Adapting Epic Theatre Principles for the Design of Games for Learning

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ABSTRACT
Educational games are primarily developed for use in formal education, which limits both their typical audience and the subject matter they may address. This paper presents recommendations for designing games for learning to be played outside the context of formal education, which explore the ways complex systems influence real human lives. Existing work from within the field and epic theatre principles form the basis for these guidelines.

In this framework, the context of educational game play is considered alongside game content as essential to encouraging reflective play behaviour. Educational aims are made explicit throughout game involvement, and each aspect of the game directly contributes to stimulating reflection on the topics at hand. Complex subject matter — for example, the ways systems such as economics affect players in real life — may be fruitfully explored using this approach.

Keywords
video games, game design, epic theatre, learning

INTRODUCTION

Play in Education
Learning and play have long been interconnected concepts. Developmentally, children learn through exploration, experimentation, and play (Forman and Hill 1981), as knowledge is actively constructed and reconstructed through direct interaction within the environment (Bee and Boyd 2010). Play in general — activity that is intrinsically motivating, freely chosen, process-oriented and enjoyable (Johnson et al. 1987) — typically aligns with play in videogames. Therefore, the continued attempts of videogames to harness the learning potential of play are hardly surprising. The use of videogames for learning stems from the idea that successful entertainment-focused games exhibit the same traits that facilitate teaching (Gee 2004): they are highly motivating, structured such that players are given new challenges as they master older ones, allow repeated trial and error without significant penalty, and so on. While evidence suggests

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that children learn while playing well-designed educational videogames (Barab et al. 2007; Kato et al. 2008; Squire et al. 2008; Warren et al. 2008), the harnessing of game elements to educational outcomes has historically met with mixed results (Young et al. 2012). This paper explores new ideas about designing for learning in games, building on past experiences in the domain, connecting to alternate theories of learning, and tapping into learning through epic theatre experiences. Its primary goal is to propose new guidelines for the design of educational games with broad, *real-world* relevance.

Malone's (1981) foundational work on educational game design identified the importance of intrinsic fantasy — a concept defined as the tight integration of player action and in-game subject matter. The term "fantasy" implies, from the outset, a disconnect between the game's subject matter and reality. The dissonance between this framing and the observation that much learning occurs through literal transformations and real-world actions (Garvey 1990) generates questions for game designers that are investigated in this text.

Educational game design theory typically aims to combine the intrinsically motivating aspects of videogame play with the medium's observed ability to teach (Gee 2004; Malone 1981). One proposed advantage of using videogames in this way is the medium's ability to situate players in roles that simulate experience in a given domain (Gee 2008). A game's possibility space becomes rhetoric; it makes arguments about optimal approaches to success in the simulated environment (Bogost 2007, 20) and privileges values that support such behaviour (Barr et al. 2007). If games are suitably realistic and applicable to players' own lives, this rhetoric may in turn influence real world behaviour. While commercial games mostly tend to teach players how to improve their in-game skills, the primary goal for educational games is for the knowledge or skills developed during videogame play to transfer (Rick and Weber 2010); that is, to be recognised and applied in appropriate real life scenarios. Achieving this is simpler when game actions approach total replication of their real-world counterparts: in Math Blaster (Davidson & Associates 1983), for example, the operations solved by players are identical to those that exist in their classrooms and beyond. Further, learning basic numeric operations can be linked to understanding money, which can be recognised as a step towards independence. The relevance and value of the subject matter is clearly identifiable.

Educational practices, to which games may contribute, are less effective when topics are not immediately and obviously applicable to players' lives. For example, secondary students' general lack of motivation to study mathematics results partially from their inability to relate topics to real-world applications (National Research Council 2003, 80). Teachers' general reluctance to form explicit connections between mathematical concepts and their use in students' potential careers (Gainsburg 2008) makes high-school math appear arbitrary, despite the concrete examples (e.g., from engineering) that typically populate math textbooks. It follows that videogames aiming to teach more complex topics than those analogous with basic mathematics must also clearly demonstrate their relevance to players.

Videogames' ability as a medium to represent complex systems has value for learning. The act of play within game systems can expose the fundamental rules governing them, resulting from player analyses of optimal approaches to success. Players with sufficient knowledge of a game's systems have the capacity to recognise where their constituent parts could be improved or replaced entirely. For example, SimCity (Maxis 2013) players quickly identified issues with the game's artificial intelligence, which limited the

simulation's accuracy in representing citizens' lives (Walker 2013). Encouraging such an approach to play is similarly valuable for educational games, in which players may explore systems — economic, social, cultural — that recognisably exist in their own lives, and critically reflect on how they may be improved or replaced.

While the *theory* of educational game design appears promising, in practice, the effectiveness of games in classrooms as a teaching method remains contested (Boyle et al. 2016; Connolly et al. 2012; Young et al. 2012). This is compounded by difficulties in establishing experimental standards in a field setting (Boyle et al. 2016; Craven et al. 2001). Indeed, teachers in control groups may renew their efforts in attempts to equal the experimental treatment's predicted improvement, as a result of compensatory rivalry (Borg 1984). A need to demonstrate quantified effects of game interventions on student learning likely contributes to the popularity of designing games that prioritise knowledge acquisition (Boyle et al. 2016), which play against the medium's proposed strengths (Gee 2008). Also prevalent within the field is the concept that educational games must be made "fun"; that a balance of entertainment game elements and educational content is necessary or desirable to achieve teaching goals (Arnab et al. 2015). This approach falls short of exploring the reasons that students show disinterest in classroom learning in the first place.

While educational game theory forms part of the basis for this work, and indeed, the guidelines presented in this text do involve teaching, the approach to design outlined here differs from that of traditional educational games in a number of ways. The concept of "documentary games" — games that embody an extensive degree of simulated realism in order to more accurately depict past events — likely represents the closest comparison to the present work (Fullerton 2005). More specifically, the recommendations made in this text are aimed at designing games for learning to be played outside of classroom environments, which explicate the nature of systemic influences in real human lives. Throughout this paper, existing games with learning outcomes will be termed "traditional educational games" to avoid confusion with the present approach. The proposed guidelines are based on existing work in the field, as well as epic theatre techniques developed by Bertolt Brecht and Erwin Piscator, two prominent directors of the style.

Epic Theatre

Epic theatre grew out of the post-World War 1 sentiment that people could no longer be considered as individuals separate from or unaffected by societal forces (Piscator 1980, 186). No person could be seen as entirely separate from the cultures that they inhabited. It was for this reason that explicating the influence of these systemic factors in people's present-day lives became the primary purpose of their art. Both Piscator and Brecht used the theatre to advance arguments about society and culture, in response to the prevalence of productions that adhered to the notion of pure art. The latter were characterised by the foregrounding of aesthetics abstracted from context, and were often centred around heroic individuals who were able to affect significant change in their own lives. These characters, and the productions that portrayed them, were considered out of touch with the post-war reality. The sociological, or didactic drama that epic theatre produced was designed to engage audiences by informing them. Indeed, audiences were motivated to attend epic theatre productions because of their factual approach towards representing and analysing recent societal events. The epic theatre approach to education via an entertainment medium forms a key motivation for its exploration in this text. While a complete conversion of practices from theatre to videogames is neither possible nor

desirable, it would be wasteful to entirely ignore lessons learned decades ago by those who sought similar ends.

The connection between epic theatre and videogame theory has been considered prior to this text. Horror games are similar to epic theatre in that they often intentionally create distance between player and game; however, this does not occur for the purpose of inducing reflection, but in the pursuit of particular aesthetic effects (Kirkland 2007). It is therefore important to recognise that the application of epic theatre techniques, on its own, may not result in reflective play behaviour. Separately, the practice of game modification has been proposed as a means for individuals to express their opinions or experiences in terms of videogame logic (Frasca 2001). This approach further suggests that attempting to induce immersion should be avoided, as it inhibits reflective practice (Frasca 2001). Other work considers the ways in which Brecht's V-effect (sometimes translated as the alienation or distancing effect; the original German word has no exact equivalent in English) can be induced using game design techniques, in order to prevent players from becoming immersed; in short, to engender a critical approach to the arguments videogames make (Dunne 2014; Evans 2014). This paper instead proposes applying the overarching principles of epic theatre set out by Piscator and Brecht as guidelines for educational game design, rather than a more direct mapping of their techniques to game design practices. This approach favours the principles themselves because they lack specific reference to elements presently unique to the theatrical form.

Three key components of this approach to educational game design theory emerge from the epic theatre background. Epic theatre required audiences to maintain a 'scientific' attitude ("...of calmly observing, weighing up and checking" (Brecht 1964, 57)) towards the events unfolding on-stage, in order to encourage analysis and comparison between the production and present events in their own lives. In educational game design, a similar type of play behaviour must therefore be aggressively encouraged by considering the equal roles of play *context* and game *content*. The physical and social context in which these videogames are to be experienced must be controlled — as in the classroom — in order for reflection to remain a primary consideration for players throughout engagement with the game.

While epic theatre is still recognisably theatre, its broad dismissal of the dramatic form was critical to attaining its entirely disparate aims. In the same way, games designed for play outside formal education environments should avoid turning to entertainment game design theory in attempts to create enjoyable play experiences. Educational games played as leisure, unlike their traditional counterparts, benefit from the explicit framing of learning goals. Educational subject matter can drive game engagement to the extent that it clearly relates to players' own life experiences (Fullerton 2014). The commercial success of educational games is therefore contingent on the extent to which they force players to question their comprehension of the subject matter. Extraneous game elements are actively harmful to this goal; educational game design must prioritise creating tight, scaffolded experiences that present consistent opportunities for learning.

Epic theatre aimed to show that seemingly disparate problems affecting individual people at the time could be traced back to a larger economic, political, or societal cause (Piscator 1980, 188). The same types of systemic influences remain highly relevant a century later. Complex systems, such as economics, exert significant force on present-day human lives. The continued existence of these systems, as they are, relies on the continued assumption that their presence is perpetual and unchanging. For people to have the ability to affect

meaningful change in their own lives, an understanding of systemic influences and the structures that support them is necessary. Videogames, as an artistic medium, are well-positioned to make these arguments within their encoded logic. Demonstrating that problems afflicting a range of social and cultural groups have the same systemic causes will ideally assist in creating solidarity against them, regardless of the nature of these problems and group identities. This forms a contrast with the empathy game design approach — which appears more suited to adaptations of personal narratives — and with pure simulation, which risks eliding the human element altogether.

CRITICAL REFLECTION THROUGH CONTEXT

Reflection refers to metacognitive action that involves the reassessment of ideas or beliefs, often in response to new information (Mezirow 1998). In contrast, critical reflection may be considered the process of "challenging the validity of *presuppositions* in prior learning" (Mezirow 1990, emphasis in original). In other words, foundational perspectives upon which further beliefs rely are re-evaluated. This section — and indeed, the paper at large — refers to both processes throughout, with the view that while critical reflection is the more desirable play outcome of the two, it is also more difficult to induce through game design.

Epic theatre productions were constructed such that their didactic qualities could not be ignored. Descriptions of a play's purpose were often written into program notes, and plays themselves were directed such that reflecting on the relationships between on-stage action and recent events was encouraged. These techniques — the V-effect, gestus, and so on — are less applicable to videogames than they are to theatre, although their adaptation may be possible (Dunne 2014). More important, however, is that theatre exposes audiences to broadly identical stimulus material — aside from differences in seating arrangements, and minor discrepancies between individual performances, the physical and social context of theatre attendance is largely fixed. Videogames differ in that they can often be experienced across a range of circumstances; for example, public play behaviour involves more emotional regulation than play that occurs at home (Deterding 2015). Establishing a consistent play context in which reflective behaviour can be readily elicited is therefore necessary to effectively teach using educational games.

One of the most well-known educational games remains The Oregon Trail (Rawitsch et al. 1971), which represents the early experiences of European colonists in North America. The Oregon Trail is generally considered an exemplar of the educational game genre; indeed, the game remains so fondly remembered that references to it — such as The Organ Trail (Block and Wiemeyer 2012) — endure within videogame culture. However, an observational study suggests that the game, on its own, did not guarantee a learning-centred approach to play (Caftori and Paprzycki 1997). When students were allowed to play in a largely unsupervised computer lab, they appeared to ignore the game's primary goal — arriving at their destination with as many people alive as possible — in favour of pursuing more entertaining in-game activities, such as hunting wild animals. Engagement in play for the purpose of leisure largely precludes the possibility of reflective play behaviour (Albuquerque 2016), suggesting that the outcome of educational game play for recreational purposes is generally limited to enjoyment. An unsupervised computer lab and a classroom clearly represent different physical and social play contexts, through which player experience — and the approach to play — is drastically altered (Deterding 2015; Nordin et al. 2014).

Conversely, even videogames developed for the purpose of leisure can be successfully used to support learning within the context produced by the classroom. A field study adapted Civilization III (Firaxis Games 2001) to simulate events in world history, with the aim of teaching students that European colonialism was made possible by the accessibility of natural resources used towards this end (Squire and Barab 2004). A similar case was documented in a middle school class, in which The Elder Scrolls III: Morrowind (Bethesda Game Studios 2002) was played to highlight moral choices, such as stealing, and their consequences within the game's simulated society (Kadakia 2005). In this instance, the teacher prepared separate save files throughout the game, which were then played in class as vignettes while students watched and recorded relevant information for use in their homework. Students engaged in post-play discussions comparing and contrasting Morrowind's society with their own; the teacher noted that even students who were normally disengaged during class began to actively participate. This research demonstrates the important role of the educator, who is responsible for structuring the learning activity or environment, allowing learners to explore a problem space and discover connections between knowledge (Woolfolk and Margetts 2010). More broadly, these examples illustrate the role of context in educational game play: reflection and learning from videogames is possible only when context allows; this is true regardless of whether the game itself is developed primarily for educational purposes.

The previous examples, in aggregate, appear to point towards the necessity of a supervisor or teacher in order to facilitate learning during play. However, the potential for videogames themselves to encourage reflection does appear to exist. Point-and-Click Adventure games, such as The Curse of Monkey Island (LucasArts 1997), require the consideration of human relationships with their environments as a result of their focus on problem-solving play behaviour. However, the genre's tendency towards the absurd may limit players' ability to relate to the subject matter. Other entertainment games that involve investigative work, such as L.A. Noire (Team Bondi 2011), encourage critical thought as a result of role-taking behaviour. Indeed, this particular game's combat elements are relatively minimal, with repeated failure in troublesome action segments prompting the ability to bypass them altogether. L.A. Noire emphasises the importance of detective work over gunplay. However, that the game is set in 1940s Los Angeles likely limits the extent to which players can draw comparisons between in-game events to their own lives. Regardless, encouraging players to take on a role that consistently uses reflection or analysis as part of their character remains a promising approach.

Reflective behaviour during videogame play may also result from the presence of other players, rather than supervisors. In the context of competitive play, victory over other human players acts as a strong motivational goal. The desire to succeed, combined with even-odds matchmaking systems, can in turn consistently motivate player improvement — for which the analysis of game systems must eventually occur. However, as with other entertainment games, this analysis relates entirely to the desire to improve in-game skills; while the competitive play *context* makes learning a salient goal, it extends no further than the game *content* allows. The typical absence of complex themes in such games — in many cases, they simply entail acceptance of the military-entertainment complex — restricts the learning potential at hand. The types of experiences involved with competitive game play have little relevance to most players' lives; this works in concert with the prevalence of strategic discussion in player communities to stifle critical dialogue on game themes.

However, if the presence of other players can support reflective play behaviour, cooperative games may represent a suitable alternative to videogames involving competition (Kiili 2007; Stevens et al. 2008). This mode of play mirrors a number of approaches to learning found in real life, such as pair programming, which exploit the educational value of cooperative action. Many cooperative games, such as Portal 2 (Valve Corporation 2011), feature problem-solving activity; the presence of a second player yields discussion about ways of solving the game's relatively abstract spatial puzzles. This conversational approach to play, inherent to cooperation, can be readily applied to other topics. Moon Hunters (Kitfox Games 2016), while limited in strictly educational value, uses cooperative play to prompt discussion on in-game themes. Players are confronted with a variety of procedurally-generated events involving moral choices over the course of the game. Moon Hunters asks "How will you be remembered?" as a means to encourage reflective play behaviour; to relate in-game decisions to players themselves. The cooperative play context becomes valuable as a result of having to decide how to respond to events together. These discussions may elicit internal analyses of players' own values — and more importantly, why they hold them. Cooperative play may therefore assist the induction of an educational context in games that present complex ideas more explicitly.

These examples demonstrate the necessity of considering play context in educational game design; these factors affect in-game learning behaviour, as well as player experience more broadly (De Kort and IJsselsteijn 2008; Deterding 2015; Stevens et al. 2008; Vella et al. 2015). A range of strategies for producing contexts that support reflective play behaviour have therefore been identified. However, the identities of players themselves must also be considered in order to ensure that game topics and themes possess real-world relevance. As a result, educational games should focus on reaching a specific audience: by marketing on the basis of their subject matter, which confirms that players share the most relevant attribute of topic interest; and by framing play as educational throughout, which ensures players approach the game with similar goals. Where players diverge from the positions represented in the text may serve as a useful starting point for further discussion; however, this is only possible when these positions can be clearly identified.

EXPLICITLY EDUCATIONAL FRAMING

Epic theatre made its educational framing explicit as a rejection of the incompatibility of enjoyment and learning; indeed, Brecht took the view that "enjoyment is degraded by the deliberate suggestion that one can learn nothing from it" (Brecht 1964, 95). Notably, this positions learning as inherently enjoyable, rather than a process that must be made interesting by other means.

Educational game design often adopts conventions from more mainstream game design theory in order to avoid reinventing the wheel. However, when aspects of entertainment game design theory are uncritically applied to educational games, entertainment is likely to subsume learning as the salient goal of play. Obfuscating the primary goal of educational game play may at first seem ideal — after all, many people leave formal education with the view that learning is an undesirable activity — however, this sleight of hand limits both the range of topics available to educational games, and the extent to which they may be taught.

Specifically, the continued interest in facilitating immersion or flow during educational game play (Kickmeier-Rust and Albert 2010; Kiili et al. 2012) promotes design that

limits opportunities for reflecting on how in-game behaviour relates to players' present experiences (Egenfeldt-Nielsen 2006). Immersion represents the dominance of the subconscious mind; connections between videogame themes and players' own lives are broadly inaccessible in such a state. This remains true even after considering that flow only limits *self*-awareness, by definition (Nakamura and Csikszentmihalyi 2014). Reflection, as one aspect of the learning process more generally, requires self-awareness; an understanding of how stimulus material relates to existing beliefs about a topic (Boud and Walker 1998; Mezirow 1998). An absence of self-awareness during educational game play prevents the integration of new ideas into the self. Inducing immersion or flow in educational games that explore more complex concepts is therefore antithetical to these games' primary purpose.

It is a mistake to conclude that educational games are inherently boring, and that their design must therefore incorporate immersion or flow as a primary outcome. In fact, the potential of educational games as leisure, for an audience beyond schoolchildren, remains yet untapped. This absence within the market results from the negative connotations associated with their most common use in formal education environments. However, games made for classrooms are bound to be tedious *because they are played in a classroom*; educational games designed for play as leisure have the freedom to be interesting because of their educational aspects. If it is really true that "with games, learning is the drug" (Koster 2004, 40), learning must be emphasised through their design, and remain constant as the foremost goal of play (Egenfeldt-Nielsen 2006). In this context, discussions of balancing "learning" and "fun" become moot; they are one and the same. Educational games are engaging only insofar as they continue to exhibit challenging material. For this reason, educational game development should focus on eliciting learning — rather than fun — as its primary design goal. Epic theatre practices provide some illumination as to how this may occur.

The videogame industry has historically made use of cutting-edge technology, often for the sake of advancing visual fidelity. While some popular experiments with alternative control mechanisms have emerged, of which the Nintendo Wii is a recent example, technological innovation within the videogame industry is limited. In contrast, epic theatre productions made extensive use of the technological advances of the period, such as the rotating stage, which provided the means with which to express their subject matter in more appropriate ways. Piscator was especially well-known for embracing the physical possibilities of the stage beyond those of the standard set. For example, adapting The Good Soldier Schwejk (Hašek 1930) from novel to play involved the construction of a moving stage using conveyor belts. This set helped represent the movement of systemic forces — bureaucratic, militaristic — around the relatively powerless (and therefore, static) titular character. Felix Gasbarra, who collaborated on the adaptation, further noted that the continuity the conveyor belts afforded the production made staging disparate scenes possible without "falsify[ing] the fluid character of the novel" (quoted in Piscator 1980, 259). Technology was therefore used in service of the text to better articulate the thematic content of their adaptation.

However, it would be irresponsible to conclude that educational videogames should follow the same principle to the letter. Piscator's career in pre-World War II Germany was largely ruined due to financial mismanagement, to which his often costly set designs contributed (Piscator 1980, 303). As videogame development is similarly expensive, a more practical recommendation on this point is to appropriate pre-existing technologies in unforeseen ways. One example of this design approach is reflected in Johann Sebastian

Joust (Die Gute Fabrik 2014), a physical multiplayer game that involves the use of PlayStation Move controllers. In Johann Sebastian Joust, each player holds a motion-sensing Move controller, which is visibly disabled upon sudden movement. The last player with an active controller wins the game, giving rise to a variety of compelling competitive play behaviours (Wilson 2012). The PlayStation Move controllers' motion sensitivity and light-based visual indicators facilitate the human interactions that result from play, which are themselves the main draw. The innovation of Johann Sebastian Joust arose from creative design applied to a relatively inexpensive technological artefact, which also represents an avenue for more practical innovation within educational game design.

Many videogames are designed to contain an excess of content: dialogue that has no direct purpose, optional missions that exist only to increase player power, and largely empty "open worlds" are prevalent examples of this approach. It is unusual for elements such as these to exhibit strong relationships to a game's thematic explorations. Instead, their role is often to signify "value" for players, in the form of increased play time. Epic theatre responded to perceived excesses in the dramatic form by requiring all aesthetic and emotional elements to serve the text; those lacking a direct relationship to a production's subject matter were reworked or discarded. Dialogue, for example, should "carry the dramatic action forward and increase the mental tension; it must never simply passively reflect itself" (Piscator 1980, 210). The primary value of this approach is that arguments can be presented more clearly; multiple interpretations of the production become impossible. This lack of ambiguity gives audiences a shared knowledge of the subject matter, from which further discussion is possible. The application of this principle to educational videogame design is relatively trivial: if learning is the goal of play, elements of the game that fail to contribute to this outcome should be reconsidered. However, the inverse is also true: for example, if the insertion of elements intended to evoke emotional responses would serve the arguments being made, it would be absurd to exclude them. Game elements hold situational utility; taking their presence in design for granted should be avoided.

A further extension of this principle to the videogame context is simple: player activity, too, should submit to educational demands. Every action within a game's possibility space should be as essential to the text as the parameters of Mario's (Nintendo R&D4 1985) ability to jump. Even commercial videogames express values within play activity (Barr et al. 2007), although players are typically too immersed in the game to recognise them. As noted, a salient learning context is required for these values to be seen and analysed as relevant within the game world, as an analogue of the real one. The difference between entertainment games and the approach designated within the present theory is again one of excess. The presence of a jump command in games that involve little to no reason for its use represents a common example of an excess of player activity. Situational opportunities for action, such as gaining the ability to jump only where relevant, are more appropriately constrained. In educational games, extraneous player action weakens learning outcomes. Educational games should therefore exhibit a strict economy of design. This style more often occurs in indie games; for example, Year in Review (Kunzelman 2015) presents a drowning man who may be kept afloat by repeatedly alternating presses of the 'n' and 'o' keys. Maintaining economy clearly becomes more difficult in proportion with game size; because of this, absolute design cohesion for educational games that represent complex systems is likely impractical. It remains a worthy goal of design nonetheless.

Many educational videogames mimic their more mainstream counterparts in more ways than simply adopting immersion or flow as desirable experiences during play. To some extent, these similarities can be helpful; for example, using players' pre-existing knowledge of basic game concepts may improve a game's accessibility. Some recommendations within this text itself have been derived from the analysis of entertainment games, with the view that similarities will exist between games designed for entertainment and for learning purely as a function of their shared status *as videogames*. This mirrors the basic comparisons that can be made between the major dramatic form of theatre and epic theatre. However, obscuring educational framing by appropriating a familiar videogame form should be avoided. The danger in more completely adopting the signifiers of entertainment games — in advertising material, genre conventions, and so on — is the risk that players will recognise the manipulation; they have been "tricked" into learning. This may, in turn, cause players to feel like their prior engagement was involuntary; that they did not agree to play *this particular game*, which may in turn have negative consequences (Deterding 2016). Successfully "hiding" educational or ideological elements in a videogame also represents a significant challenge for design, although approaches concerned with presentation alone (e.g., Abraham 2015) may fare better in this regard than those that harness game mechanics more directly.

Educational games are interesting and motivating to play insofar as players can relate to, and are challenged by, the topics they represent (Fullerton 2014). Entertainment games that explore cultural and societal issues within their design, such as Mass Effect (BioWare 2007), are enjoyable partly because of this approach to their subject matter. The demand for games that interrogate more relevant issues than science-fiction space politics demonstrably exists. Indeed, videogames that advertise on the basis of offering players "meaningful choices" have become a cliché, even as their fantasy settings — entirely divorced from players' own real-world experiences — limit their potential significance. The "meaningful choices" of new educational games should be so named because they allow players to explore issues that are relevant in their own lives. In this framework, players are themselves reflected in the game world, with relationships to others clearly outlined in the text.

INTERROGATING SYSTEMIC INFLUENCES

Epic theatre aimed to elucidate the systemic causes of working class problems, founded on the belief that exposing the ways these systems contributed to oppression would provide the motivation and the means to collectively address them. While neither Piscator nor Brecht themselves grew up in working class households, both were influenced by observing — in Piscator's case, first-hand — the senseless horror of World War 1. Epic theatre therefore came about in an attempt to create working class solidarity, to recognise and begin to oppose the overwhelming influence of systemic forces on their lives.

Human lives in the 21st century remain heavily influenced by largely invisible systemic forces. For example, the Global Financial Crisis (GFC) that began in 2008 — a life-changing event for many people — resulted from the absence of regulation in the financial sector, itself an imposition of deeply flawed neoliberal ideology (Crotty 2009). Unfortunately, neoliberalism was not publicly discredited as a result of its immense failure; rather, it was broadly ignored in favour of blaming individual bankers and increasingly powerless governments (Fisher 2009, 63). This failure to identify the systemic cause of a collective issue resulted from a lack of critical reflection among the media and society at large. Educational games are well-positioned to continue epic

theatre's legacy of identifying systemic causes of seemingly disparate issues and working towards providing a means to address them. The details of this approach follow.

As previously mentioned, experiences of videogame play *can* elicit discussion regarding how play relates to real life — when game content is clearly relevant to players, and when context allows (Stevens et al. 2008). Facilitating transfer between events occurring during play and similar real life experiences is a necessary function of educational game play; without it, even things that are "learned" are unlikely to escape classification as mere game knowledge. In order to succeed in providing a means to address collective problems, educational games need to build solidarity by demonstrating the ways that the systemic powers influencing players' lives also contribute to problems for people with different backgrounds. Building these explicit connections between groups — who may not otherwise see themselves as having much in common — allows different types of people to work together, regardless of their level of identification. This requires the recognition and negotiation of differences between social and cultural groups, while simultaneously acknowledging that no truly individual problems exist.

One way that epic theatre promotes solidarity across groups is by privileging the examination and analysis of systems themselves over the human relationships that are changed in response. Notably, the aim of this approach is to explore the ways that the subject matter causes changes in people's lives throughout society, rather than to remove the human element from consideration entirely (Brecht 1964, 48-49). Narratives that focus on individuals — especially prevalent in the avatar-centric sphere of commercial videogame development — promote identification with their characters, such that the systemic causes of their problems are easily masked by individual circumstances. Indeed, in designing for players to feel powerful, player characters are often able to transcend the influence of systems that shape the lives of non-playable game characters. For example, Fable's (Lionhead Studios 2004) protagonist undergoes a transformation from peasant child, powerless to prevent a devastating bandit attack, to "Hero": a privileged position that offers the character a permanent home, a well-paying job, and the freedom — afforded by combat aptitude — to resist authority. The persistent threat of bandit attacks that peasants continue to face are no longer a threat to the player character; indeed, their fairly trivial slaughter represents a means to further power. Epic theatre instead makes systems and their societal effects central to the work. In Boom (Lania 1928), for example, oil itself is considered the "hero" of the production. The play's human roles serve to illustrate the societal, political, and economic effects of striking oil more broadly (Piscator 1980, 276-277).

While not a perfect analogue, Final Fantasy 7 (Square 1997) takes a similar view: the planet, conceptualised as power plant, is central to the game's narrative, although the main cast of controllable party members are certainly foregrounded as well. The game's use of a typical Japanese Role-Playing Game (JRPG) structure, which involves traversal of the entire world during game play, supports this literally global perspective. The Shinra Corporation, ostensibly a power company, represents the primary target of Final Fantasy 7's critiques. Each community the player encounters is affected differently by Shinra's wide-ranging interference, although the corporation's goal — amassing wealth and power — remains the same throughout. In turn, each controllable party member contributes their own partial understanding of the issues that Shinra Corporation embodies: the privatisation of government, corporate greed, environmental destruction, colonialism, scientific irresponsibility, and so on. Their combined knowledge constitutes an ideological weapon against the corporation and its practices; in this way, their

coalition represents a complete resistance. Notably, what motivates each member of the group is a sense of solidarity: despite facing varied local problems, their recognition of a shared cause brings these individuals together in mutual support.

As a prominent game genre that highlights social issues, empathy games represent a worthwhile comparison to the recommendations outlined above. The empathy game approach to game design involves influencing out-group attitudes about marginalised people, typically in order to elicit more positive behaviour towards these groups (Belman and Flanagan 2010). However, empathy as a primary design objective has its limits. For example, We Are Chicago (Culture Shock Games 2017) is an empathy game that aims to demonstrate the effects of gang violence in a neighbourhood predominantly populated by Black people, culminating in the player character's attendance of the funeral for a murdered friend. The game was developed to raise awareness about the immediate issue, and to generate donations for non-profit organisations operating in the area; it does not attempt to address the systemic causes of the issues it represents (Jackson 2017). The contrast between the severity of problems We Are Chicago exposes, and the action it proposes in response, demonstrates the limitations of empathy as a primary design goal when confronting complex subject matter. While the game does succeed in presenting a real, present-day problem that many Black Chicago citizens face, it falls short of outlining collective strategies for change *by design*. We Are Chicago — and empathy games more broadly — have utility in establishing that a given issue exists; however, additional benefits to the groups they represent are limited.

The McDonald's Videogame (Molleindustria 2006) instead represents an example of centring systems as subject matter without consideration of the human relationships that are affected as a result. The McDonalds Videogame is a microcosmic management simulation of various aspects of the fast food business, such as advertising, farming, and meat production. The game presents players with control over this systematised version of fast food enterprise, which includes options to participate in irresponsible and unethical industry practices. However, the human outcomes of those practices are never directly addressed. The consequences of adding industrial waste to cow feed, for example, are entirely abstracted — although the game does communicate that people become sick as a result of eating meat from these cows, and health officials may eventually audit the slaughterhouse, the widespread sickness itself is not shown. Players can assume that this behaviour is unethical, as the game takes a consistently critical view of its subject matter. Despite this, the explicit presence of visible effects on McDonald's customers would strengthen the game's criticism of the fast food industry.

A relevant present-day addition to the McDonald's Videogame could involve the ability to replace service employees with touchscreen-based ordering systems, reflecting current industry movement (O'Toole 2014). In this scenario, exhibiting the broader effects of worker automation on human lives could involve a demonstration of the inadequacy of a nation's welfare to support its citizens. This could in turn prompt critical reflection about types of societal organisation that would not fail at such a task. In this way, the original problem under scrutiny may be shown to affect people from a variety of backgrounds, and players — who may be service workers, past or present welfare recipients, and so on — could be reminded of their common interest. While players may experience empathy for service workers and welfare recipients as a result of game engagement, the primary objective is to situate players in a recognisable environment to evoke solidarity with others whose problems arise from the same systemic cause. This togetherness would

ideally result in real-world action; for example, organising with sufficient collective power to address the cause of their disparate problems.

CONCLUSION

This paper has presented a set of guidelines for the design of games for learning, intended to be played outside the classroom, which interrogate systemic causes of real-world problems. Taking educational games outside the context of formal education allows them the freedom to address more varied subject matter, and games designed with the present approach in mind may vastly differ from traditional educational games as a result. However, as the goals of both remain similar, the recommendations within this text may also prove useful in the design of traditional educational games regardless.

The role of context in learning, and player experience more broadly, cannot be ignored. The classroom remains useful — similarly to the theatre — for inducing reflection as a result of its physical and social context. However, the classroom is also limited, and the utility of games for learning can go beyond their use in formal education. Creating a play context that encourages reflective play behaviour requires the game itself to take the role of educator, by presenting subject matter as educational, making direct connections to real-world events, and structuring content to make these links possible. Reflection may be implicitly encouraged as a result of role-taking behaviour or cooperative play; however, explicitly directing players towards reflection may also be appropriate.

Just as entertainment games prioritise fun as a design goal, the design of games for learning must make education a critical objective. The desire for these types of experiences is represented in the enshrinement of games that make serious attempts to grapple with existential issues, such as Planescape: Torment's (Black Isle Studios 1999) exploration of its central question: "What can change the nature of a man?" The continued significance of such games in present-day videogame cultures suggests that many players are indeed interested in engaging with concepts they consider important. However, making learning the sole focus of play involves more than avoiding the use of entertainment game theory (e.g., immersion) in design. Learning can be made the primary motivation for game play when subject matter is highly relevant to players' lives, and topics are tightly scaffolded to ensure continued interest. The use of affordable technology in design may represent a means to present topics in ways that more accurately reflect their salient characteristics. Extraneous design elements should be removed; each aspect of the game should be directed towards learning support.

In creating games that allow players to explore personally relevant situations in recognisable environments, a foundational position on these topics can be developed in the game as text. Presenting topics from multiple perspectives highlights their prevalence across society, preventing issues from being seen as purely circumstantial. While interrogating the subject matter should take precedence over the human relationships that form in response, representing the latter assists in demonstrating connections between affected individuals. Clear arguments towards the existence and malleability of the constituent forces governing present human existence can be made as a result of their explicit, detailed in-game representations. It remains true — as it did at epic theatre's inception — that only by calling attention to the artificiality of these systemic powers can they be recognised as candidates for change (Fisher 2009, 77). Videogames represent a promising medium through which this may be achieved.

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