BurgerTime: A Proceduralist Investigation

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ABSTRACT
This paper explores the foundations and implications of interpreting videogames as representational procedural artifacts. Where our previous work established a method of *proceduralist readings*, close readings of videogames that emphasize the representational power of a game's rules, to interpret videogames intentionally authored to represent, this study attempts to apply the method to a game was not: the classic arcade game *BurgerTime*. Interpreting *BurgerTime* provided a challenge to the proceduralist perspective that required investigating its outer limits and assumptions. In the end, a comprehensive reading is achieved by considering the gameplay of expert players: those who understand the rules of a game the most.

Keywords
Videogame interpretation, procedural rhetoric

INTRODUCTION
Designers, players and theorists all advocate that games are *meaningful*. What exactly is meant by this is a subject of some dispute, but that is to be expected as meaning itself has been a subject of philosophical controversy throughout history. There are many ways that a videogame can be interpreted, or said to mean. Approaches involve academic disciplines spanning from game studies itself to film studies**,** sociology, psychology and others.

While these perspectives are illuminating and important, some believe that these perspectives too often ignore, or underemphasize, interactivity, an essential element of videogames. Specifically, processes and rules are often unacknowledged. As one example, Kennedy's discussion of *Tomb Raider* primarily discusses the game's relationship to issues of feminism that result from the game's visuals (Kennedy, 2002). While perspectives like this are certainly valuable and help us understand how *Tomb Raider* functions in culture, it does not help us understand *Tomb Raider* as a procedural artifact.

Bogost describes a game's procedural meaning as its *procedural rhetoric* (Bogost, 2007). The most ready examples of procedural rhetoric are found in simulation games like *SimCity*. To play *SimCity* well is to act in accordance with its procedural assertions about the workings of cities and societies. The procedural meaning of *SimCity* consists of its rules.

However, procedural rhetoric is often misused and misunderstood (Treanor, 2009). There are many reasons for this. For one, most designers do not seem to consider the procedural

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rhetoric of their games and those who do are exploring new territory. Also players, which for the most part have had a youth full of literature classes, are unequipped to recognize procedural meaning as it takes place within a dynamic system, rather than in a static text, as in literature and film.

There are some designers who intentionally set out to create procedural meaning in games that can be said to be part of a *proceduralist* movement (Bogost, 2009). Interpreting proceduralist games involves carefully taking the system's rules and dynamics into consideration. In previous work, a framework for performing *proceduralist reading*s was presented which demonstrated how a videogame's rules, dynamics, thematic mappings (visuals), along with the interpreter's aesthetic and cultural assumptions can be synthesized to form an interpretation. Through this framework, interpretations are understood and justified via *meaning derivations*: hierarchical arguments about the meanings of a game that strive to take as much of the game as possible into consideration (Treanor, Schweizer, Bogost, & Mateas, 2011) (figure 1).

The mathematical proof-like structure of meaning derivations is necessitated by the systematic nature of videogames. Without carefully establishing assumptions and relationships between components of an interactive system, and what role they play in a proposed meaning, it is easy to create selective interpretations that do not stand up to scrutiny and thus do not help us understand how to make better procedural rhetoric or in general help us to understand our medium better. One such example is Poole's claim that *Pac-Man* is a game about rampant consumerism in America based on the player's goal of relentlessly collecting dots in a seemingly endless pursuit of points (Poole, 2000). With meaning derivations, interpretations such as these are shown to not carry much weight by pointing out facts about the game that do not support the claimed meaning. In this case, among other things, the interpretation does not adequately explain the role of the ghosts that chase the player. Furthermore, one of the game's key mechanics, that upon colliding with the larger dots (the *power pellets*), the power shifts and ghosts are sent running from the player who can now collide with them for points, is ignored.

Even if these mechanics were addressed in Poole's argument, a proceduralist reading carries little weight if it does not address the visuals, dynamics, theme and aesthetics of a

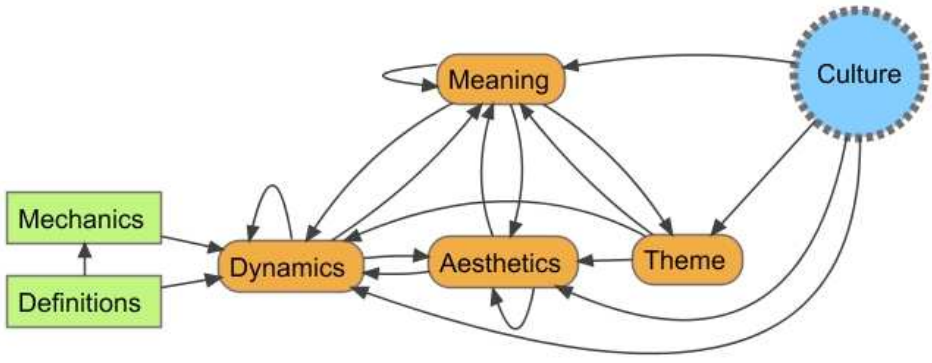

Figure 1. In a meaning derivation, meaning is formed by the synthesis of observations pertaining to dynamics, theme (visuals) and aesthetics. All of which *ground out* in the game's mechanics and the interpreter's cultural assumptions.

game. What does it mean that most players of *Pac Man* enact a dynamic where they let the ghosts get very near them before they eat the big dots to ensure that they can consume as many ghosts as possible while the power pellet power up is in effect? Also, that the enemies are themed as ghosts, along with the cultural associations that ghosts carry, should not be ignored. Poole's interpretation does not address the thematic mappings of *Pac Man*. In previous work on interpreting *Kaboom!* (Activision, 1981) it was shown that thematic mappings alone are crucial in establishing meaning in what would otherwise be a meaningless abstract game. By simply applying different thematic mappings, it was shown that *Kaboom!* can be about protection, rescuing, stealing, competing, and many other concepts (Treanor, Mateas, & Wardrip-Fruin, 2010). Similarly, the abstract *feelings* and subjective judgments that result from being chased through a maze, the aesthetics, are facts that are interpretable. A meaning derivation is where the possibly limitless observable aspects of a game with meaning potential are threaded together into comprehensive and rigorous arguments for a meaning.

The rigid and limited scope of the components considered in a proceduralist meaning derivation is inspired by the process of game design. A game designer can manipulate the rules, dynamics, theme and aesthetics of a game in the process of trying to represent a meaning. Other potential components, such as how players subvert the game's rules, are not considered as these are not aspects that a designer can directly control. For example, dynamics formed by goals other than the game's stated goals are not usually considered. Likewise, meaning derivations are not used to argue for a game's meaning within a culture or society. For example, that a game is played by one minority over another, or how a game influences culture, is not considered. Proceduralist readings are somewhat analogous to *close readings* in literary analysis that privilege the game's mechanics. However, unlike close readings, proceduralist readings strive for comprehensiveness and consistency. Obvious observations about a game should not be overlooked or omitted from consideration without reason and all assumptions and interpretations that contribute to a proposed meaning should not contradict one another. In general, a proceduralist reading is a convincing and logical argument for an interpretation that emphasizes the materiality of a videogame: its processes.

Of course, a game with a convincing proceduralist reading does not guarantee that it will always be interpreted in that way by everyone. Though, a proceduralist reading would provide the means to nail down any points of disagreement between interpreters, as all assumptions and components of a claimed meaning are clearly stated. Convincing meaning derivations may have nothing to do with the author's intent. This is partially because relatively few, outside of newsgame and artgame designers, consider processes as a representational component for authorial expression, and also because procedural systems, with their emergent dynamics and the non-visual nature of code, cannot be said to mean any *one* thing. Anything said about a computer program can be understood as a metaphorical narration of its abstract processes (Agre, 1997). In other words, any claim that a game means something is only as strong as the argument that supports it.

The proceduralist approach toward videogame interpretation has been shown to be a promising perspective for understanding the arguably unique way that games can produce meaning. However, the implications and foundations of this approach have not yet been fully explored. This paper reports the difficulties and discoveries experienced by performing a proceduralist reading on a very peculiar game: *BurgerTime* (Data East 1982). In interpreting this game, which was almost certainly never intended to be the subject of a close reading, the proceduralist perspective faced many challenges. If the

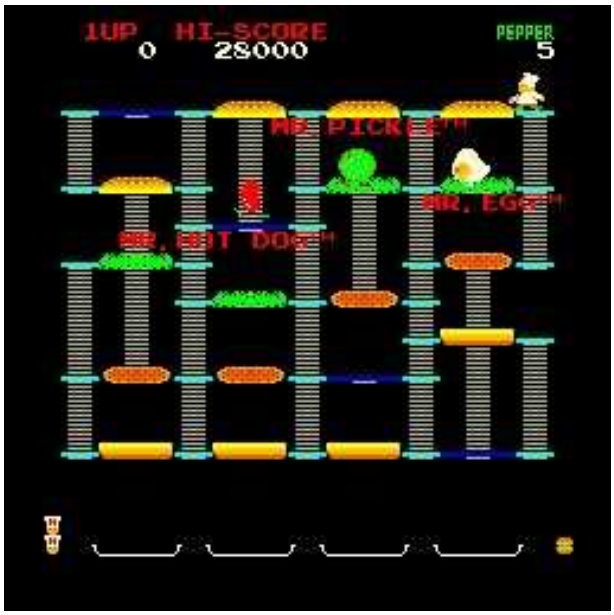

Figure 2. A screenshot from *BurgerTime* that shows the chef (top right), the plates (across the bottom), the burger parts (stacked vertically on platforms above the plates), and the enemy foods (labeled).

rules and mechanics of a game can be interpreted as representations, what happens when a game is interpreted that seems to not have any meaning? These following attempts to interpret *BurgerTime* shed light on the implications of the proceduralist perspective and ultimately reaffirm the proceduralist assumption that a game's rules are pivotal in forming its meaning.

READING BURGERTIME

BurgerTime (figure 2) is a 1982 arcade game created by *Data East* that is still found in many arcades. Like other arcade games from that era, it is a 2D platformer structured as a series of levels with the overall goals being to advance through levels and achieve the highest score possible. Each level contains different arrangements of staggered platforms with ladders connecting platforms on different vertical layers. The player controls the movement of a chef being chased by pickles, eggs and hot dogs. Upon colliding with any of these three foods, the chef falls over and the player loses a life. To help prevent this from happening, the player has a limited ability to direct clouds of pepper which momentarily stun these enemies. Occasionally, stationary icons of French fries, ice cream or coffee appear on the game board which replenish the chef's supply of peppers.

What makes *BurgerTime* stand apart from other classic arcade platformers is found in each level's goal. Placed throughout the level are plates. On the platforms directly above each plate are various layers of burgers: buns, patties, tomatoes and lettuce. When the chef runs across the entirety of one of these *burger parts*, it falls to the platform below the one it was resting on. If there is a burger part on a platform directly below a falling burger part, both fall to the next platform, creating a cascading effect. When all of the burger parts fall on to all the plates below them, the player moves on to the next level, which contains different arrangement of platforms and burger parts.

Below are a few attempts at making sense of *BurgerTime* and its rules, dynamics, theme and aesthetics. The meaning derivations will not be as formal as in previous work (Treanor, Schweizer, Bogost, & Mateas, 2011). This is partly for the sake of brevity and partly because the meanings proposed will not be strong enough to warrant the rigor.

Broad Strokes

Given that the goals are to complete levels and get a high score, and that forming all burger parts into complete burgers progresses the player to the next level, it is reasonable to assume that the player will attempt to run across the tops of all of the burger parts on the game board. Given that the player's avatar is themed as a chef and that the parts that are formed into burgers are themed as buns, tomatoes, lettuce and beef patties, it might be said that *BurgerTime* is a game about a chef preparing burgers.

To believe this meaning, the interpreter must accept the metaphor that running across the tops of burger parts is analogous to cooking or preparing the food. This metaphor is supported by the thematic mappings of the game as chefs are known to cook, and the various burger parts are the sort of thing that a chef would work with to create an entree: a burger. Furthermore, the relatively bland, or themelessness, of the game board's platforms and ladders can be treated as merely supporting the ludic metaphor, and thus can be rendered as invisible to the interpreter. Additionally, there is a thematic consideration in that the only means the chef has to collide with burger parts is to run over the top of them. Because of the unsanitary cultural associations with feet, it could be claimed that the game is about a chef preparing burgers in an unsanitary way.

However, this interpretation can be accused of employing the same sort of *selective* interpretation as Poole's *Pac Man* interpretation. The reading does not hold once more of the game is taken into consideration. Particularly, all considerations pertaining to the game's enemies are omitted and unaccounted for. If the chef's contact with burger parts is supposed to be understood as a metaphor for cooking, why does contact with the hot dogs, pickles and eggs cause the chef to look unhappy and the player to lose a life?

Breaking Out the Shoehorn

One might argue that the chef is only *supposed* to be preparing burgers, as if some undepicted customer ordered a burger and not a hot dog. To touch (cook) any other food would be a waste of time as the chef would not be preparing what was ordered. This interpretation relies on many assumptions about the game's diegesis that are hardly even hinted at and it is thus an unconvincing meaning argument. Furthermore, it still doesn't address the antagonistic *behavior* of the enemy foods. Why do they try so hard to make the chef collide with them?

The following interpretation attempts to avoid such large leaps in reasoning while still trying to take a more comprehensive consideration of the game. Given that collisions between the chef and hot dogs, pickles and eggs causes the player to lose a life, it can be expected that players will avoid collision with these enemy foods. This and the movement behaviors that have the enemy foods follow the chef's movements bring an anthropomorphic sense to the enemy foods. It *feels* like the enemies do not like the chef and thus do not want him to be successful. Because the chef is trying to prepare burgers, and the enemy foods do not want him to be successful, perhaps they do not *want* the burgers to be made.

Given that hamburgers, hot dogs, pickles and eggs are all popular American foods, one might argue that the enemy foods are competing with the hamburger for the chef's attention and thus their ability to fulfill a prepared item of food's purpose: to be eaten. Thus *BurgerTime* could be a game about the ubiquitous nature of the burger, and how other *neglected* foods must compete for their *plate share*. This (quite large) interpretive leap introduces questions such as why the enemy foods are volitional where the burgers lay still waiting to be prepared. While we could potentially conjure up answers to this question, the assumptions required to get to this point were perhaps already too unreasonable. Furthermore, much of the game is still left unacknowledged. Given this context, how does it make sense that pepper slows the competing foods? Why does colliding with the French fries give the chef more opportunities to bail himself out with these peppers? Why is it so hard for the chef to escape?

Now What?

The above two attempts seem to confirm the intuition that *BurgerTime* is a nonsensical game. Of course this isn't surprising. The game was even advertised by emphasizing its absurdities:

> Your job is to climb up the ladders and assemble an order of giant hamburgers. But you've got to do it fast because you're being chased by killer hot dogs, sour pickles and a very nasty fried egg. Good thing you've got your pepper shaker. One shake and they're stunned. But just make sure you don't run out of pepper. Because you know what happens then. You stop making lunch. And you start becoming it!

This description of the game makes no attempt to rationalize the peppers and even highlights the game's *ludonarrative dissonance* (Hocking, 2007). In fact, the game itself almost appears to exist as a celebration of nonsense given its obscure subject matter and seemingly unrelated gameplay.

However, as shown above, aspects of this game do lend themselves to its theme. A chef is someone who manipulates food into becoming more desirable forms of food. Likewise, *BurgerTime* also has the player take action to bring items of food that are not typically eaten individually, into a whole, or complete, item of food. Regardless of the other disharmonious mechanics and themes, it seems reasonable to say that at least this relationship will *shine though* to players.

At this point, it could be that the only reasonable interpretation (i.e. one that many interpreters would agree on) is that the game is simply a poorly executed and incoherent representation of a chef cooking burgers. The following sections will demonstrate what was learned by forging forward in spite of this suspicion. By investigating *why* a more comprehensive interpretation does not seem possible, the limits of the proceduralist perspective are expanded.

COHERENCE, ROLES AND MEANING DERIVATIONS

The following section investigates the differences in function of interpretable observations, as well as the philosophical roots of meaning derivations. Through this deeper understanding of the proceduralist perspective, a way forward for a comprehensive interpretation is revealed.

Dealing with Incoherence

As with all media artifacts, interpretations of *BurgerTime* will vary between interpreters. Even when socio-cultural considerations are treated as constant (i.e. a specific context is assumed), interpretations can vary wildly depending on where one focuses one's attention. If one solely considers the movement of *BurgerTime's* chef through the level, an easy argument could be made that the game is a representation of a chef running around and climbing ladders. Obvious observations such as these are taken for granted by most, but we should not forget that moving pixels on a screen are merely representations. In this case, the movement of an animated image of a chef running, moving along the top of a narrow stationary box (the platform) is understood as a representation of a chef running. Even in accepting this reasonable interpretation, one must omit violations of expectations ranging from why the platforms are seemingly suspended in midair to why the chef cannot move in three dimensions (as one would reasonably expect a *real* chef to be able to move).

For most, these minor departures from reality are not a problem. This is in part because the history of visual culture has prepared us to accept abstract images of humans moving as a metaphorical representation of their real world movement and also because the operational logics that underlie most classic arcade games are well suited for representing real world movement and collision by the nature of their spatial simulation (Mateas & Wardrip-Fruin, 2009). The aspects of *BurgerTime* that do not support the representation of a chef running, such as the floating platforms, are not likely considered to be significant enough to factor into interpretations and most don't even notice them. These incoherent aspects are what *support* the higher level metaphors that the overall meanings are derived from. When it isn't clear where incoherent aspects of a game contribute to a coherent aspect, the interpretation loses its strength. For example, the attempt at interpreting *BurgerTime* as being about a competition between burgers and other foods became unbelievable because too many observations, such as why pepper *protected* the chef, did not contribute to the claimed interpretation.

As evidenced by the first, more modest, interpretation that *BurgerTime* is a game about preparing burgers, it is also possible that supporting metaphors are not always consistent. Where collisions between the chef and burger parts are in some cases understood as cooking, in other cases collision with the enemy foods causes the player to lose a life. Likewise, when the chef is standing on a platform (colliding with it), it doesn't make sense to think that he is preparing or *cooking* the platform and most wouldn't interpret it in that way. Thus, it cannot be the case that collision with the chef can always be a metaphor for cooking. Interpreters are willing to accept a certain degree of metaphorical inconsistency and detracting considerations that support metaphors that do contribute to the overall meaning. Just how much an interpreter is willing to accept depends on the individual, the game and the particular interpretation.

That procedural metaphors may be constructed out of aspects that do not necessarily support the overall meaning and need not *always* be applied consistently allows us to revisit the apparent roadblocks in our previous attempts at interpreting *BurgerTime*. However, before this can be undergone, an exploration of the philosophical roots of meaning derivations will be presented to give direction toward a new interpretation.

Interpreting the Language of Videogames

A videogame can be understood as having a language. This perspective is alluded to in Crawford's notion that interactive systems are comprised of a *listen/think/speak loop*

(Crawford, 2003). A system listens and thinks when its state is modified by player interaction. How the system presents this change to the player is how a game speaks to its player. Making sure that games listen and speak clearly is a top priority of most game designers. Typically, this sentiment only applies to making the ludic aspects of the loop unambiguous. For example, a designer would certainly want to make clear to a player of *BurgerTime* how to control the chef's movement (with the left and right directions of the joystick), and that upon colliding with a hot dog, the player loses a life.

Different than considering the ways that a game speaks about its internal state, it is useful for this discussion to consider how a game communicates what it is trying to represent. Our conception of a player is not solely trying to understand how to play the game, but he is also an interpreter trying to answer the question *what does the game mean?* And the system is *trying* to tell him. This player/interpreter collects observations and attempts to make sense of them. The game's utterances take the form of the components of a proceduralist reading: mechanics, dynamics, thematic mappings and aesthetics.

Given this, Wittgenstein's concept of the language-game can shed light on how an interpreter makes sense of his observations. In a language game, meaning is dependent on context and ultimately determined by how the utterances are *used* (Wittgenstein, 1953). Much like how a move in Chess does not hold any sense outside of the context of a game of Chess, communicative acts only make sense in the context of a rule governed activity – a language game. Wittgenstein describes a particular language game, in which when person A says the name of some object, person B will find the object referenced by that word and hand it to person A. The meaning of person A's words are not found in the words themselves, but in the context of the rules that govern the exchange. For example, the command language enacts a rule where when person A says a single word, person B is to find the object the word references and hand it to him.

As an outside observer, interpreting the actions of person A and B is only possible once one has discovered the rules that they are enacting. In this particular example, this requires identifying the two roles, commander and assistant, as well as the way that the commander's words are to be interpreted - as short hand for "find the object referenced by my word, and bring it to me." Only at this point, can the actions of persons A and B make sense. In other words, to interpret person A's words as commands for person B to hand him objects, presupposes our ability to understand his words as being used in that way.

Does this mean that an interpretation of *BurgerTime* that claims that it is about cooking burgers presuppose the ability to understand it as being about cooking burgers? In some ways, this is precisely what is stated in the attempted meaning derivation above. Assuming that a chef's primary purpose is to cook, that burger parts are made complete when formed into a complete burger and that the chef's actions (collision), cause this to be the case, allows us to understand his actions as cooking the burgers. Just as one could not understand person A and B's actions without understanding the language game they were engaged in, without an understanding of the *roles* and rules outline above, *BurgerTime* cannot be interpreted.

Many videogames signal the roles and rules for interpretation before the game even begins. For example, understanding the abstract artgame, *The Marriage* (Humble, 2007) would be near impossible if the game were not titled *The Marriage*. For most, the title alone immediately sets expectations about two humans involved in a romantic

relationship. Once the game begins, the player sees a blue and pink square, which clearly establishes that the two squares are meant to represent the two humans, as well as their gender. From this point of departure, the player can investigate the mechanics of the game, utilizing cultural assumptions about scale and transparency, to interpret the game's meaning.

The problem with *BurgerTime* is that the roles are not so well established. The title tells us little beyond that the game will involve burgers *now*. This insight is confirmed the moment the game begins, by the prevalence of the burger parts. Like *The Marriage*, the game also establishes roles by its visuals. The presence of a chef sets up the expectation that he might cook food. The presence of food all around the game board appears to confirm this expectation but, as discussed above, the game complicates this by having mechanics that cause some foods to be the player's enemy.

Like Wittgenstein's command language, understanding *BurgerTime* requires us to have a preexisting idea of *how* the game's utterances are to be interpreted. Thus, our inability to comprehensively interpret *BurgerTime* is not necessarily indicative of the game having no comprehensive meaning, but it could be that we simply do not understand the rules of the game *enough.*

A WAY FORWARD

That some aspects of a game can support the metaphors that build meaning, despite seemingly working against it, allows us to second guess our assumption of the role that the enemy foods are to play in the game's meaning. Rather than interpreting the chef's collisions with the various enemy foods as incoherent, given the assumption that collision with burger parts represents cooking, it is possible that the behavior and rules that send the player running from the enemy foods can *support* metaphors rather than represent themselves. And as discussed above, it may just be the case that we have yet to consider, or presuppose, the correct framing from which *BurgerTime* can make sense.

A possible solution to the problem of how to interpret the hot dogs, pickles and eggs can be found in the same place the problem came from: the game's rules. The following section describes how expert BurgerTime players understand the game in order to provide perspectives from which new framings can be considered. Finally, a comprehensive proceduralist reading of *BurgerTime* is proposed.

Learning from the Pros

On September 19th 2008, Bryan Wagner earned the world's highest score for *BurgerTime* on an arcade machine, with a score of 11,512,500 points**.** In an interview alongside *Mappy* (Namco, 1983) world record holder Greg Bond, Wagner describes that the most important part of getting a high score on *BurgerTime* is to create *tight groupings* of the enemy foods (Tuttle, 2008). By this, he means to manipulate the enemy foods into moving as a single entity by exploiting their chasing behavior. To group the enemies, the player can use peppers to stun an enemy, wait for another enemy to overlap with the stunned enemy and then use another pepper. Once the enemies start moving again, they will be moving as one entity (figure 3).

The interview also states that once the enemies are grouped, a strategy referred to as *dropping* becomes the best way to get the highest number of points. If an enemy is standing on a burger part as the chef finishes running across the entirety of the same part, the enemy will fall along with the burger part to the platforms below until the burger part

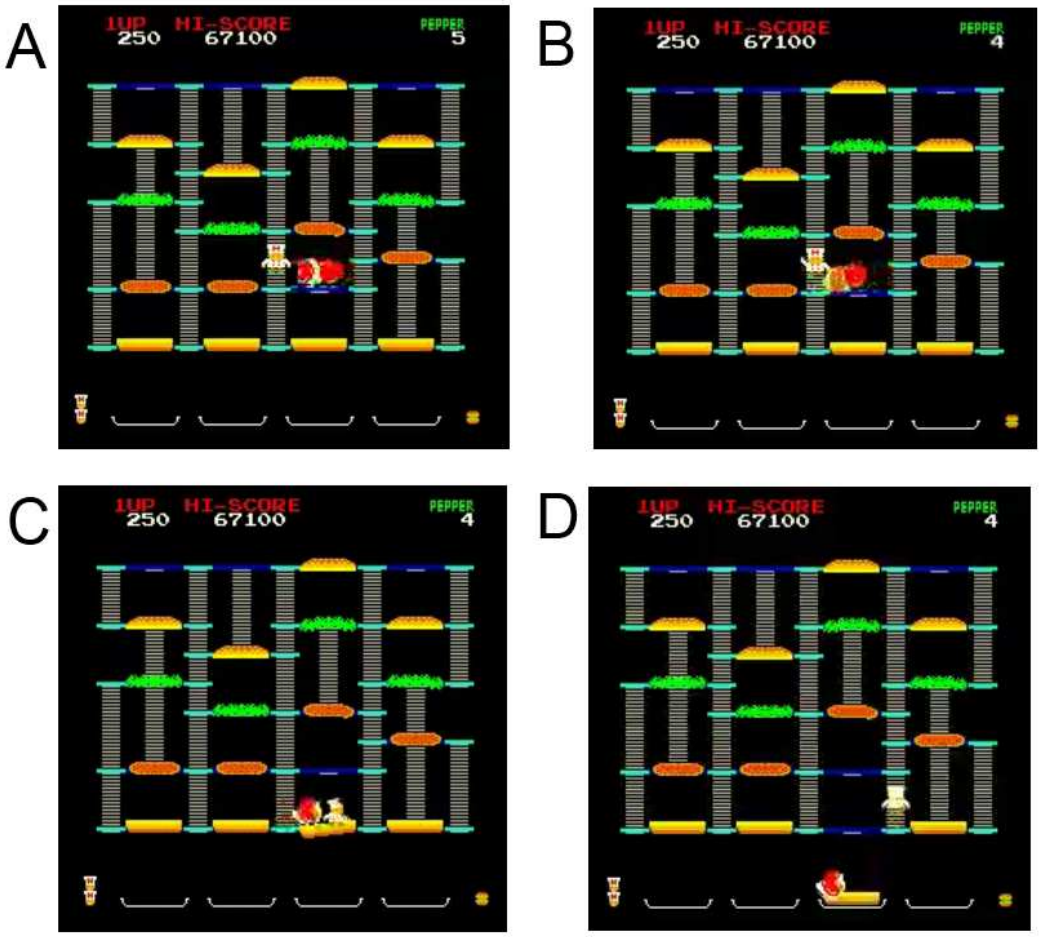

Figure 3. A and B demonstrate how a loosely packed group is made into a tight pack with peppers. C and D show how a tightly packed group can be dropped to a plate.

and enemy land on a plate and a large number of points are awarded. Doing this when the enemies are grouped awards points for each enemy in the group (figure 3).

The tightness of groups is important for both leading the group toward the burger part that the player is going to attempt to drop, as well as to make it possible for the group and the chef to be standing on the burger part simultaneously, even if momentarily, without the group colliding with the chef. In the interview with Wagner, Bond describes how unstable the groupings are "When you make a drop on *BurgerTime*, the last thing you want to do is celebrate… because they're watching you…" (Tuttle, 2008). By this, Bond is expressing the precarious nature of a group's cohesion. The only thing holding a group of enemies together, from not taking different paths from one another, is the player's precise understanding of the way they chase the chef. Because of this, even when the group *looks* tightly packed, and the player is about to drop the group, the player must still diligently monitor the way that they move the chef. One wrong move and the group will split, and with that the player throws away "a whole lot of points, and a whole lot of peppers (Tuttle, 2008)."

Figure 4. *BurgerTime's* world high score holder, Bryan Wagner (left), *Mappy* high score holder, Greg Bond (right bottom), and J.D Lowe, online *BurgerTime* evangelist (right top).

J.D. Lowe, another *BurgerTime* expert, posts his strategies for creating groupings for particular levels on his website for people to learn from (Lowe). He demonstrates that to create a grouping with all of the enemies on the game board requires diligent practice and a careful plan. His advice is to learn his strategies to begin with, then to eventually discover your own patterns for grouping. "Improvising while playing the game is what will make you a better player."

A (somewhat) Reasonable Comprehensive Reading

These expert perspectives enable new ways of understanding *BurgerTime*. Particularly, the enemy foods can be seen as assets, rather than enemies, as their antagonistic behavior enables opportunities to achieve the highest scores. Expert players of *BurgerTime* are not running from the enemy foods, instead they are leading them together into groups and onto burger parts. Also, the fact that the hot dogs, pickles and eggs are dropped onto the burger parts resting on the plate, where they disappear and award the player points, becomes of relevance for interpretation, as creating this situation becomes the focus of gameplay.

When interpreted in light of the game's theme of a chef preparing food, these new considerations finally provide a lens from which we can make *some* sense of the game. Creating groups, using *just the right amount* (not too much) pepper, can be interpreted as the *mixing* of ingredients. The dropping of these concoctions onto the plate can be seen as *seasoning* the burger with the mixture. The necessary patterns to group the enemy foods might be interpreted as *recipes*.

The two types of cooking presented, the assembling of the burger and the seasoning, are presented in ways that contribute to the interpretation. The assembling of the burger

requires that the player methodically collide with each part, and can thus be argued as analogous to the craft of a *cook*. The seasoning, with its free form, artful and improvisational nature is more analogous to the art of being a *chef*.

To believe this interpretation requires that one understands the enemy status of the foods as supporting the metaphors that enable it. Their chasing behavior, and the fact that collisions cause the player to lose a life, must be seen working in the service of giving the player the ability to mix the foods into groups. The fact that collisions with enemy foods cause the player to lose a life has no place in this interpretation. However, if the collisions did not cause the player to lose a life, the player would only need to *not* move the chef and the foods would group on top of him. If this was the case, the game could not be said to be about the relationship between the artful seasoning of burgers and the tactile craft of assembling of buns, beef patties, tomatoes and lettuce.

CONCLUSION

This study attempted many approaches at performing a proceduralist interpretation on a game that didn't make it easy. Where previous work focused on games that were created to be interpreted (Treanor, Mateas, & Wardrip-Fruin, 2010; Treanor, Schweizer, Bogost, & Mateas, 2011), by looking at *BurgerTime*, the proceduralist perspective faced many challenges that ultimately furthered our understanding and ability to perform proceduralist readings. Particularly, the insights that many, possibly contradictory, levels of metaphor at work simultaneously when a game produces representational meaning, along with the concept that to understand a game requires the presupposition of the *rules* of interpretation, inspired us to find the proceduralist reading for *BurgerTime* described above.

The proceduralist method is currently being used for an in-development videogame design assistant tool for journalists to create newsgames: *The Cartoonist*. In order to generate videogames that carry meaning, it is necessary to have very detailed and formal models for exactly how a game carries meaning. The lessons learned in this study have greatly influenced the computational models that underlie this meaningful game generation system. Furthermore, that the comprehensive proceduralist reading we were able to find required the knowledge of an expert level player has far reaching, and unexplored, implications to the ideas of procedural rhetoric and procedural literacy.

The observations and experiences of Wagner, Bond and Lowe can be compared to works from film studies which describe the *experience* of watching film. These foundational texts in film studies, such as Balasz' detailed discussion of the close-up shot (Balazs, 1970), have greatly influenced scholarship on film and it seems as though texts of these sorts should be foundational to game studies as well. However, beyond Sudnow's detailed account of becoming an expert at the classic game *Breakout* (Sudnow, 1983), little work has been done in exploring the implications of rules as the player learns to understand them *deeply*. We hope to motivate future work in game studies in this area by demonstrating possible applications of this sort of knowledge toward interpretation and representation.

Finally, while our proposed interpretation of *BurgerTime* may not stand up to heavy scrutiny, we hope that it exemplifies how the proceduralist perspective can yield unexpected and meaningful results. As shown, when an interpreter or designer *really* takes the rules of a game into consideration, it becomes very difficult to coherently interpret or represent. Because we believe that procedural representation can help people

express their understanding of our complex world in different ways than other popular mediums, it is our hope that careful investigations will help people make and experience more meaningful videogames.

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