Well Suffered

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Introduction

At the Game Developers Conference (GDC) in 2011, independent
game developers Edmund McMullen and Tommy Refenes, collective-
ly known as Team Meat, presented a post mortem of their extremely
successful 2D platformer Super Meat Boy. This post mortem was
somewhat out of the ordinary for three reasons. First only Edmund
was physically present with Tommy calling in via video-conference.
Second, rather than calling the session a post mortem, the two chose
to give it the slightly enigmatic title "Super Meat Boy: A Team Meat
Meatmortem." Third, and most relevant for our consideration of the
game, instead of following the common post mortem formula of
discussing both what went right and what went wrong in the develop-
ment process, the session focused almost exclusively on the incredibly
difficult challenges Team Meat experienced in completing Super Meat
Boy and bringing it to market. These challenges were in fact so brutal
that in reporting on the conference session, the video game blog Joy-
stiq subtitled their report "The almost death of Team Meat" (Hinkle,
2011). While this might be mistaken for a piece of journalistic hyper-
bole, it actually directly reflects statements made by Tommy Refenes
both during the Meatmortum and since that it would have killed him
if they'd tried to release the game on more than one platform at once
(McMullen & Refenes, 2011).

I had purchased Super Meat Boy on Xbox Live roughly four months
prior to GDC 2011, and clocked a substantial number of hours by

that March. I was far from completing the game, but I had already died countless times by that March. Dying repeatedly is in a very real sense the core dynamic of Super Meat Boy. Although it draws direct influence from Super Mario Brothers (1), unlike Mario and most other classic platformers, the player has an endless number of lives. Levels are generally rather short and a skilled player can complete most of them in seconds. However, many levels are extremely difficult and as a result most players die dozens of times on a moderately difficult level, and even hundreds of times on the most difficult levels. The magnitude of completing a particularly difficult level is also visually enhanced since on completion of a level, the player gets to see all of their attempts at completing the level play simultaneously (see Figure 1).
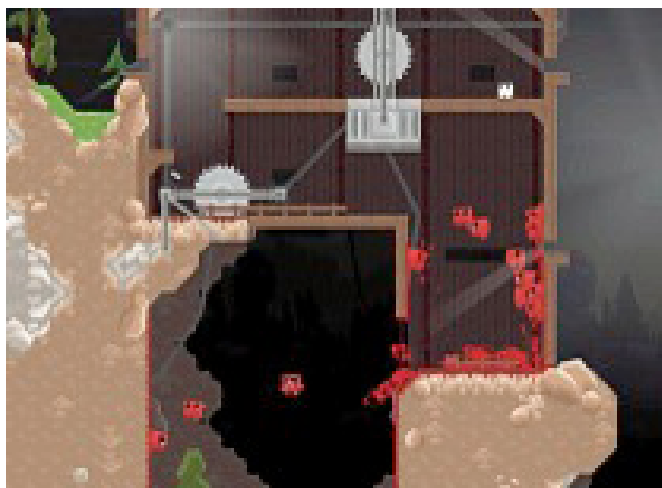

Figure 1: A replay of a level where the player died many times

As I write this I still haven't completed the game, although I'm very close to completing what might be considered to be the core of the game (2) and have been for some time. When I first began work on this paper for the 8th annual Games+Learning+Society conference (GLS 8.0) I was stuck on a level titled Omega. I have yet to complete it at present. It is the last level before the final boss fight in the game.

At the time of GLS 8.0 the part of Omega I was stuck on involves gently guiding Meat Boy over the edge of a cliff and down between some saw blades. I could get up the cliff to get the key necessary for unlocking a door below easily enough, but until the conference I'd only been able to get back down once.

Figure 2: A problematic drop on Level 6-5 "Omega"

Towards the end of the session at GLS 8.0 I attempted to play through Omega live in front of the audience. I forewarned the attendees that I had been basically unable to pass this particular section of the level for many months. I died numerous times on Omega that morning. However, when I reached this drop I was able to perform it without difficulty that day in two consecutive attempts, and have since been able to execute it at a commensurate level with my ability to surpass

other difficult challenges in the game. Since GLS 8.0 the length of the level and its overall difficulty have continued to prevent me from completing it. However, as I will discuss later, the sorts of psychological and physiological obstacles that continue to stand between me and the final boss fight in Super Meat Boy are very distinct from the block I experienced with that drop on Omega and in other segments of the game. Unlike segments of the game that have simply been physically demanding in some way shape or form, in those moments I was either unable to grasp what needed to be done in order to overcome a challenge or unable to execute the action necessary for success.

Coming back to GDC 2011 and the Meatmortem, I can't recall precisely where I was in the game at the time, but I had definitely been playing it with some frequency. It's extremely likely that I was stuck on one of those parts of the game that tends to cause me to swear extensively, literally hop up and down in frustration, and nearly hurl the controller across the room. Indeed, by the time I found myself sitting in that hall at Moscone Center listening to Team Meat discuss the suffering they endured in developing Super Meat Boy, I had already experienced a significant number of rage inducing moments while accidentally hurling Meat Boy's tiny red body into grinding gears, rotten meat blobs, or any of the other countless perils and enemies that can be found throughout the game. Sitting in that hall surrounded by game industry professionals and aspirants, I couldn't help but draw a connection between the suffering experienced by Team Meat in creating Meat Boy, and the more modest suffering experienced by players like me in playing it. As a games and learning researcher, I also found myself thinking about other instances in games research where boundaries between work and play have been observed to blur (Dibbell, 2006; Malaby, 2007; Yee, 2005), and about the theory posited by Roger Schank that learning takes place through expectation failure (Schank, 1983). When I subsequently began to replay earlier portions of the game, I was excited to find that these same themes were not

only instantiated as played experiences through game mechanics, but enhanced and extended through narrative design and art direction. that these same themes were not only instantiated as played experiences through game mechanics, but enhanced and extended through narrative design and art direction.

From The Forest to The End

Super Meat Boy is composed of seven different worlds, plus a "world" that is updated periodically with additional content called "Teh Internets." Most worlds contain twenty levels and a boss fight, and on each level the player's job is to help Meat Boy rescue his girlfriend Bandage Girl who has been stolen by the evil Dr. Fetus. The core of the game consists of the first six worlds called: The Forest, The Hospital, The Salt Factory, Hell, The Rapture, and The End. The sixth world, The End, only has five levels, and the seventh world "Cotton Alley," has the player play as Bandage Girl rescuing Meat Boy and can only be accessed after beating all of the boss fights on the first six worlds. The remainder of this paper will explore the worlds of Super Meat Boy offering a consideration of how the game progresses through stages of difficulty, supports a theme of suffering through its various design elements, and how that theme frames the process of learning to play the game. When relevant, I will also bridge to the topic of the development experience related by Team Meat during the Meatmortem at GDC 2011 and in subsequent publications.

Figure 3: Super Meat Boy World 1 Level Selection

The Forest

Super Meat Boy begins in the pastoral environment of The Forest.
The color palette of the intro scene and many of the early levels is
dominated by soft browns and greens, and 8 bit squirrels and other
forest critters. While it's immediately evident to the experienced player
that the game is a precision platformer based on the sensitivity of the
controls, Team Meat eases you into that difficulty by providing a clas-
sic structure that use the first several levels to orient the player to the
basic controls and types of challenges Meat Boy must face. The first
actual danger the player faces is on level 1-3, The Gap, in which the
player can accidentally guide Meat Boy into the titular gap plunging
him to his doom. Giant saw blades are a persistent hazard throughout
the game, and they are visible from as early as level 1-2 giving the
player the suggestion of danger. However the blades aren't actually
exposed until level 1-6. In short, the early levels of Meat Boy are
designed to make the player comfortable with the basic platforming
activity that will drive the rest of the game. Clickable signs are even
deployed across the first few levels to provide the player with basic
hints about the nature of the challenge on each level and how it can

be overcome with the appropriate controls.

Prior to picking up Super Meat Boy, the "hardcore" 2D platformer wasn't exactly a style of game that I'd spent a huge amount of time with. While I'd certainly played a number of the Mario games over the years and had completed Braid in 2010, I'd never devoted any real time to any of the more difficult platformers like Mega Man or Ninja Gaiden. Among other things, I grew up with a computer at home from the late elementary grades on, but I didn't have a game console in the house. Since the console with game pad style controllers has historically been the natural setting for platformers, this meant that the genre as a whole wasn't one that I had a particularly deep history with.

That said I knew what I was getting into when I purchased Super Meat Boy. Since I began studying video games I've made a point of trying genres that are outside of my comfort zone, and to some extent Meat Boy was just a continuation of that approach. Putting all of this together, the beginning levels of Meat Boy did exactly what they needed to do for me as a player. They got me comfortable enough flinging Meat Boy's body around the screen that by the time I got to level 1-8, the first level where I encountered a challenge that gave me any kind of difficulty at all, I was ready to press on. In fact, Team Meat does an interesting little trick right before 1-8 with level 1-7 as it introduces an element visible in the upper right corner of Figure 4, a saw blade that requires a relatively long wall jump to surpass. This jump appears extremely difficult upon first viewing, but is actually relatively easy. This prepares the player for future challenges by offering an opportunity to realize that even elements that might appear difficult or impossible are ultimately beatable.
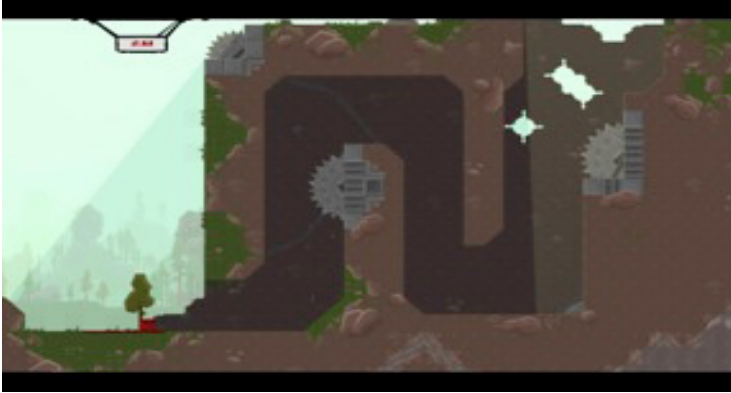
Figure 4: Super Meat Boy 1-7.

The trick of warming the player up to a state of relatively fluid play and then producing a difficult level that the player has to push through is one that Team Meat employs several times in world 1. I experienced these sorts of choke points in The Forest on level 1-15 which combines collapsing walls and saw shooters, and 1-19 which is the longest level in The Forest. 1-19 was actually difficult enough that even on the playthrough I did in preparation for GLS 8.0 I died several times. To provide a point of reference, in the same playthrough I was able to finish the rest of the levels in The Forest with no deaths in a matter of seconds.

With the exception of The End, each world only requires the player to complete 17 of the 20 levels in order to unlock the boss fight that must be completed in order to open the next. When playing The Forest initially, I played through and beat all 20 levels which was a pattern I would attempt to keep, but would ultimately fail at, through my whole experience of the game. That first boss is Lil Slugger, a bipedal robot with a phallic chainsaw projecting from its front that Dr. Fetus drives across the level from the left to the right chasing Meat Boy through a series of perilous obstacles. As a result of its relentless push

across the screen I have to count Lil Slugger as the first legitimately difficult challenge in Super Meat Boy. Lil Slugger invokes a wide variety of prior platformer playing experiences by way of its structure of relentless advance. I've always had a particular dislike of platformer levels that force the player forward the entire time prohibiting exploration. It was likely for this reason as well as memories of my prior experience with Lil Slugger that I actually paused for a second before starting the level on my pre GLS 8.0 replay. In that moment I was struck by a feeling akin to fear as that earlier played memory lingered in my mind. Ultimately the level gave me little trouble on that playthrough. The same cannot be said for some of the other levels in the game I had beaten before.

Overall The Forest provides the player with an opportunity to generally get adjusted to how Super Meat Boy plays, and to some degree to inure the player to the experience of repeated death and the accompanying frustration that will characterize the rest of the game. There are minor challenges, but even a modestly competent player of 2D platformers like myself doesn't experience much in the way of frustration or suffering on a first play through of The Forest. I see a parallel here that probably applies to the development path trod by Team Meat, and that certainly applies to my own experiences in game development and other large-scale projects. In essence, the work starts out as a joyful experience. You might encounter a few difficulties early on, but the activity is fresh, exciting, and generally filled with promise. While you anticipate some trials ahead, you don't truly have any notion of the scope of those actual challenges. This is the point where your emotional investment in the process is relatively high and your material investment relatively low.

For all of the positive feelings that the early levels of Super Meat Boy invokes, the conclusion of the boss fight with Lil Slugger provides a

cut short as the squirrel is decapitated by a flying saw blade, and the player is pushed on to the next world.

The Hospital

The second world in Super Meat Boy is The Hospital, and everything about the design of world two tells the player that things are getting significantly more serious. While I still managed to play through the early levels of The Hospital in one attempt on my second playthrough, I found that I was gritting my teeth on occasion and had to remind myself to breathe. Beyond the general increase in difficulty, The Hospital's shift in mood is supported by a major change in aesthetics. The palette shifts over primarily to dark purples, blues, and greys. In supporting the theme of an abandoned hospital, the landscape is littered with piles of broken syringes that, like so many things in the game, spell instant death for Meat Boy. While I haven't mentioned the music thus far, it too is an essential part of the Super Meat Boy experience. Danny "B style" Baranowsky is the musician behind the Super Meat Boy soundtrack, and his work perfectly supports the evolving mood of the game. While the music for The Forest is generally light and upbeat, the music for the Hospital takes a very rapid turn in a darker, spookier direction (4).

World Two also pulls from the pages of classic game design by introducing a much wider array of features into the game's landscape. Giant fans are introduced starting on level 2-4, and while the player often needs to use these to propel Meat Boy to different parts of the level, a chance encounter with one can also shred him in a meaty mess. On level 2-7 Meat Boy has his first encounter with a staple of 2D platformers, moving enemies. While I found the complexity introduced by these variations presented very little challenge on my second playthrough, I can well recall the rising frustration I experienced the first time through. Team Meat very carefully introduces new elements into the game, usually presenting them first in isolation, and then in var-

ious combinations that force the player to adapt. Moving enemies in particular create a dynamic where the player has reduced opportunities to pause throughout the level. Level 2-13 introduces floating enemies that bounce around the level magnifying this issue further. Like the wall jump with the saw on level 1-7, the technical challenge posed by these enemies is no where near as significant as the psychological impact on the player upon first encountering them. Perhaps an even better example of this effect is evident on level 2-8. As you can see in Figure 5, this level shifts to a silhouetted view with a reddish background. There is nothing about this shift that makes the level harder in any technical sense, but the dramatic aesthetic shift definitely impacts the player's impression of the level's difficulty.

Figure 5: Super Meat Boy 2 - 8

That said 2-8 is a comparatively difficult level. It was somewhere in this vicinity that I began experiencing serious frustration with some levels, sometimes playing until my hand began to hurt from gripping the controller too tightly, or stopping when I was on the verge of throwing the controller across the room. I should note at this point that I've never actually thrown a controller while playing a video game or under any other circumstances. However, as anyone who has

encountered moments of extreme difficulty in a game likely knows, the temptation to do something physical in these instances of extreme frustration while gaming is a very real one (5). It is in large part the depth of frustration blended with the persistence that many gamers approach these moments with that has lead me to frame the experiences of playing a game like Super Meat Boy as a form of self-inflicted suffering. It certainly defies our normal framing of gaming as a fun activity, and arguably pushes on the boundaries of "hard fun" as used by various game designers and scholars (Koster, 2004; Lazzaro, 2003; Papert, 1998).ous combinations that force the player to adapt. Moving enemies in particular create a dynamic where the player has reduced opportunities to pause throughout the level. Level 2-13 introduces floating enemies that bounce around the level magnifying this issue further. Like the activity and arguably pushes on the boundaries of "hard fun" as used by various game designers and scholars (Koster, 2004; Lazzaro, 2003; Papert, 1998).

The Rapture via The Salt Factory and Hell

While the difficulty of Super Meat Boy increases substantially over the course of The Hospital, the escalation of difficulty over the following two worlds is much greater. At the same time, most of world three, The Salt Factory, was more approachable for me than The Hospital had been simply because I had already adapted my expectations regarding the difficulty of the game. By contrast, many of the levels on world four, Hell, managed to still be surprisingly difficult. I'm not quite sure how long it took me to traverse worlds three and four on my way to world five, The Rapture. Since I wasn't planning on writing a paper on the game at the time I didn't track my progress, and since I was pretty deeply immersed in gaming (running through many games relatively quickly while also playing Meat Boy), I have trouble positioning my experiences with Meat Boy in between other games to find some point of reference.

I do know that I was stuck for various periods of time on several levels across The Salt Factory and Hell, but that I persisted in trying to take an essentially linear approach to the game throughout these levels as I had with The Forrest and each world that followed. On Hell I began to break from this approach, coming back to a level if it was giving me too much trouble, but still pushing through all 20 levels before taking on that world's boss Little Horn. On The Rapture finally I broke from this approach entirely leaving two levels unbeaten at the point when I decided to finish that world and move on to The End.

Over the course of worlds three through five I began to get into a certain kind of rhythm with Super Meat Boy. I would work through several levels until I got to a level where I found myself stuck on some particular challenge. Sometimes it would be a sequence of jumps. At other times it might be the timing in dodging an enemy. At still other times it might be a challenge that seemed completely approachable, but which I simply couldn't muster the energy for at the end of an extended play session. If the challenge was either some puzzle I hadn't solved or some twitch of the controller I hadn't mastered, I would be stuck on a level for days, weeks, or in a couple of instances months. This was the point where I started replaying more levels to get an A+ or a bandage, pursuing some of the alternate content available by un-locking Dark World levels (see end note 2), and of course I played lots of other games during this time. When returning to Super Meat Boy I would pick up the controller and either start a level I was stuck on, or try it after warming up on a few other levels. Despite the trouble I may have had on a level previously, when I returned to it I would often find that I could blow through it in just a few attempts.

Two particularly notable instances of this phenomenon took place after GLS 8.0, and they serve to highlight a type of experience that certainly takes place in other games, and in contexts outside of video games. When I discussed the game at GLS 8.0, I mentioned that there

were two levels on The Rapture that I had been unable to beat, and that despite my intention to get to the final boss fight and beat Dr. Fetus once and for all, I was unsure as to whether I would ever actually complete those other two levels. In August of 2012 two months after GLS 8.0 I managed to beat both of them in one evening over a short period of time.

The two levels in question are 5:15 The Flood, and 5:16 Rotgut, and the challenges attending them are as different as can be. The Flood is primarily a test of motor control and understanding of how Meat Boy moves in the air. Like the Lil Slugger battle, it echoes the design of many classic platformers, moving from left to right with a constant threat following the player forcing a steady rate of advance. In the case of The Flood, the player is forced to guide Meat Boy through a series of precision jumps while staying ahead of a rapidly advancing flood of maggots. Unlike the relatively slow but steady advance of Lil Slugger during that battle, the flood of maggots moves at a fairly rapid rate.

Rotgut represents a distinct contrast to The Flood. While there are floating enemies called Oobs that will advance on Meat Boy if he gets in close enough proximity to them, the player can stop in a wide variety of spots to assess the situation. Although Rotgut does require some degree of dexterity as all of the later levels in the game do, it is primarily a puzzle where the player is presented with a fairly expansive level that can be conquered one of several possible ways. By exploring the layout of the level just a little, the player can discover some highly effective shortcuts that diminish the difficulty of the level drastically.

When I sat down with The Flood that day, I had a moment of game-play revelation very similar to the one I experienced at GLS 8.0 while playing Omega in front of an audience. Essentially, there was one jump that had been preventing me from completing the level, and on my second or third attempt that day it dawned on my that if I moved

the stick on the controller just a little differently I would be able to navigate Meat Boy to a safe landing. Once I had executed that maneuver twice in a row, the rest of the level opened out for me and I was able to complete it with just a few more attempts.

Encouraged by my success with The Flood, I pushed on to the next level. I had actually nearly beaten Rotgut once before by taking what I have since come to realize is the long way around to the end of the level. On that prior attempt I had overshot the final jump in the level sending me all the way back to its start. On first my attempt at Rotgut that day in August I approached it as I had every time before. I made it through a good portion of the level but due to the placement of just a couple of the obstacles my progress was uneven, and I was beginning to wonder if I had the where with all to persist through it that day. At that point, I decided to engage in a practice that Jim Gee has discussed on numerous occasions when talking about games and learning. I decided to experiment (Gee, 2003). I attempted to take a slightly different approach to crossing a large chasm in the middle of the level, and in the process I accidentally discovered that there was a route that I had previously thought to be inaccessible. Upon making this discovery I was able to complete the level in just a few more attempts.

I consider my experience with both of these levels to be particularly emblematic of a general phenomenon in which the player picks up the controller and suddenly makes magic happen on the screen after hours of frustration and defeat. It is in fact this core experience that seems to characterize playing difficult games that forces questions of learning into the spotlight. Too often in discussing learning in the context of education we look for ways to make learning easy. Yet, the moments players experience in games like Super Meat Boy where success and in some instances even understanding rest on the result of repeated failure offer a sharp counterpoint to the whole enterprise of making learning easy and safe.

This is not to say that learning only happens when this sort of "limbic" response is engaged, but rather that there are certain types of learning that seem to rely on repeated opportunities for failure. The process of learning is to a greater or lesser extent inextricably bound up with experiences of failure, and these moments are bound to bring about feelings of frustration and potentially even moments of suffering. There are of course other factors apart from failure and suffering that we can consider in thinking about what makes moments like this take place in games and learning. There is debate on whether "unconscious thought" is an effective aid in decision-making (Newell, Wong, Cheung, & Rakow, 2009). However, research in that vein might be an indicator that failure and its emotional consequences are not as relevant as the process of taking time away from the cognitive task represented by something like a difficult game level.

Still, it is hard to shake the idea that difficult experiences can be particularly impactful and as such, for better or worse, result in experiences that stick with the learner. It is for this reason that Roger Schank's concept of expectation failure (1983) seems to also fit with the learning that takes place during difficult moments in game play, as well as the learning that takes place in relation to the technological and sociotechnical constraints that impact processes of design and development. Certainly Team Meat encountered some particularly stressful moments in the process of creating Super Meat Boy, and the learning that they experienced as a result of that process seem to have had a powerful effect on how they have approached the process of game development subsequently. While this is distinct from the moments of expectation failure that I experienced in playing Super Meat Boy, both represent experiences that didn't fit our existing scripts for the challenges we faced. More importantly, both instances offer us an opportunity to observe learners being forced to produce solutions that were novel in relation to prior experiences.

Well Suffered

I almost titled this paper Well Failed, as it is the moments of failure that lay the bedrock for ultimate success in both working through difficult levels in an extremely hard game, and in the process of creating a complex artifact like a game. After all, the whole point of iterative development processes is to find the weaknesses in the product and create a better result by improving those failed elements in the next iteration. In this respect failure should certainly always be seen as a learning opportunity. However, in thinking about Meat Boy I ultimately keep returning, in a manner I hope is neither particularly Sisyphean or Nietzschean, to the theme of suffering.

While I can only hope that the level of suffering Team Meat had to endure in developing Super Meat Boy was not technically a necessary experience for deriving either the quality of game they produced, or the depth of learning about game design and the game industry that they received in the process, I cannot help but wonder if some aspect of the adversity they experienced was beneficial in some ways. Perhaps this focus on suffering is just the narcissistic tendencies of the academic, seeking to justify the value of the tribulations I and others have experienced over the course of the doctoral accreditation process by attributing value to the suffering endured by game developers whom I admire. I'm willing to acknowledge this possibility. However, it doesn't ultimately have that much bearing on my played experience of Super Meat Boy.

While I have yet to beat Meat Boy, and may never actually complete large swaths of the game, I ultimately regard the frustration that I have experienced while playing Super Meat Boy as a relatively small price to pay for the intense feeling of fulfillment that I have had in those moments of success that attend the completion of an extremely hard level. Even more importantly, I see in those moments of frustration and failure moments where I have come to understand something about myself as a gamer, and as a learner.

Endnotes

(1) In discussing the design influences of the game Edmund McMullen specifically cites Super Mario Brothers stating that the guiding design principle he and Tommy utilized for Super Meat Boy was re-imagining Super Mario Brothers in the present games market.

(2) As explained in the second section, Super Meat Boy contains a range of content that extends play beyond what might be recognized as the start and end of a traditional game. In addition to the inclusion of the Cotton Alley levels and the expanding world called Teh Internets, every level in the game has a hidden hard mode (called dark world) that is unlocked after the player has earned an A+ by completing the level. On top of this, there are also hidden warp zones in the game, and there is also the community driven Super Meat World which contains player generated content and is only accessible on the version of the game for Windows and OS X.

(3) The talk and the full paper will offer an exploration of the entire scope of the game including the worlds not included in this proposal.

(4) I actually liked the music for Super Meat Boy so much that I purchased a copy of the double disc Nice to Meat You when Baranowsky released it in January of 2011 and listened to very little else in my car for approximately 6 months. If you like video game music at all it really is a very compelling soundtrack.

(5) A great amount of research has been directed at the topic of depictions of violence in video games and aggressive or violent behavior. I believe that on a fundamental level this research is missing the obvious connection between video games (and games in general including sports, board games, and everything in between) and any kind of aggravated or irritated state the player experiences. Rather than looking at the imagery presented in games, it would likely provide researchers with far more direct understanding of these sorts of responses if they focused on the degree of difficulty or frustration (e.g. stress) that the player experiences while playing the game as the covariate in predicting aggression.

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