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Dwarf Fortress: Laboratory and Homestead

Robbie Fordyce[1]

Abstract

The "fortress simulator" game Dwarf Fortress (Bay 12 Games, 2006-present) allows players the space to conduct experiments in economics. The player is not granted an avatar in the world, but this does not mean the player is granted the role of a transcendent deity either. Instead, the player operates on the relational level—completely managing all economic interactions and assigning social codes to different spaces. Lacking a "win" condition, players are free to engage with the game however they wish, including allowing for the immediate and unsympathetic demise of the community. As play continues, Dwarf Fortress ceases to be a fortress and becomes what the autonomists describe as a "laboratory." The social relations of the fortress are upturned and become the site for experiments in production. The fortress too becomes the site for thought experiments on alternative economies, containing not one but many social laboratories.

Keywords

Dwarf Fortress, video game economies, autonomist Marxism, experimental economies, economic laboratory, homestead games, postMarxism, strategy games, Aristotle, open games

[1] University of Melbourne, Melbourne, Victoria, Australia

Corresponding Author:
Robbie Fordyce, University of Melbourne, c/o Room 216, John Medley Building, Melbourne, Victoria 3031, Australia.
Email: robbie.fordyce@gmail.com

In writing about the relationships of objects to each other in video games, Castronova states that "*every synthetic world has always had an economy*, without exception" (2005, p. 173, emphasis in text). This is certainly true. The nature of an economy is not something that is located in any object itself but rather the relationships between objects. Which is to say that an economy is real whether its objects are manifestly physical or whether they are representational. This special nature of economics means that the process of representation and simulation is capable of producing economies. But because a representation of an economy is itself an economy, then it is not homologous to the original but rather a distinct and unique thing. As Castronova continues, "The economies of these worlds, as a matter of fact, are not just 'functioning like a genuine economy': they *are* a genuine economy" (2005, p. 173). The fact that video games provide us with a wealth of economies to address means that we should consider the possibilities of how this trove of information can inform us about other economic situations. One of the primary problems for many radical politics is to discover a new form of economics. How is it possible to move past the entrenchments of capitalist economic practices? Many movements have posed their own solutions. Often these come in the form of an armed revolution aimed toward the violent redistribution of wealth. At other times, the process of a protracted and usually ineffectual reform system is deployed as a solution. In all historical cases, attempts to move past capitalism have always failed. As H. Bruce Franklin (n.d.) points out, it is easier to imagine the apocalyptic end of the world than it is to imagine the end of capitalism. The solution is perhaps to start small and imagine finding the solution in the local—in the manner of anarcho-syndicalism that Chomsky has repeatedly suggested. One philosophy of a local economy has already been proposed at numerous times throughout history, and it may avail us with new solutions to the problems of capitalist economics: the Aristotelian concept of the *oikos*. There are many ways to address these issues. This article will first address those games that contain a focus on economic arrangements, then address the chosen case study, Dwarf Fortress (Adams, 2006), in further detail, before moving to addressing the methodology for experimentation and the philosophical concern of the *oikos*.

Video games are a rich source of thought experiments in new economies. Many games reflect real moments in the economic history of humanity: Feudalistic systems, barter economies, and capitalism are well represented but so too are the bizarre hybrid economies that treat exotic gases, magic crystals, and alien spices as their unit of exchange. For the video game player, these economies are encountered as already fulfilling some sort of idealized system, be it capitalism, communism, or other economic systems. Capitalism's monetary logic is written back over history so that games such as Civilization V begin in the Stone Age with a fully functional capitalist system, but capitalism is also written onto the future such as in Mass Effect, where in-game shopkeepers excuse their profit-making ventures against the fate of the galaxy.

Many scholars have already engaged with the relationship between games and cultural shifts, with Lammes (2008) and Chapman (2013) providing nuanced approaches to thinking about those games that take a strategic and epochal approach to expressing the march of history within video games. Alexander Galloway engages with video games as "*algorithmic cultural objects*" (2006, p. 6; emphasis in original), a phrase that evokes the computational focus of video games as texts, and this compares and contrasts well with Thomas Malaby's description of the games being in possession of a "social poetics" of "open endedness" of play (Malaby, 2010, p. 357), an interpretation that focuses on the role of play for the player. It is on this basis that we can productively read the work of McKenzie Wark. In *Gamer Theory* (2007), Wark writes a history of Civilization that expresses both the history of the game's software, in its rote development and release of sequential titles, and the history of an experience of play of the game itself, as a cultural object that expresses a political project. This duovocal form of writing produces an ontological description of the historical strategy game from two perspectives simultaneously, thus adeptly performing a cultural and algorithmic analysis as if with one breath. While this article does not hope to take up the duovocal style, it does hope to draw on both the algorithmic and the cultural to inform two distinct channels of games studies scholarship.

The unique aspect about the representation of an economy in a video game is that it acts as an unwitting laboratory for political and economic experimentation. Many games limit themselves to an investment in a capitalistic economic mind-set, either explicitly or implicitly. In these spaces, the capacity to grow markets is normally restricted, and economic experimentation often sits within a frame of finding the most efficient means by which to reach total capitalist subsumption. Not only can we see the operations of the invisible hand of the marketplace, but we as players actually embody the role of this invisible hand. Games such as Patrician, Capitalism, Imperialism, Colonization, Caesar, and others—even in their names—betray the imperative placed on the player as a despotic and ruthless economic arbiter. Going further, Empire Earth and Civilization historicize capitalism as the most natural economic system by casting its existence back to the Stone Age, where humanity emerges from forests with coins clutched in their fists. The Civilization games take it further by finding their pinnacle in either destroying competitor economies or escaping the planet altogether, and eventually games such as Alpha Centauri and Sid Meier's Civilization: Beyond Earth taking the principles of capitalism from earth to other worlds. Often, the player is a pure economic spirit, driving war and exploitative trade toward a goal of a universalizing a particular economic ethic, at other times, the player is simply just the local expression of a grand imperial hierarchy—a local baron who organizes resources toward another's ends.

In some other illustrative cases, the economy takes on a secondary role. Mass Effect, Assassin's Creed III, Faster Than Light, Baldur's Gate II, Skyrim, Neverwinter Nights 2, and many others have some system of centralized economic development that acts as a tangential form of gameplay to the primary narrative. I would refer to it as a type of "homesteading" insofar as the player is granted a form of

minigame, where they develop a household economy, reorganize labor, and obtain resources. The avatar becomes the friendly face of capitalism, structuring a space that internally lacks a strict capitalist logic but which relates to the outside world in terms of a space that is fully subsumed within an economy. In many of these games, labor is expressed in a highly efficient, unmonitored fashion, where loss is negligible, profits are large, and development is largely unchecked by external factors. The role of the homestead is to economically support the exigencies of the player in the rest of the gameworld. These games are all generic in terms of their capacity for economic experimentation, and it is less of a case of determining new economic relationships than it is a case of choosing which resources are important within existing relationships. In the face of change, they adopt the ideologies of capitalist economics in a straightforward and uncritical manner, and where they do become interrogative of their economic conditions, then they become outright exploitative. Colonization, in particular, contains at its heart all the violence and racism of the colonial project, and the player has little choice between a program of Manifest Destiny and a lethal attrition, and both programs lead to an eventual form of death for gameplay.

Many of the games mentioned earlier are paradigmatic examples of the timelessness of Hardt and Negri's concept of Empire (Hardt & Negri, 2000). Dyer-Witheford and de Peuter's Games of Empire takes the autonomist perspective into the realm of video games and generates the category of "Games of Empire." Games of Empire are those video games that shore up the ideological and mimetic characteristics of a contemporary global imperial rule. Sid Meier's Civilization series is almost paradigmatic in allowing the player to etch out the history of empire, as the player guides this timeless capitalism through a series of cultural, religious, and social changes. Lammes builds on the work of Ted Friedman in the context of strategy games such as in Civilization to state that "games offer the player more than a frozen ideological representation of space, they allow us to spatially transform environments, hence making sense of it in our own way" (2008, p. 90). But it is precisely this transformation, and this process of "map making" that holds the ideology of the game. The march forth into a global empire within Civilization is inevitable, as either the player is driven to it through success in the game or else their opponents implicitly succeed upon the player's defeat. Dyer-Witheford and de Peuter follow Hardt and Negri in providing a corollary to Games of Empire. These are the "Games of Multitude." Games of Multitude are, overwhelmingly, imperial games that have been modified to allow for alternative perspectives and alternative agendas to play out or else unmodified games, where the play takes on a resistant quality (Dyer-Witheford & de Peuter, 2009, pp. 185–186). It is not enough for a game to simply be independent in order to be considered a part of resistant games of the multitude. As they note, being independent in the "indymedia" sense does not immediately free authors from the ideologies of imperial rule because as the authors state in an earlier publication, the "storylines, missions, and emotionality of countless video and computer games express and reinforce the military, economic, and political logics of Empire"

irrespective of the perspective the player takes on the narrative (de Peuter & Dyer-Witheford, 2005). The processes of interactivity can be as much a means of allowing the performance of these ideologies, as it is a mean of escape, when games reassert the same extant political conditions. A common question that games seem to pose is "who controls the state?" or "who controls the economy?" but rarely is the question "what does control look like?" and this is a core distinction between Games of Empire and Games of Multitude. A few video games allow radically different approaches to the question of economic control. Dwarf Fortress is one of the most well known of these and also acts as one of the best case studies.

A substantial portion of the value of Dwarf Fortress comes from the absence of a state of total completion. In lacking any possibility of beating the game, Dwarf Fortress holds the pretense that a single game might be able to last forever. In this, it joins the ranks of games such as SimCity and Minecraft, games which aver any commitment to success, instead leaving it to the player to determine their own goals. Games such as this tend to increase the complexity of the challenges that they throw at the player. In the case of Dwarf Fortress, this is a consequence of the player's increasing complexity of the situation for themselves by developing increasingly complex situations. A number of scholarly perspectives address the "endlessness" that some forms of games allow, for this I will address the work of Jesper Juul and Bernard Suits.

Juul (2007) finds the concept of "open and expressive" games to be useful for discussing the relationship between games and goals (Juul, 2007). These games are ones where firm goals are either absent, such as with the Sims 2, or optional and distant from much of the experience of play, as with Grand Theft Auto: San Andreas. The point is, for Juul, that goals may create problems in gaming such that gamers may choose activities that are optimal for obtaining goals and limits the capacity of expression. In this sense, Dwarf Fortress falls into Juul's category of "expressive games." Other scholars conceptualize this further. Suits (1978) writes of the nature of prolonging games, through an eroticist take on the John Keats' chased/chaste virgin. This virgin and her pursuer can enjoy an experience of a suspended period of prolonged play, whereby the two can enjoy the game of the chase, provided that the chase is never resolved. For Suits, this is a form of open play, whereby goals are not resolved but suspended. The comparison to gaming is fairly clear: By avoiding, ignoring, or protracting the completion of goals, players are capable of continuing the presumably enjoyable experience of play. Both Juul and Suits describe a situation that maps a relationship between the economy of rules in a game and the forms of play that this may take. Where Suits' work is more enlightening is that Suits makes no claim to a necessary type of efficient play simply because a game possesses rules, whereas Juul's perspective is slightly more pessimistic about a utilitarian attitude among players. That the player may simply ignore the goals, suspending any need to finish a game, is a key element to Suits' interpretation.

This suspension of goals, and the resultant forms of play, is a common topic among the scholarly approaches to game studies and appears behind the scenes for

a number of writers. T. L. Taylor, for instance, writes on the self-directed approach to play that governs games such as *Everquest*. For Taylor, players create their own "multilayered and locally defined nature of the win condition" for playing the game (2009, p. 76). This must be true, she claims, or else players would simply stop playing after reaching the internally defined limit of a Level 70 character. Malaby precisely defines games as managed endlessness, as a "domain of contrived contingency that generates interpretable outcomes" (2007, p. 96). It is possible that Malaby is claiming that all games are open ended, and the addition of end points and story is an artificial means of managing the pure endlessness that some iterable or otherwise recursive rulesets would otherwise possess. In either case, the interpretation of outcomes managed by rules ties closely to studies of gambling, which Malaby and others are invested in. This is particularly the case in the work of Schull who observes that "noninterruption" is the dominant theme of gaming-as-gambling (2005, p. 73). The goal of game designers is to reduce the motivating factors, whereby players might leave. Indeed, her quote on this, "The aim is not only to speed up play but to extend its duration" (2005, p. 67), brings us back to Suits' interpretation of Keats' infinitely chased virgin and the attempts to prolong the duration of play. With this addressed, let us investigate the nature and operation of the endless rules of play for Dwarf Fortress.

Fortress Economy

Dwarf Fortress is an independently produced and freeware video game that simulates the economic entanglement between a wilderness environment and a set of pioneers: the titular "dwarves" (Weiner, 2011). The game itself is graphically sparse, with visual aesthetics comparable to command line entry or perhaps a spreadsheet. Despite this, the natural environment consists of a bounded surface, upon which sits a range of lush tropics, arid deserts, harsh tundra, volcanic ranges, small cities, bucolic prairies, and vast oceans. This topology conceals the real wealth of the game, which lies below the surface of the map. The resources of the earth are varied and allow for a wide range of possible constructions, and many resources are mutually exclusive. The economic portfolio of any given region is rich and varied.

This portfolio is all procedurally generated from random seeds, producing fractal global maps that conform somewhat to earth-like geology. This algorithmic creation allows for a wide range of environmental factors in each iteration of play, with each map having different registers of scarcity and abundance for given resources. The mutual exclusivity of certain types of resources means that any iteration provides a relatively unique subset of possibilities, which is realized as any number of potential economic regimes. The profusion of different resources means that different commodities become possible and others disappear. Resources that are not to be found within the local environment of the fortress itself can be accessed through trade with other civilizations that do have access to such resources, each of which have their own economic portfolios of relative scarcity. Additionally, the continual

development of the Dwarf Fortress software means that the economic relationships between labor, resources, and production is not fixed but open to continual change into the future. The capacity for the introduction of user-made content means that conditions of economic production is never complete and players can introduce new resources, labors, and products at any time.

The dwarves themselves are an assorted collection of individual actors who have randomly assigned desires and fears and—barring the initial seven you begin with—a wide range of skills and talents that are randomly distributed and often less than useful. The player commands the nexus between the dwarves and the environment and takes the place of a process management orchestrator who can determine a range of general and specific tasks for a set of dwarves to complete. The dwarves possess a level of agency, where they engage in various occupations that can be toggled on and off, and this in turn determines which characters complete which tasks. Dwarves also possess their own desires, goals, relationships, and biological needs, and these act as alternate actions that the dwarves can take.

The game begins in an extremely precarious position—a handful of citizens in the middle of a wilderness. No economy exists as such, and without guidance, the dwarves will eventually perish from starvation and thirst. Autarky, however, can be reached quickly with a modicum of planning, and from that point, the game's key tension is unlikely to remain an internal matter of biological health for the dwarves but of the emotional health of the community. At this point, the player is largely free to attempt any developments the game offers them. The game proscribes no goals and organizes narrative as only an incidental function. The game refuses any form of win condition, and while particular goals and mandates arise within the game, the lack of ability to complete the game means that progress is determined by players' desires to produce their own goals as well as manage the goals of the population they are managing. As such, the game is played until it is lost, which leads to the game's adage that "Losing is fun." It is precisely this loss, this sudden and catastrophic destabilization of a highly internally contingent system, which causes the laboratory's experiment to escape its bounds and come crashing down upon the heads of its occasionally starving—and often desperately insane—dwarven citizenry.

Almost every facet of an individual dwarf is generated randomly. Generic or physical attributes, such as names, appearance, general health, and sex, are drawn from a pool of characteristics that are randomly assigned. The social attributes are more complex: Every member of the community develops social connections with other community members, including friendships, relationships, acquaintances, and religious associations. Furthermore, every individual possess his or her own assortment of economic desires. There is no generic economic preference—each dwarf is unique in terms of their likes and dislikes. For instance, in some cases, these preferences are expressed as a fondness for bronze items, dogs, helmets, a hostility toward blue objects, and so on. This makes for multiply contingent emotional factors in order to maintain the psychic stability of the community.

The emotional state for the dwarven citizenry is far from insignificant. The psychic health of the community is the fulcrum on which the whole economy turns, and once it has become upset, it is almost impossible to recover. Melancholy characters refuse to perform tasks, which in turn prevents the desires of other characters being fulfilled. An upset undertaker will leave the corpses of the dead strewn around the city, imperiling the mental health of those nearby. Farmers who become despondent refuse to produce food crops, and any character that is sufficiently upset will begin a rampage. The spiral downward begins quickly, and the nested chains of dependency between different sectors of the economy means that effects can be quickly felt across the entire psychic environment. This is the hidden element of the game, as it acts as the crux upon which the stability of the economy turns and is therefore the attribute that must be constantly defended. The death of any single character does not pose a problematic loss of labor but rather casts ripples through the emotional health of the community. The dwarves in Dwarf Fortress are truly self-valorizing, and all materialist concerns are internal to the individual, and desire is not contingent on external factors. If any single character is sufficiently distressed by, for instance, the death of a loved one, defeat in battle, failure to produce an artifact during a "strange mood," or exposure too many of their fears or not enough of their desires, then they may be driven insane. Insanity regularly manifests itself in the dwarves as a pathological rampancy, and the insane dwarf immediately attempts to destroy all members of the community that they can find. Whether or not this rampancy can be overcome by the player's management of the community's security apparatuses is moot, as the psychic damage is sufficient to render many of the remaining dwarves into a range of solipsistic or paranoid behaviors, halting the economy in its tracks and often triggering insanity in the rest of the community as well.

How do we understand the role of the player in the game of Dwarf Fortress? The player acts to coordinate resources so as to best serve the psychic requirements of the community. Warding off insanity among the most emotionally precarious dwarves is, for all pragmatic concerns, the only loss condition for the game. To this end, the player is not a transcendent entity who utilizes a hierarchy of command in order to succeed, despite the cues of the strategy games genre (Apperley, 2009, p. 354), they also do not take the role of a "focalizer" for action, such as within character-driven games (Kücklich, 2003) nor are they incorporated directly into the gestural and mimetic acts of the world as in *Cooking Mama* (van Ryn, 2013). Instead the player is the *genius loci* of the community, a deity that develops out of the community itself, which, and I cannot emphasize enough, is expressly not an idea of the transcendent "invisible hand" in any of the myriad permutations drawn from Adam Smith. This position points to the two primary concerns for this article: First, the totally immanent nature of the ordering of the community's labor and resources and second, the lack of a transcendent economic hierarchy leads to a completely free space for the processes of laboratory experimentation.

Experimental Economies

The principle of experimentation allows for the development of new economies either parallel to or beyond capitalism—they allow new economies to be thought and the limitations of ideology to be overcome. Many games, such as those already mentioned, fail to generate space for a new conception of economy. Alternative history games are one space in particular that leads to other experimental routes similar to Dwarf Fortress. As Apperley notes, the capacity that modding grants to video games allows "the player [to use] the game as a tool to create a vision of the world that suits them" (2013, p. 191). While Apperley's perspective highlights how modding allows players to recast historical events within new schemas, modding in itself does not necessarily lead to players to generating genuine experimentation but rather allows them to reassert their ideological position on the nature of what history is or should have been. Equally, Hong interprets the role of historic reappropriation as a part of "pragmatic pillaging of historical, mythical, and ritual elements" from the past (Hong, 2015, p. 36), where the happenstance of history becomes the source book for narrative inspiration, leading to the case where players are able to experience liminal moments—it is within these liminal moments or "liminoids" where players can find space to experiment with history before the moment collapses into a stable and recognizable narrative structure once more. Laboratory spaces such as these are rare and often exceptional because the experimentation needs to arise from a relationship of individuals and resources that are structured without conforming to a preexisting economic archetype. Comparing this to Chapman's analysis of technology in Civilization-style games where the achievement of a new technological hurdle produces new affordances for the empire (Chapman, 2013). Dwarf Fortress, in comparison, has no concept of epistemes, which a culture might transit through. Instead new devices are developed simply as a matter of fortune by drawing existing materials together. Here "fortune" should be understood in the Machiavellian sense of both luck and wealth, and in many cases, it may not be possible to develop certain tools, as the environment may not provide the necessary resources. Dwarf Fortress is valuable to the concept of the laboratory, as its randomized material occurrences are presented as situations to be experienced and dealt with. Finally, laboratories are not indexical to real-world economies and can be engaged in without risk. From there, understanding the role of the laboratory means understanding the manner in which simulated experimentation can be put to a political purpose.

What is a laboratory then? We need to expand the notion of a laboratory beyond a sterile space for examining empirical data in the rationalist scientific mode. The scientific laboratory attempts to constrain events so that they can be understood, and we need to find a space to explode the possibilities of practices. Hardt describes a laboratory as historically being the space of the protest and of activism, but there is no need to limit such experimentation to real-world spaces. The engagement with

experimentation on complex scenarios such as the economy is something that is difficult, and potentially catastrophic, to experiment upon in real-world conditions. We can see this when we look to such tragedies, as the Great Leap Forward that was practiced by the People's Republic of China in the late 1950s or the more recent economic struggles of Zimbabwe as it tested land reform policies. Zimbabwe experienced the greatest inflation in modern times—231 million percent in July 2008—while the People's Republic of China suffered catastrophic and protracted famine over the years 1958–1961. I would argue that Hardt points to the possibilities of experimentation within texts and media when he discusses the radical Italian politics of the 1970s as a model "because it has constituted a kind of laboratory for experimentation in new forms of political thinking that help us to conceive a revolutionary practice in our times" (Hardt, 1996, p. 1). From Hardt's perspective, the laboratory is not a space for locking down and isolating variable for study. It is instead about exploding the possibilities of action and about undermining the expected. To return to work by Lammes, games with a focus on spatial arrangement are ones which "allow users to mix observant roles with subjective and personal experiences of space [. . .] they allow gamers to appropriate spatial practices and make sense of them in their own way" (2008, p. 94). And for Wark, it is the term "gamespace" that best evokes this complicated relationship between the player and the game, and which flattens out all pretense to transcendence. To be in gamespace is to be highly involved in a diegetic reality such that one is invested in its outcome (Wark, 2007). Wark makes the depressing observation that it is quite easy to tie this concept of gamespace back into the life we all live as economic subjects in some great and unknown game. Life is a type of gamespace where we cannot save and cannot win. It is within this mode that we can begin to see that Dwarf Fortress offers a different space to experiment on developing gaming capital not as an individual but as a social unity. Perhaps we are not only seeing dwarves on the playing field of Dwarf Fortress but also our own social experiences. In this light, humanities and the social sciences can seek to avoid their own ideological presuppositions and find worth in new arrangements—including finding the political and philosophical value in video games.

The economies of video games provide a space for symbolic experimentation without the volatility of experimentation in the real. As Lehdonvirta and Castronova suggest, game worlds provide opportunities for experimentation in economic practice without compromising the real wealth or real security of the individuals playing the games (Lehdonvirta & Castronova, 2014, pp. 263–264). By substituting experimentation in the real with experimentation in the symbolic, particular tactics for the organization of economies can be uncovered by those who are immanent to the concerns. The manner in which Dwarf Fortress allows this is by placing the player as an immanent element of the game, whereas many of the other homesteading games simply teach the player new hierarchical methodologies and only allow labor to be subordinate and subjectified.

A Grand Household

Treating the player as *genius loci*—the "community spirit"—provides a particular avenue onto an economic analysis of Dwarf Fortress. Dwarf Fortress, as well as many of the other 'homesteading' games I have mentioned, can be understood as a proper *oikos*, or household, in the Aristotelian sense. This is the case on two fronts. For one, the *oikos* is not the *polis* and is not subject to the conditions of a predefined system of rule that in some cases would be recognized as some form of social contract with a monarch and in others would be recognized as a republican constitution. The *oikos* is a specific relationship of mutual ordering, which, most crucially, is immanent to the relationship between actors, resources, and the laws of the environment. Immanence is not the condition of having no hierarchy but rather the case where every element contributes to the ordering and arrangement of all other elements, and this includes the player. This is the ordering of all by all. This process of ordering is not a predefined thing, and as Aristotle suggests, the nature of the ordering process is unique to every situation within an *oikos* (Aristotle, 1941: 1255 a–b). Which is to say that there are no rules within the *oikos* that are not already a part of the natural order of things. Here, in the case of the game, there are no rules beyond the code that defines the operations or the logic of the environment, and thus it is up to the mutual tensions between the player and the characters as to what arrangements or orders arise out of any individual iteration of play. This means that, following Aristotle, we can see that the economic arrangements that occur in games, such as Dwarf Fortress, are ones that have a unique economic profile at every turn. The unique profile of every individual *oikos* is separate from the polis due to its unique set of rules, which are administrative rather than scientific. This administrative attitude is one that treats all problems as unique, requiring decisions for solutions that are nongeneral and at each point are concerned with their effects on other aspects of the *oikos*. In the case of the *polis*, where all decisions are structured in a transcendent hierarchy, the effects of any solution are only with reference to the maintenance of the hierarchy, whether in the case of retaining the position of the monarch or reinscribing the role of the democratic statesman. A system of governance based in the *polis* can have no space for experimentation because the system is already inscribed on the basis of deference to a predefined set of rules. This is a difference that is not simply quantitative, as Aristotle says, as one would find in imagining the state as simply a household operating on a gargantuan scale, and instead finds itself to be a difference of the nature of rule between *polis* and *oikos*.

Aristotle's framing of the relationship between the master and the slave is effective for understanding the relationship between the player and the dwarven citizenry, provided we reconceptualize the relationship between master and slave under the principles that Aristotle grants them, rather than the understanding received from a Hegelian notion of an absolute dialectic. "That which can foresee by the exercise of mind is by nature intended to be lord and master, and that which can with its body give effect to such foresight is a subject, and by nature a slave"—this is exactly true

in the case of Dwarf Fortress, as the player can have no influence on the effects of the environment except through the coordination of the actions of its citizens (Aristotle, 1941: 1252 a–b). But the relationship between master and slave is one that Aristotle affords a particular responsibility. With reference to the authority granted to the master, ''the abuse of this authority is injurious to both; for the interests [. . .] are the same, and the slave is a part of the master, a living but separated part of his bodily frame'' (Aristotle, 1941: 1255 b). While it is possible to suspend the problems of despotic slavery when one considers video game simulations, the core of the experimentation becomes clear when we consider the player as *genius loci*, as the spirit of the community. Here, the mastery of the player is simply an expression of the mutual ordering that occurs within a plane of immanence.

To understand the internal workings of the *oikos* is difficult because of its innate dissimilarity, and as such, it avoids generalities. ''The *oikos* is not the modern single-family household or simply the extended family but a complex organism composed of heterogeneous elements'' Agamben tells us (2007, p. 17). It is more than ''mere arrangement'' and instead involves attributes of choice, analysis, and thematic patterns in its ordering, the idea of which Agamben elucidates from the pseudo-Longinus who suggests that order needs to account not for one or two key elements but rather ''from the whole texture of the composition'' (2007, pp. 19–20). Dwarf Fortress, unlike most video games, allows for economic experimentation through its lack of a polis, and the production of unique economic scenarios at every turn—each one requiring a novel or uniquely inventive method for resolving the continual challenges posed by the plane of immanence.

The idea of *oikos* is not without its detractors—Arendt, for instance, describes the *oikos* as a frame for the development of ''sheer life'' and suggests that it is only by the movement from the household to the city—that is, from *oikos* to *polis*—that one may move from pure biological existence to the discovery of the philosophical ''good life'' (Arendt, 1958, pp. 36–37). Arendt is a compelling thinker, and her point stands on its own; however, the issue that the process of experimentation seeks to solve is one that is framed in relation to the precise problems that exist within the institutionalization of the polis as suffused with the problems of capitalism.

In order to prove this thesis on the *oikos*, one has only to look to the role granted to the player in any of the games with a homesteading element, or to the broader category of strategy games overall. The characteristic game of the home is The Sims. While the game does illustrate a particular vision of the *oikos*, it fails to fulfill the categories I have provided for three reasons. One, the player is not incorporated into the struggles of the game's characters. Two, the household economy is subject to an external economy. Three, the environment starts under the same conditions in almost every instance.

In the first case, the role granted to the player is not external to the conditions of play. That is to say, the nature of the environment is not contingent on the characters' involvement in the environment—simply having money allows any player of The Sims to change the shape of the house and thus the nature of the

characters' existence. In the second case, the player is not granted access to real economic experimentation. The player's engagement with the game is simply the management of the characters' lives between working hours. The characters themselves are certainly not separate from a logic of capitalism, and every action or improvement that the characters have centers on their capacity to act in a capitalistic workspace. This does not allow for economic experimentation but rather pushes the logic of capitalism onto the *oikos*. Furthermore, the player either has control of the desires of the individuals or else can satisfy all characters with the same systems—for instance simply deploying objects with a high density of "value" around the home spaces (as any player versed in the utility of fishtanks within The Sims will be aware). The characters do not allow for economic experimentation because their emotional portfolio is generic. In the last case, the point of departure remains the same for all players. The lack of change in versions of the game software, or of the economic resources to hand, means that the player is not granted an explosion of possibilities that would otherwise make The Sims a genuine economic laboratory. Indeed, all economic resources are rendered in the absolute generic of the money commodity, in the form of "simoleons." No networks of trade are required, as wealth is transformed "as if by magic" into whatever commodity is needed at hand: Food and drink simply appear out of whatever receptacle they are supposedly housed in, and an appropriate amount is deducted from the player's limited wealth. The common thread that follows from Aristotle, Arendt, and Agamben is the understanding of the social body as ontologically democratic. Judith Butler describes this trend in Arendt's work as "a social ontology without which no exercise of freedom and no claim to rights is finally possible"; Butler continues by noting that "Sociality is both the precondition of the legitimate exercise of rights, but also the effect of that very exercise" (Butler, 2010, p. 158). The player is not the spirit of feudalism, the spirit of capitalism, or the spirit of governance but rather the spirit of the reflected and simulated sociality of a population that only exists in the screen. There is no *polis* because there is nothing beyond the organization of the *oikos*.

Other games show the same division between *oikos* and *polis* or between the generic and the laboratory. In many of the homesteading games, the application of Aristotelian principles of *oikos* and *oikonomia* are much more easily applied than in the case of Dwarf Fortress. For instance, Aristotle's conceptualization of the *oikos* is more developed than simply containing a "despotic" relationship of master and slave, but, as Agamben describes them, it also includes the authority of the "paternal" relationship of father to son and also the "gamic" relationship between husband and wife. Many games with a homesteading element allow for the introduction of these types of relationship but because they are generally a larger part of a generic narrative then the capacity for experimentation is lacking—for example, games within the Mass Effect series generally have a linear relationship between narrative and the player's economic interactions. They may, in some cases, be more illustrative, but this greater parallel between a homestead and an *oikos* is a

relatively uninteresting narrative comparison, as the core of radical economic possibilities is generally absent.

The Political Economy of Dwarf Fortress

Dwarf Fortress does not only simply allow the presentation of alternative economic models to capitalism but is itself produced within a different economic system. It begins already outside an exchange economy. Dwarf Fortress is not burdened by a reliance on a capitalist model of production in order to reproduce itself, as it is free and cannot be purchased. Instead, the developer, Tarn Adams, and his brother sell illustrations, drawn in crayon on their grandmother's table (Weiner, 2011). The sales of these illustrations provide the conditions of reproduction for Adams and allow him to provide Dwarf Fortress for free. Dwarf Fortress is, as already stated, subject to constant ''versioning'' and is far from being a finished product. Because it lacks the prescription of a capitalist exchange paradigm in its origins, it has also lacked a commercial paradigm in its production. It is, itself, produced within an *oikos* of its own, where Adams lives purely off donations from players. Adams has stated that he has refused a lucrative programming job as well as offers of licensing for Dwarf Fortress. While this likely means that Dwarf Fortress is incompletely free of the ideological functions of capitalism (the game did briefly include a version where currency was introduced—the dwarves apparently didn't know what to do with it as it served no practical use) it still possesses the capacity to contest dominant myths about economies. As such, Dwarf Fortress is part of a long history of games which take on a radical or activist approach to political, ideological, and economic factors, as myself and others have noted in the past (Cassar, 2013; Fordyce & van Ryn, 2014). In particular, the processing requirements for games of Dwarf Fortress vary wildly depending on user preferences, meaning that the game is not a substantial part of the push for cycles of enforced obsolescence that drives the despoliation and military conflicts of the Democratic Republic of the Congo (Dyer-Witheford & de Peuter, 2009, pp. 222–224). The *New York Times* interview also notes the noncommercial nature of the project has brought a great deal of interest from professional developers - from another perspective this suggests that Dwarf Fortress' experimental production has itself produced the experiments necessary for influencing the development of games such as The Sims 3, World of Warcraft, and Minecraft.

Situated at the peripheries of capitalism, Dwarf Fortress combines the laboratory with the household and produces a space that allows for radical new economic arrangements without falling into the despotism of hierarchy-driven authority. It both contains economic experiments, and is an experiment in itself. If we share the faith that those like Frederic Jameson, Michael Hardt, and Antonio Negri have in the postmodernization of industry allowing for new resistances, then the effect of cultural products such as Dwarf Fortress could not only act as interventions in new

economic thought, but also could stage itself as a stepping stone toward the use of computers in the social intervention in the organization of societies.

Conclusion

The treatment of Dwarf Fortress as a mechanism of economic experimentation points to a way in which players can engage with genuine economic variations. Dwarf Fortress is by no means perfect in this regard nor the only game to do this, however, it does provide a wide range of variables and tensions while retaining a simulation of a vibrant social community. Simply by being able to "think past capitalism" without an authoritarian air means that the game provides something of an antidote to the hegemony of capitalist economic thought and hints to the production of a social idea of alternative economies without a need for violent revolution. While the game still submits the body of the player and the programmer to the routinized nonergonomics of all computer-based work and it still has its own cycles of consumption and demand, it allows players to break the mold of the economic theories such as the "double coincidence of wants" that David Graeber charts as ghettoizing noncapitalist or barter economies (Graeber, 2011, p. 36), namely, the theory that assumes that societies without money are societies without effective economies. This task is a small subset of a much larger picture, which video games can contribute to: That is, when the many *oikonomia* can move from their existence as multiple isolated economies into an inclusive ecology of practices.

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Author Biography

Robbie Fordyce is a research fellow for the Melbourne Network Society Institute at the University of Melbourne as well as for the Australian Communications Consumer Action Network, specializing in social research into 3-D printing. He is also a research assistant to the Australian Research Council project "Avatars and Identity" for video games. His primary research interests are 3-D printing, activism under globalization, and the study of video games. He has previously been published in *Ephemera*, the *Journal of Peer Production*, and *Asia Pacific Media Educator*.