has been a challenge faced by teachers for any kind of content (Terry, Mishra, Henriksen, Wolf & Kereliuk, 2013). We hope our working example contributes towards establishing how aesthetical elements of learning environments, as in game-based learning environments, help foster cognition and deeper understanding of the content.

The context of this study focuses on an understanding of aesthetics from a theoretical, practical and methodological perspective. Aesthetical experiences are known to mobilize cognitive powers either through reflection or analysis (Jay, 2005). Gadamer's (2012) definition of aesthetic understanding revolves around the notion of play, derived through participation in moments of opening and venture that enable participants to comprehend various ways of the world. Aesthetic experiences, according to Dewey (1984), have a single pervasive quality that makes the experiences memorable, holistic, unified and consummatory. Aesthetic learning experiences in particular are cultivated as reflective, critical and resonant, empowering learners by stimulating their imagination and perception (Eisner, 2005, Greene, 2000). Emphasizing the importance of acknowledging learners as creative and innovative problem solvers, researchers (Dickey, 2015; Harry & Walling, 2013; Kay, 2010) claim how aesthetics can provide guidance for creating immersive, memorable and cohesive learning experiences.

Research in game aesthetics have so far been limited to an aesthetic understanding from a design perspective (Aleven, Myers, Easterday & Ogan, 2011) in connection with the mechanics and dynamics of the game. Game aesthetics in general lacked a definition till Niendenthal (2009) explained it as a sensory phenomena and a representation of various art forms. Aesthetics in games in presently understood as the elements of a game (rules, geography, representation, time and number of players) that bring out the experience of playing the game (Egenfeldt-Nielsen, Smith & Tosca, 2013).

Aesthetics of human computer interactions provides a methodological perspective on the aesthetics of digital game-based learning. Wright, Wallace, and McCarthy (2008) suggest that participant engagement can be holistic, constructivist or a dialogical ontology, emerging through the interactions of the self, others and technology. Squire (2011) has also claimed how art in games or aspects of aesthetics communicate educational concepts because aesthetics motivates players to see patterns in the process. Within learning environments it is also known that aesthetic experiences make the learning immersive, meaningful, coherent and transformative (Parrish, 2009). We have therefore suggested that learning depends on the aesthetic qualities of the gaming environment and that aesthetics in games play a crucial role towards understanding what the game is all about (Gupta & Kim, 2014a).

Recent scholarship on game-based learning reiterate how aesthetics in games are central to how a game is experienced and stresses the importance of its' role in conjuring and supporting the cognitive complexity (Dickey, 2015). We are also aware that the learning process of a game are revealed through the aesthetic elements, which can also be shaped and reshaped depending upon the player's choice (Egenfeldt-Nielsen, Smith & Tosca, 2013).

Using the above theoretical constructs to understand the notion of aesthetics in games in conjunction with the aesthetic principles of learning as postulated by Parrish (2009), we suggest that the aesthetic element of geography in games

- clarifies the problem as in exposes the tension or conflicting information
- creates anticipation of consummation and maintains the suspense by gradually enhancing the complication
- brings out the patterns, routines and motifs to sustain engagement
- makes it meaningful for the learner who is the protagonist in the game
- turns the learning experience into a narrative grounded in real life events

This process is iterative across all game genres be it adventure, role playing, action, strategy, simulations or virtual worlds because geography as an aesthetic element, helps in comprehending the game from a number of perspectives as we explain below. Using a theoretical framework that we have conceptualized, we clarify how this holistic aesthetic experience of gaming by visualizing the geography, helps establish the subject matter or the theme of the game. Other aesthetic elements of the game such as the rules, representation, time and number of players, similarly clarify the game from various other perspectives (Gupta & Kim, 2014a, 2014b). For the purpose of this paper however, we are focusing on geography as an aesthetic element for engagement.

Understanding Geography as an Aesthetic Element

According to Egenfeldt-Nielsen, Smith & Tosca (2013), the geography of any game encapsulates the physical landscape that the learners encounter in the game. From a technical and design perspective Egenfeldt-Nielsen, Smith, and Tosca (2013) explain the geography of a game as its physical dimensions, game space and off-screen space. In understanding geography as an aesthetic element we not only refer to the physical landscape of the game that include all of the above, but extend it to include the social and cultural landscape which incorporate the artistic, political and economic landscapes. For this working example, we explore and analyze the social, cultural and physical geography of three very different games. The three games include a digital game, *Global Conflicts: Military Operations* (globalconflicts.eu), the board game of chess and a game-based learning environment of a graduate program.

We are choosing three very different games or game-based learning environments to exemplify how geography, as an aesthetic element, has a pervasive quality that makes the gaming or learning experience holistic and unified. The physical, social and political landscapes unify various perspectives of the underlying content of the game, which helps learners or gamers to reflect, synthesize and analyze the situation presented through the game. This experience in itself is aesthetic in nature.

Our theoretical framework, which we call visualization of aesthetics for game-based environments (Gupta, 2014), incorporates principles from visualization theory (Brodie, Brooke, Chen, Chisnall, Fewings, Hughes, John, Jones, Riding, & Roard, 2005), macro-cognitive model of sense-making (Klein, Moon & Hoffman, 2006) and distributed emotions in the design of learning technologies (Kim & Kim, 2010). It explains how each aesthetic element can be visualized for analysis or production. The principles below explain the iterative process of visualization:

- Learners visualize the aesthetics of the games and extract meaningful information from the data.
- As the learners visualize the information they start making sense of it from a data frame perspective. The frame commences with some data or information and from that perspective other information starts making sense.
- As the learners start making sense of the information, their emotions act as resources for their learning resulting in the cognitive experience of problem solving.

We describe how the geography of each of these games or gaming environments, makes gaming an aesthetic learning experience, as it corresponds to the aesthetic principles of learning and helps the learners to visualize the aesthetics for a deeper understanding and engagement with the game. We are specifically using three games, very different in content, in order to exemplify how we could use geography, as an aesthetic element, to evaluate various types of games and game-based learning environments for engagement and understanding of the core content or discipline. The game *Global Conflicts: Military Operations* (Serious Games Interactive, 2008) deals with the ongoing Israel Palestinian strife and the related issues of democracy, citizenship, human rights, terrorism and poverty which are often abstract and difficult concepts to comprehend. Chess is a board game that focuses on strategy and the third game constitutes a game-based learning environment of a graduate course. The entire course is run as a game with avatars and experience points, as part of the course activities and assessments but we are focusing on the encounter with the physical space of the classroom to compare with the other two games.

Geography of *Global Conflicts: Military Operations* In *Global Conflicts: Military Operations* the learners take on the role of journalists and are brought closer to a series of problems that occur on account of the on-going conflict between Israel and Palestine.



Figure 1: Screen shot of Café near Jeruzalem

As a foreign journalist a learner arrives at Israel and meets with a media personnel/editor who provides guidance on how to garner information and report accurately. The meeting takes place outside a café near Jeruzalem. Although it appears to be a normal street side café the sudden arrival of the military trucks beside the cafe introduces the problem (see Figure 1) from a social, cultural, and physical perspective. Through mere observation it becomes clear that the region is in turmoil because of the strong presence of the military (Israel Defence Force) within the city. The almost deserted café also accentuates the instability of the region in terms of the safety of the people and the political conditions prevailing in the country. Thus the learner is directly exposed to the problem that initiates the interest or anticipation to proceed onwards for a better understanding of the problem. Although as a journalist the learner has been briefed about the prevailing conditions in the country, landing in the city brings about a direct encounter with the physical space to figure out what he or she has to do. After the initial meeting with the editor the journalist gets direct orders on the entire operation and has to work with the Israeli Defense Force for security reasons. As the journalist travels with the military across the country he or she develops a deep awareness of the country through the artistic representation of certain specific areas (Abu Dis for example where the military conducts a raid), which contribute towards meaning making of the physical, economic, social, cultural and political landscapes (See Figure 2).



Figure 2: Screen shot of raid at Abu Dis

Abu Dis, a deserted neighbourhood with a few masked people on the streets, provides a clear picture of the economic and cultural situation of the region. As Abu Dis suddenly turns into a hub of activity on account of a military raid with the capture of a potential terrorist, the journalist witnesses the change in perspective of the physical, social and political landscape, which creates and sustains the suspense. At the site of the raid, the journalist's movements across the physical space and social encounters are determined by the geography. The journalist can only approach the people on the streets since most of the houses have their windows and doors shut. The geography also informs upon the culture. As the journalist physically navigates the area and approaches the people some refuse to converse, or prefer to stay out of the picture while some lodge their complaints. Based on such social interactions under the specific circumstances (See Figure 3) the journalist gets a fair idea about the religious conflict, the economic condition brought about by the conflict etc. It also enables the journalist to make a fair judgment on the responses received, which in turn helps to identify the problem.

The geography also embodies certain rules in the game, which may include controlled movement within the country. Such geographic boundaries speak volume about the social and political situation in the country. For example, it is not safe for journalists to move around and gather information on their own. It is advisable for them to travel with the military and take adequate precautions such as wearing bullet-proof vests while on the job.



Figure 3: Screen shot of journalist navigating the geography of Abu Dis

In addition, the geography reflects patterns of the political practices through frequent raids of certain areas. The raids help towards understanding the culture of the social communities and the dangers they are exposed to under the given circumstances. Thus geography as an aesthetic element of the game creates a meaningful learning experience helping learners to understand the real issues in order to succeed at investigative reporting.

Geography of Chess



Figure 4: Chess Board

Chess is a board game (see Figure 4) that involves two players and is a real time strategy game employing a third person perspective. However chess can also be played in a digital environment with the computer as an opponent. In both versions of the game the chessboard serves as the geography of the game. We have chosen the game of chess because Dewey (1984) illustrates aesthetic experiences by listing games such as chess. And as Dickey (2015) claims, many of the key aspects of Dewey's (1984) characterization of aesthetic experiences such as flow, unity, consummation and memorability are key facets of contemporary digital games. The geography of chess plays a crucial role in representing the problem because the problem commences with the move of any character

on the board. The physical space thus embodies the rules that govern how the game is played. A move by a player challenges the opponent to identify the problem and proceed with subsequent moves that adds complexities to the situation, increasing the suspense and anticipation. As the characters of the game as in pawns, rooks, bishop, knights, king and queen are physically moved across the board, the particular arrangement of the characters on the physical space helps to identify the strategy employed by the players. The strategy can change with every move, making it more complex and this complexity is revealed through the specific arrangement or the geographic positioning of the characters on the board. The increasing complexity maintains the suspense and creates anticipation for a check-mate.

The physical space of the board also helps to identify the patterns or routine movements of certain characters such as the rook, which can move across any number of vacant squares either vertically or horizontally. Similarly the bishop can move diagonally across vacant spaces and such movements bring about a change in the perspective and help gauge the strategy employed by the opponent.

The social perspective comes alive through the characters, their roles and powers for capturing the enemy pieces. Based on the learner's experience of the narrative grounded in real life events it can be argued that the cultural perspective can incorporate both a political and an economic realm for the protagonist learner.

Geography of a Game-Based Learning Environment

The sketch below (see Figure 5) represents the physical layout or structure of a class for conducting a graduate program course in digital game-based learning, at a Western Canadian university. The entire course was conducted as a game for a period of two weeks in summer. The course design used game concepts such as experience points (XPs) and multiple battles as learning tasks (Johnson et al. 2014; Sheldon, 2011). The learning tasks included team formation, sharing project plans and developing a game prototype (Kim, in press). As a game, the course thus incorporated developing and articulating design principles for the prototype informed by theories and practices of digital game-based learning, both in the physical space of the classroom as well as through the Google+ community page. We have chosen this example because it is argued that careful use of game design elements can motivate players to solve real world problems (McGonigal, 2011). Besides Linehan, Kirman & Roche (2014) claim that gamified environments can change the behaviour of the players for their benefit. We focus on the geography, as an aesthetical element of the gamified course, to analyze how the physical space of the classroom helped create an unique socio-cultural environment that facilitated clarification of the problem for the learners and contributed towards making the entire learning experience meaningful.

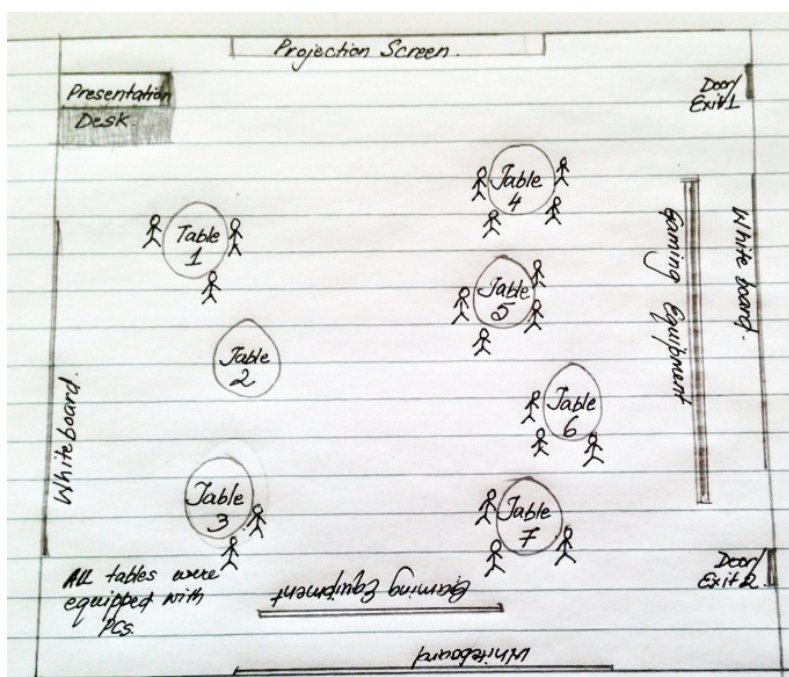


Figure 5: Rough Sketch of Classroom Layout

The geography of the classroom sheds some light on the social and cultural norms practised by the groups. When in class the learners assumed their own seating positions, which contributed to the team formations and as the team members regrouped based on various other criteria (interests in games, communication, etc) the teams

assumed different positions in the physical space. It was interesting to note that some groups (consisting of avid gamers) took up positions in the front rows and back rows while the centre of the class had learners who were not so comfortable with gaming. It was also seen that a few learners occupied certain desks for facilitating communication with learners who were well versed at gaming. During class time, which also incorporated a scheduled time frame for playing games, there was a lot of movement in the physical space around the gaming equipment on account of help-seeking and help-giving with the games. The aisle or corridor in between the desks was also a centre of activity because the learners moved around and discussed various games or their unique characteristics. The physical geography of the class embodied minimal rules of movement: the focus of attention shifted to where all the gaming equipment were located, with more advanced commercial games when they were introduced. The students were expected to choose to play those games. Thus certain areas of the classroom helped arouse the anticipation for consummation either because the learners had access to the games or because they knew they could seek help towards solving a problem or to clarify their own understanding through group discussions.

The physical geography of the classroom largely facilitated social interaction and community building by shifting the focus of the social interaction to discourse about games interspersed with their personal experiences. Thus their learning experience turned into a narrative grounded in real life events making it aesthetic in nature. The groups made their “moves” based on where and how to do their group work within this space. For example, by using the whiteboard and leaving their brainstormed ideas on it, some groups marked their own space to continue their work in the next class. Such routines or patterns established by the learners themselves helped to sustain the engagement as the group members were aware of their own progress and contributed both individually and collectively.

The geography also revealed aspects of group culture and dynamics. It became obvious during class discussions or gaming activities that some members automatically assumed leadership positions and went around helping the others even if they were from different teams playing different games. Some of these leaders also shared access to games they enjoyed playing personally. Depending on the topic of discussion some learners introduced various other games to their fellow classmates. The level of collaboration and sharing was very evident although one might say that the learners were scoring in the game of learning simultaneously (which would affect their grades) and hence making the effort. However it could still be argued that the close-knit structure of the classroom and environment fostered collaboration and sharing, making it a meaningful aesthetic experience for the learners.

Conclusion and Implications

The aim of this working example is to emphasize the importance of geography as an aesthetic element of games. We have tried to demonstrate through three distinctive games how the geography of a game plays an important role in understanding the content or subject matter of the game. We have also described how geography lends a social and cultural perspective to the content helping the learners comprehend the subject from a socio-cultural point of view. By revealing the core learning concepts the aesthetics of geography promotes deeper engagement and this criteria may assist educators or teachers to assess games for learning.

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