

## Postmortem: Team Meat's *Super Meat Boy*

By Edmund McMillen, Tommy Refenes

[In this [Game Developer Magazine](#) postmortem, reprinted here on Gamasutra, Edmund McMillen and Tommy Refenes candidly discuss the development process of smash Steam and Xbox Live Arcade hit *Super Meat Boy*, diving into the punishing process that lead to the retro revitalization that took hardcore gamers by storm.]



When I was in middle school I would draw up designs for what I thought would be the ultimate video game: full of blood, huge bosses, epic worlds, and a story that would follow an immortal hero through hell, the end of the world, and beyond.

Then I grew up... and not much changed.

*Super Meat Boy* originated as a simple Flash prototype that an online friend of mine (Jon McEntee) and I made during our free time over the course of three weeks. I had no idea it would become one of my most-played Flash games, let alone spawn a full-fledged console game.

In 2008 I was contacted by Microsoft and Nintendo about working on something for their download services. Originally my first pitch to Microsoft was *Gish 2*, and Nintendo was more interested in an expanded version of *Aether*, but the deciding factor was actually determined by a chance friendship.

I met Tommy Refenes in 2008. I've worked with a lot of programmers over the years, and my past artist/programmer relationships were always a bit alien. Working with Tommy felt a lot like hanging out with my best friend in junior high, nerding out and going off on tangents that would annoy just about everyone around us. I knew right away that whatever we decided to work on together would be fun, and this was how *Super Meat Boy* got made.

We just wanted to make something fun and have fun making it.

Getting this console deal was basically our one big break, our one shot to show everyone who we were and what we could do. No pressure.

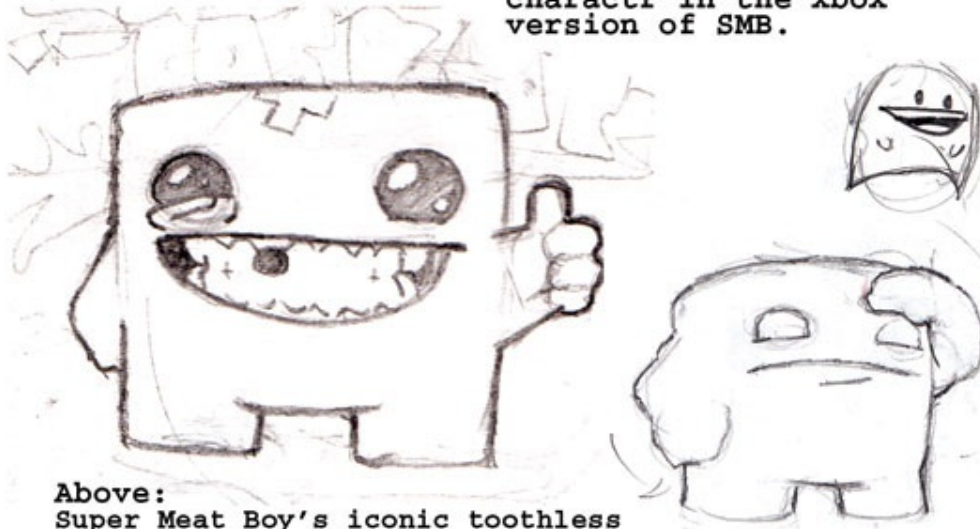
# MEAT BOY



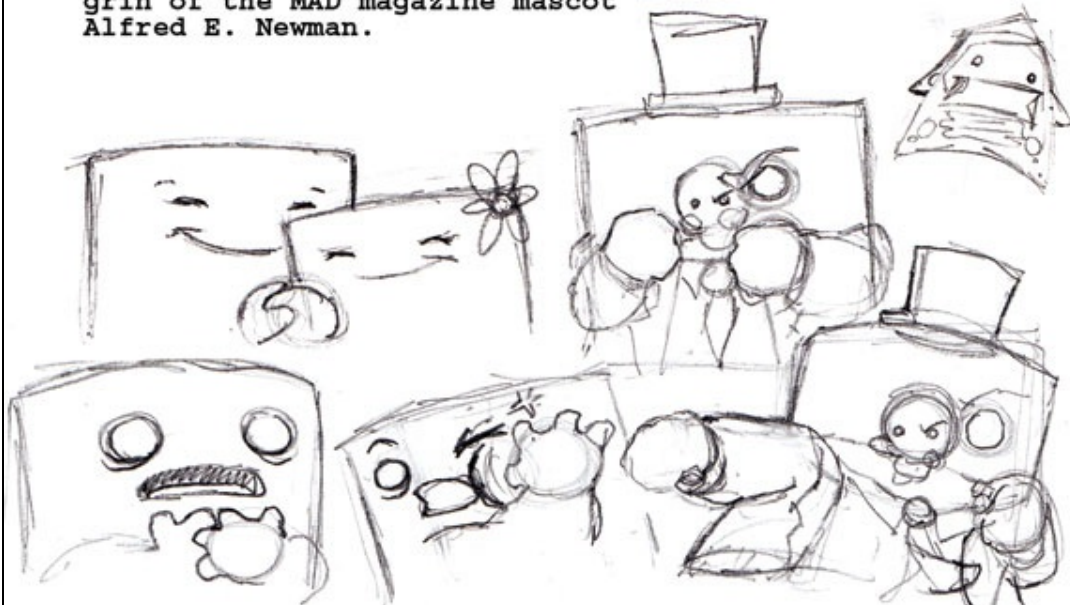
Originally Meat Boy's name was The Meat Ninja, or Insideout Ninja.

I removed his ninja hood because I felt the game already had too many similarities to the indie title N+.

The Ninja from N+ would later become a playable character in the xbox version of SMB.



Above:  
Super Meat Boy's iconic toothless face was inspired by the toothless grin of the MAD magazine mascot Alfred E. Newman.



## What Went Right

### 1. Using Our Own Engine and Toolset

**Tommy:** When I tell most people that I made the engine and tools myself, they usually ask, "Why did you do that?" My friends over at FlashBang try to cram Unity down my throat every single time I talk to them, but I stand by the decision to make our own tools and engine.

One huge reason is control. I'm sort of a control freak when it comes to code; I like to understand everything that's going on in my codebase. That way, if something breaks, I know exactly where and how to fix it. Also, I got into games to program games, not to script them. I enjoy all aspects of game programming, from the engine to the gameplay. Since we're indie and can do what we want, and since I had the skill set, I simply enjoyed doing the engine.

Development of *Super Meat Boy* took 18 months from the first line of engine code I wrote to the last line of error messaging code I wrote before final submission to XBLA certification. Personally, I think that's record time for a game made by two guys with as much content as it has. I honestly feel the reason we were able to do this is because I was so involved with the code. When a bug would pop up, I could track it down immediately no matter how low to the hardware it was.

There weren't many tools used with *Super Meat Boy*. The in-game level editor was invaluable because it provided Edmund the ability to make levels with a "what you see is what you get" mindset.

The only other tool we had was the Flash Exporter I made. Basically it was a script that packed all the Flash symbols into one texture and exported animation information with sound cues. This paid for itself with the very first export of Meat Boy that Ed did. We had sounds, animations, and everything with one quick export that the engine could easily manipulate and call when needed.

## 2. The Design Environment

**Edmund:** Very early on, both Tommy and I became a bit frustrated by the very rigid work environment most developers told us we needed to have in order to be taken seriously and get things done.

I remember the day we got an email from Nintendo asking for head shots and a developer bio. It suddenly seemed so insane how serious everyone takes an industry whose goal is supposed to be entertainment.

Tommy and I went out that day in search of the most ridiculous sweater vests we could find, broke into Sears Photos and used their setup to take what would become our team headshots. I believe we also submitted some totally ridiculous dev bio to Nintendo that was printed in their press release alongside our photo.



The point I'm trying to make is that everything about our design environment was fun. It was important for us to always enjoy what we were doing, and let the love of our work come through in interviews, videos, conventions, and even the game's design.

Tommy and I bonded over the course of development, and *Super Meat Boy* was an expression of that. We had fun making this game and didn't hold those feelings back when it came to the decisions we made. *Super Meat Boy* was a schoolyard inside joke that just got out of hand. I think one of the things that is most appealing about *SMB* is anyone who plays video games gets to be in on that joke.

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### 3. Back-to-Basics Design Innovation

**Edmund:** When Tommy and I talked about attempting to remake the *Mario* formula, we didn't really discuss it publicly. Nothing could ever touch Mario, and nothing has ever come close, but as a designer I desperately wanted to at least try.

*Super Meat Boy* is *Super Mario Bros.* if Tommy and I made it. If we had made a design doc, it would have been as simple as that.

So looking at it from that perspective, we had a very solid foundation design-wise, but video games have changed a lot in the past 20 years. Difficulty has kind of been thrown out the door and replaced with accessibility over all else, erasing any real challenge.

It was vital for us to bring back the difficulty of the retro age, but also reinvent the idea of what difficulty meant. Frustration was the biggest part of retro difficulty and something we felt needed to be removed at all costs, in order to give the player a sense of accomplishment without discouraging them to the point of quitting.

At its core, this idea was quite basic: Remove lives, reduce respawn time, keep the levels short and keep the goal always in sight. On top of these refinements, we added constant positive feedback, and even death became something to enjoy when you knew that upon completing the level you would be rewarded with an epic showing of all your past deaths. The replay feature was a way to remind the player that they were getting better through their own actions and reinforce that feeling of accomplishment of doing something difficult and succeeding.

### 4. Soundtrack

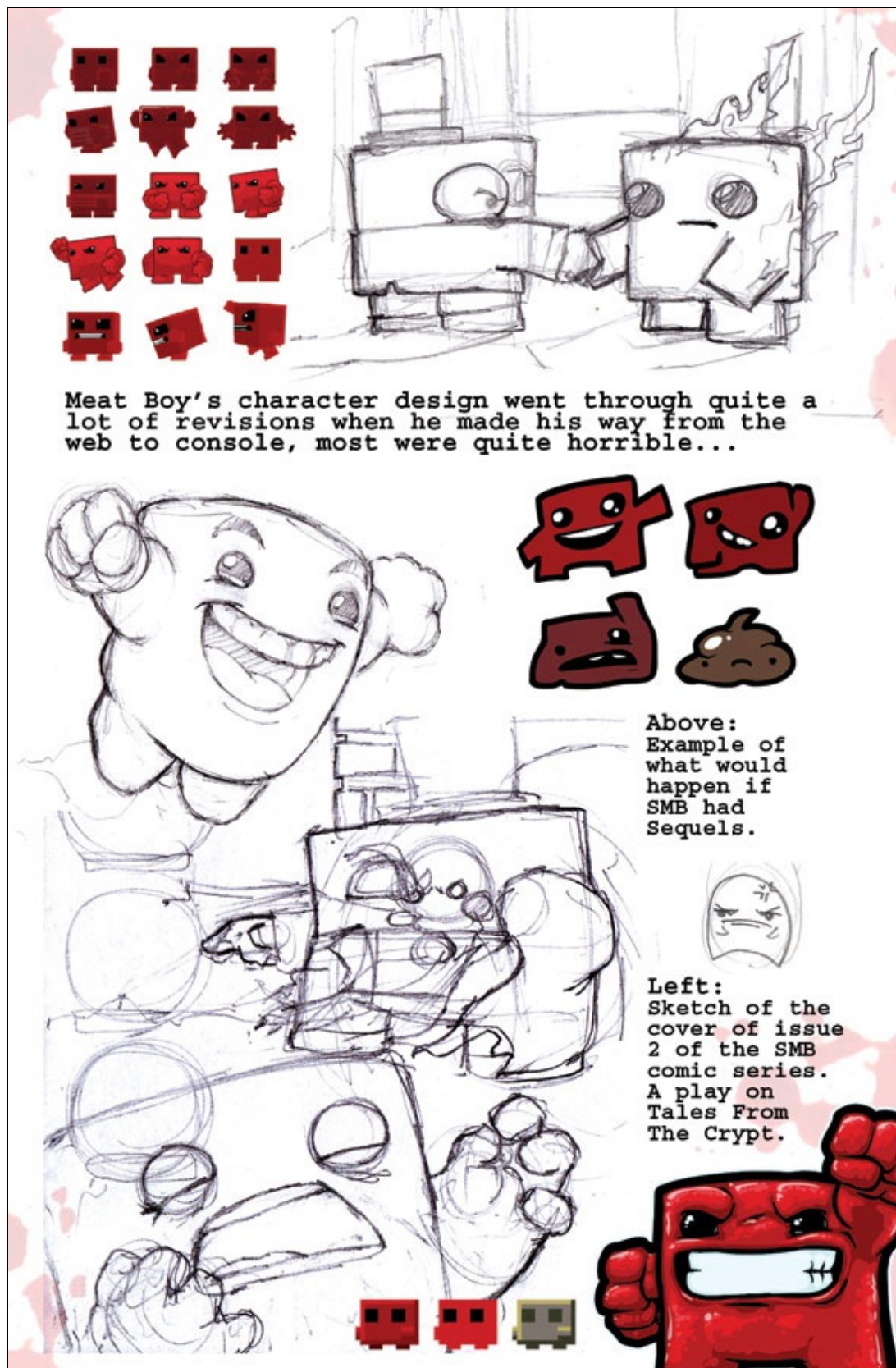
**Edmund:** Danny Baranowsky is an amazing musician, but one of the reasons why I believe his music was received so well in *SMB* lies in how things worked behind the scenes.

From the start, I felt it was important that Danny own the rights to all the music he made for the game. It seemed logical that an artist would put more into his work if he felt it was his and it represented himself. We wanted Danny to receive 100 percent of the profits from his work, and it only made sense that he would be that much more personally invested in his work if this were the case.

Danny's work comes from the kind of person he is. It's manic, obsessive, complex, and full of life. These were all elements we wanted for the *SMB* soundtrack, and making that happen was as easy as allowing Danny to make music he was proud of with little direction.

The *SMB* soundtrack was an amazing addition to the game -- it gets your heart rate up, complements every aspect of its gameplay, and stays with you for days. I believe the reason for this was respecting and trusting Danny as an artist and simply letting him do what he does so well.





## 5. Steam

**Tommy:** Steam is amazing. I can't stress that enough. The ability to quickly update within hours of a bug popping up made the entire PC launch much easier than it could have been if Steam had a different system in place to update code.

Also, Steam listens to its developers. They listened to us when it came to our suggestions for how we should push the sale, and in return we listened to them. Working with Steam never felt like a publisher / developer relationship. It felt like a mutual partnership to make the most money and put the best game out there.

We love Steam.

# What Went Wrong

## 1. Personal Expenses

**Edmund:** It's hard to say our personal expenses were something that really went wrong, due to the fact that it was a HUGE motivator to getting the game done, but it was definitely an issue as we moved into the last few months of development.

There was one point where I had emergency gallbladder surgery that put me in the hole \$50,000 due to the fact that I couldn't afford health insurance.

We had no real money at all, and even all the comics we had printed for GDC and PAX were attained through a barter system where my wife would make plush toys to sell in the Newgrounds store in exchange for the cost of printing.

Our situation was quite dire at several key points of development, but I've been on the poverty line for the past 10 years, so going without wasn't much of an issue, and honestly, we had much bigger issues to worry about anyway.

**Tommy:** At one point I had negative \$800 in the bank. It's bad when you go to a 7-Eleven to buy a Coke Zero and get rejected. Turns out, each one of those Coke Zeros cost me about \$40.

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## 2. Losing Sight of WiiWare

**Tommy:** When we initially announced *Super Meat Boy* for WiiWare, we were planning 100 levels at maximum, no cutscenes, and no unlockable characters. We were planning on just doing a straight port of the Flash game with a few extras and nothing more. We obviously got carried away, but I wouldn't call it a bad thing, because we made the game we wanted to make. The bad part is we couldn't possibly do the game on the Wii.

As we were building the game and kept adding more to it, it became clear that it would be nearly impossible to fit within the size limits of WiiWare. It was always in the back of my mind to try to make sure we could, but cutting down to 50 MB meant removing a lot of content that made the game what it is.

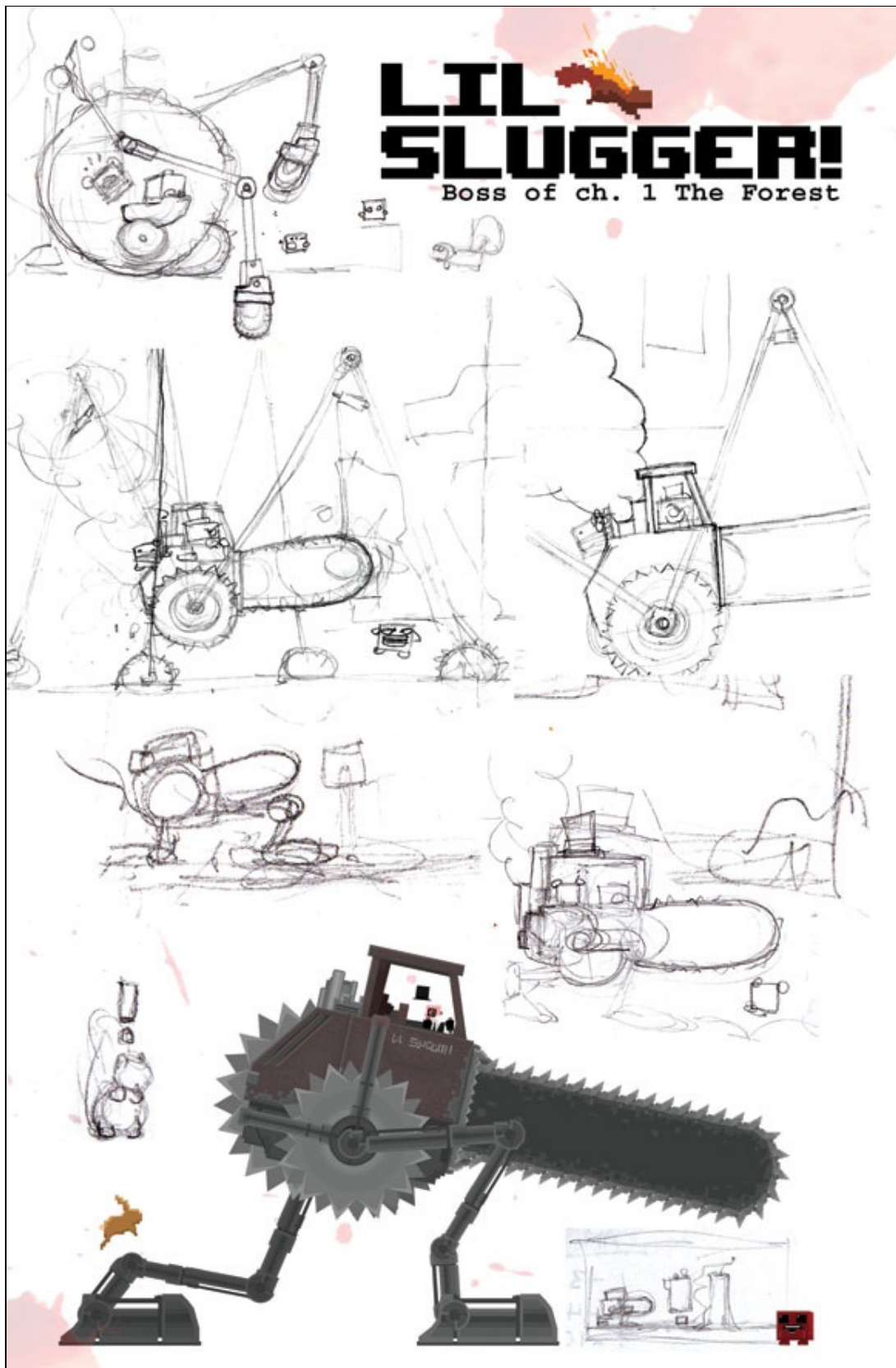
**Edmund:** Not releasing on the Wii still bothers me, and I wish we could have done it. After WiiWare became an impossibility, we looked into getting *SMB* published on Wii retail, but sadly, there wasn't one publisher we talked to that saw the Wii as a smart investment at this point in its life cycle. So we closed the book on the Wii.

## 3. PC Launch

**Tommy:** A two-man team putting out a game on several platforms is pretty tough. The PC launch was a little rocky because of testing. I had what I felt was a wide range of test machines. I had range from our minimum specs (an Acer netbook) to a beefy quadcore. I thought I had everything covered; I had ATI cards and NVidia Cards. This obviously wasn't enough.

The day of PC launch we were inundated with tons of bugs, crashes on startup and shutdown, and more. I think I answered about 2,000 emails during the first few days of launch. I felt similar to how I did during the crunch for the XBLA launch -- every time I would fix something, it seemed like something else broke.

It was hard to go from the stress of XBLA launch to the PC launch in the same month. It was a feeling of accomplishment followed by an immediate feeling of failure. For our next game we'll do more extensive PC testing, and probably actually farm it out to a company that specializes in testing.



#### 4. Last Two Months of Crunch for XBLA Launch

**Edmund:** In late August 2010, we got a phone call from our producer at Microsoft, explaining that there was going to be a fall promotion similar to Summer of Arcade. At this point, we were about four months from being done, but in order to release during this promo, we needed to pass certification in two.

The deadline seemed a bit impossible. We were told if we didn't make it into the fall promo, we would have to push the game back until spring or attempt to launch the game ourselves without much support, and risk a sizable loss. Microsoft explained that all games in the promo would get an exclusive launch week, very high spotlight advertising, reviews by Major Nelson, and face time at PAX and other events. This promotion was going to be called Game Feast.

At this point, both of us were going into the red financially and felt like if we didn't get into this fall promotion, there was no hope for us. We



couldn't push to spring, and releasing without Microsoft support seemed like suicide, so we went all-in and attempted to do what would take any team four months within two. These two months were easily the worst months of my life.

The pressure, workload, and overall stress of development was extremely overwhelming. In those two months, neither of us took a single day off of work, working 10–12 hours a day, every day. There was a point at the end of development where I was getting less than five hours of sleep for several weeks. I remember having a breakdown in September where I actually thought I was stuck in some nightmare where I was repeating the same day over and over.



**Tommy:** Because we were so time-compressed, we were basically developing features during bug checking, which meant every single time I turned on the computer and checked the bug database, the work I did the night before was pretty much rendered irrelevant. I would work and fix 100 bugs in a night and get it down to 50, then wake up the next morning and have 200 bugs to fix.

This lasted for weeks and weeks. I felt sick, angry, and totally stressed. My parents were bringing me dinner because I literally didn't leave the house for those two months. I remember just saying to myself over and over, "Don't die until the game is done," because it was a real concern of mine. I felt miserable, my blood sugar was all over the place, but I absolutely had to press on and crush the bugs as they came up. I don't know if it made me stronger or not... all I know is that somehow I survived!

**Edmund:** I think both of us were trying to keep from the other just how bad things were getting to avoid stressing the other out any more than we already were.

I had many nights where I would tell my wife that I was done, that I didn't want to make the game anymore, that it wasn't worth it, and that I would gladly bow out and take the loss just to go back to my normal life. She would "talk me off the roof," I'd go to sleep, wake up five hours later, and repeat the same day again.

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## 5. XBLA Launch

**Edmund:** Development was over, *Super Meat Boy* had taken home a few awards at PAX, and the press was starting to focus their lights on us. Many websites and magazines said *Super Meat Boy* was easily the hit of the Feast, and possibly the next big indie hit, but the business side of Microsoft wasn't convinced.

We were told our price was too high, our visuals too rough and simply not as eye catching and flashy as the other Game Feast games *Comic Jumper* and *Hydrophobia*. Our hearts sank when we were informed that we were projected to sell as much if not less than *Hydrophobia*, which would be the second-highest grossing game of the Feast in their minds.

This projection became that much more soul crushing when *Hydrophobia* launched and its overall leaderboard had less than 10k players in the first week. If Microsoft's projections were correct, we were fucked.

A week later, *Comic Jumper* launched with a similar public reaction but slightly better numbers -- still very low for XBLA standards. The Game Feast seemed to be a huge bomb, and quite a few news sites were already writing it off as a failure.

*Super Meat Boy* launched Oct. 20th alongside *Costume Quest*. It was placed third on the spotlight for four days. We never received any of the promotional launch bonuses that the previous Game Feast games had gotten (exclusive launch week, #1 spotlight, and a review by Major Nelson) but were told if we performed well in terms of Metacritic score and sales, we would move up and be more heavily advertised.

By day three of our launch, we had already outperformed *Hydrophobia* and *Comic Jumper's* launch weeks combined, our Metacritic was the

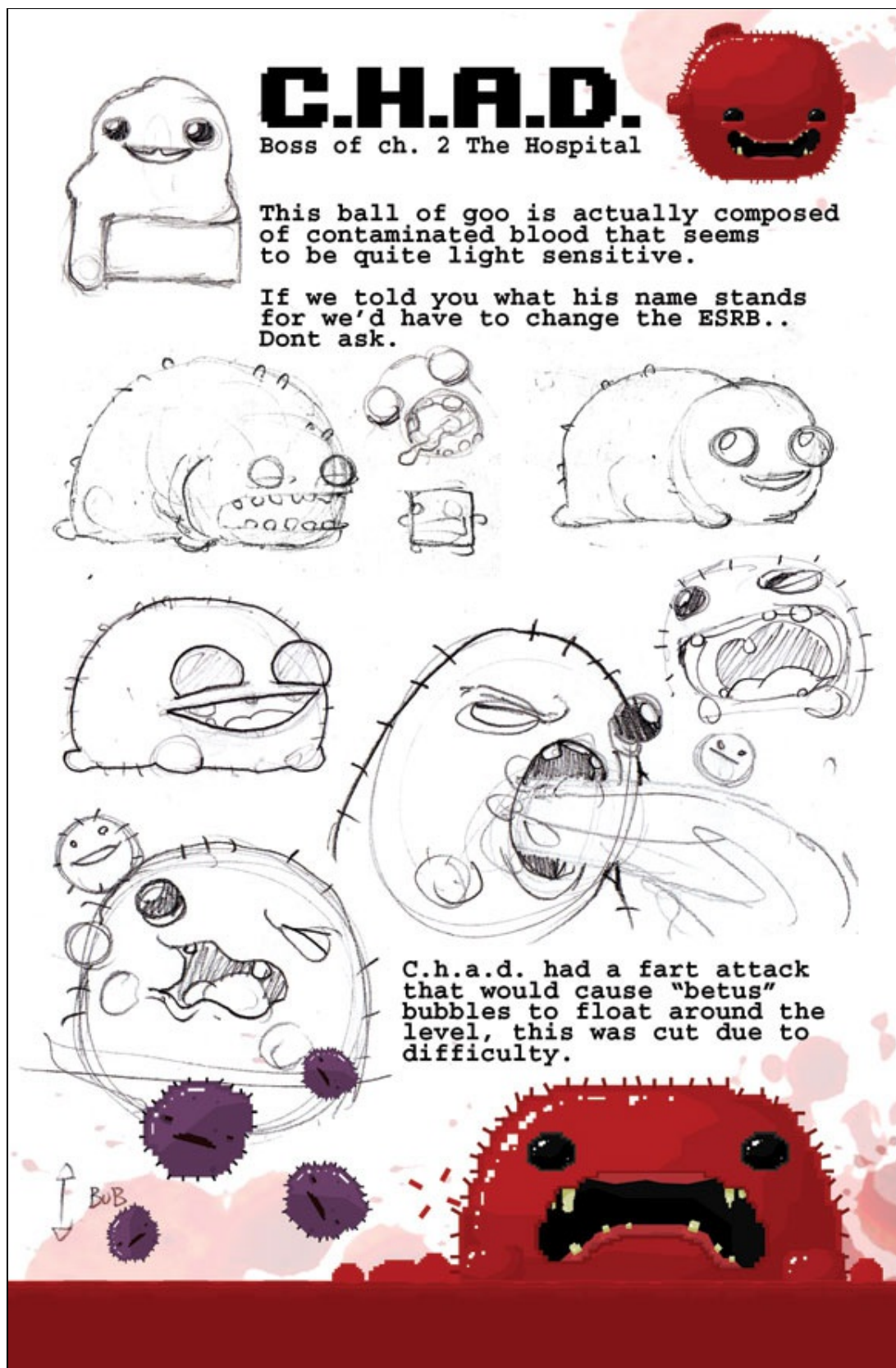


second-highest rated XBLA game of all time, and the word of mouth was insane.

Our spotlight placement was gone by day five and never came back. We never got a review by Major Nelson nor did we get an explanation for why Microsoft launched *SMB* alongside *Costume Quest*, or for why, even though we exceeded their expectations for sales and score, we weren't given the treatment we were promised, even while they continued to heavily promote other Game Feast titles like *Comic Jumper*.

In the end, we felt very confused and taken advantage of. To this day we are still unsure of why things went down the way they did. Was it that Microsoft simply wanted to detach itself from the Game Feast? Was it that they didn't believe we would perform as well as we did? Or was it just horrible luck at the most competitive time of the year for the video game industry?

Either way, by far the biggest mistake we made during *SMB*'s development was killing ourselves to get into a promotion we would gain basically nothing from.



# Meaty Bits

**Tommy:** It's hard to talk about any kind of conclusion... we aren't done with it yet! We have the editor, portal, and Mac version to finish. It's hard because it already feels like we are finished, like we ran the race. But then someone asks, "Hey, do you wanna do a whole other race?" and we're like, "Yeah, sure, that sounds like it could be fun."

**Edmund:** Then you get there and you realize it's the same race, there's no prize at the end, and at this point you've lost control of your bowels.

Honestly, it was worth it to me because I got to make this game with a friend. It's as simple as that. If I had made it with someone I wasn't close to or couldn't joke around with, I would have had a miserable time and regretted the whole thing.

**Tommy:** I feel overall, that the game was worth all the stress. We went in as two guys with no games under our belts and left with the fourth-highest-rated PC game of 2010, sold over 400,000 copies worldwide, and received over 15 Game of the Year awards, which is a surreal thing to think about.

**Edmund:** It was an honor to make a game that we put so much of ourselves into, and that so many people appreciated. It's nice to be living proof that two college dropouts with no money can make a multiplatform console game and come out the other side with only minor head trauma.

## Data Box

**Developer:** Team Meat

**Number of Developers:** 1 Edmund, 1 Tommy, 1 Danny

**Length of Development:** 18 months

**Release Date:** October 20, 2010 (XBLA), November 30, 2010 (Steam)

**Platform:** Xbox 360, PC

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