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+

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EXPLORING
**NINTENDO'S
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a highland song

**SONGS AND SURVIVAL FROM
THE MAKERS OF HEAVEN'S VAULT**

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Why it's OK to give up when video games stop being fun

█ recently gave up on *Elden Ring*, and I've made my peace with that decision. I knew going in it wasn't going to be a game to my tastes, because as far as I'm concerned, the two worst things in video games are a) boss fights, and b) doing the same thing over and over, so *Elden Ring* was always going to be a tough sell.

But everyone was banging on about it being a solid 10 game of the year, and as a game designer, I suppose I felt it was my duty to check it out – I did a similar thing with *Breath of the Wild*, having never played a *Zelda* game before, and I loved it, so maybe I thought lightning would strike twice.

And look, I very much enjoyed the 'dressing up' and 'going around' parts of *Elden Ring* – they were absolutely 10 out of 10 brilliance. It's a very pretty game, and I enjoyed feeling constantly ill-at-ease with, well, everything. But the boss fights and repetition wore me down to the point that I eventually, calmly, took the disc out, popped it back in the box, and threw it down a well. Not out of frustration. I wasn't in the middle of a boss fight. I'd just... suddenly seen enough.

And you know what? That's fine. It's absolutely fine. I got 25 hours' playtime out of it, and in a world where eight hours of any game is generally enough, it did very well indeed. I got my money's worth.

Giving up on games isn't something I do lightly. Even games I've absolutely detested I've played through to the bitter end, just... because, I guess? Sheer bloody-mindedness, maybe? Perhaps a thin hope that the game will all come together at the end? A sort of bizarre sunk-cost fallacy where I've spent eight hours



DAN MARSHALL

Dan Marshall set up *Size Five Games* in 2008 before selling indie games online was really a thing. His most recent smash-hit indie game was *Lair of the Clockwork God*.

not enjoying this, I might as well see it through? Who knows. I regularly give up on books, movies, and TV shows – if they're not your jam, why waste your time persevering? Triple-A games are expensive, though, so it's a little different: you need to feel like you got your money's worth, even if you're utterly miserable.

That said, I reckon it's bad advice to just say "When a game stops being fun, stop playing". Sometimes games elicit more reactions than just 'fun', they can challenge you (in many ways), and they can tell you stories that are tough to be a part of. They can infuriate you and enchant at the same time. I think I stopped having 'fun' with *Elden Ring* within the first few hours, but I was continually drawn to it for a whole host of other reasons.

For me, the game just reached a natural denouement. I'd scoured the first big area and was getting my backside handed to me by everything in the second area. All of a sudden, a beautiful calm descended; I was surrounded by a lovely hazy, warming Sunday afternoon light; it was like seeing into *The Matrix* while God stroked my hair and told me everything was going to be alright and would I like a biscuit?

"I'm done with this", I thought to myself. And that's OK. It's not about the ending, it's about the journey, and for what it's worth, I enjoyed my journey immensely. It might be different and shorter than your journey, but I'm leaving a game I generally disliked with extremely fond memories, and for that alone, I feel like I beat *Elden Ring* in the best possible way. If not, you know... literally. 🍪

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WELCOME

Are handheld games fundamentally the same as the ones on our big televisions, or are they distinct, more intimate? There's no correct answer to that question, necessarily, but it's still one that's been batted back and forth among designers for years. The Game & Watch and Nintendo DS offered experiences you couldn't find anywhere else, while the Switch now offers a middle ground. Valve's Steam Deck offers nothing less than an entire gaming PC in the palm of your hand (or both hands – it's quite a hefty beast, the Steam Deck).

While approaches to handheld gaming change all the time, it's pleasing to see the Playdate carve out its own niche. Here's a device that sticks to the 'withered technology' pioneered by Nintendo's Gunpei Yokoi: with its monochrome, non-backlit screen and limited, quirky inputs, it's a system that challenges developers to work around its limitations. And as you'll see on page 28, there are already lots of games that use the Playdate to engaging effect.

The Playdate's wilfully off-kilter design may not be for everybody, but then again, neither's the Steam Deck or even the Switch. Handheld gaming is almost as broad a church as the wider medium as a whole, and that's no bad thing. Indeed, it's something we're celebrating in this very edition, from refurbished Game Boys to Playdate to our Python homage to the Game & Watch era. As always: enjoy!

Ryan Lambie
Editor

inkle's incredible journey

Lead designer Joseph Humfrey introduces the studio's latest opus, *A Highland Song*

W

ith every game, inkle has pushed its narrative-based games in bold new directions. *80 Days* was a globetrotting adventure drenched in

intrigue; *Heaven's Vault* was a sci-fi epic about an archaeologist digging through tantalising clues on a strange alien world; *Overboard!* was a mischievous murder mystery where you played the killer. Its latest project, *A Highland Song*, is bolder still – an unusual combination of survival adventure, platformer, and rhythm-action game.

Lead designer and studio co-founder Joseph Humfrey cites Jordan Mechner's *Prince of Persia*, the animated films of Studio Ghibli, and his own teenage years hiking in Scotland as inspirations. *A Highland Song* is still as narrative-driven as inkle's previous games, but as Humfrey himself says, it's a story driven by its visuals and music rather than dialogue. Those varied mechanics are also another storytelling tool: don't go into *A Highland Song*

imagining some brutal, *Rust*-style survive-'em-up where death lurks behind every crag, or where failing to leap and jump to the beats of a song will cause a sudden fail state; instead, they act as spurs, coaxing you on through the mountains.

The underlying story is simplicity itself: as teenage Moira, you set off on an ill-advised quest to cross the Scottish landscape and visit your Uncle Hamish who lives on the coast. On the journey, she'll have to find shelter from storms, scale craggy mountain faces, and find the supplies she needs to carry on. It's a 2D game, but don't let the perspective fool you: there are multiple pathways through the Highlands, and secrets and snippets of story to uncover depending on which way you head.

Inkle's pedigree alone makes *A Highland Song* one of our most anticipated games on the horizon, and our chat with Joseph Humfrey, about its origins, development, and future, has only added to our enthusiasm. Here's what he had to say... ➔



You're passionate about walking and hiking, so that's where that part of the game came from. But what led you to create Moira, the teenage lead?

We always try to have a diverse cast in our games. And if there's a question of gender, in order to promote diversity, we prefer to default to female rather than male. So most of our games recently have had female character leads.

In terms of the age, it's based on my own teenage years, basically – the experience of being foolish and feeling invincible and doing very silly things in the Highlands. It's kind of a semi-autobiographical element, I guess you could say.

And how many iterations did Moira go through in terms of her look? I've seen some of them on your dev blog. She's changed quite a lot.

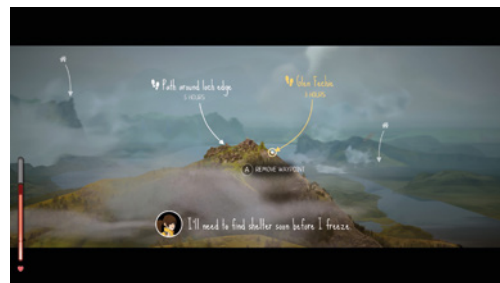
She *has* changed quite a lot. We started with quite a whimsical look – she had a feather or something in her hair. It's been tricky getting the balance between a style which is light-hearted on the one hand, where it makes sense that she's able to do big jumps because she's got a cartoony look to her, and something that's more grounded, because, really, we want the tone of the game to have an element of

realism to it. It's about you being there in the mountains and being affected by quite grounded things like the weather and real things you'd come across in the Highlands.

It's striking a balance between those two things. When we moved away from that initial, overly whimsical look, we arrived at something that's a bit more grounded, but still slightly stylised to give it a slight Studio Ghibli aesthetic. We also wanted to make sure we portrayed her in a way that shows she's a modern character. In some ways, the story's timeless, in that the Highlands are wild and there's not many signs of what time period it's set in. But giving her a yellow anorak definitely grounds it in a more modern setting with her backpack and everything.

Did you experiment with other perspectives besides 2D, and how does that viewpoint affect the storytelling and atmosphere?

We've always thought of it as a 2D game, but there's been a bit of experimentation in terms of mechanics and seeing how to get multiple 2D layers so you can go in and out of the screen. We looked at games like *LittleBigPlanet* which has this classic, three-layered design. There can sometimes be a design challenge in making that feel good, because it can be confusing to the player when they're jumping onto platforms that are receding from view. We have a bit of



^ **"There'll be multiple endings" to *A Highland Song*, says Humfrey, but adds we should expect two or three rather than thousands.**

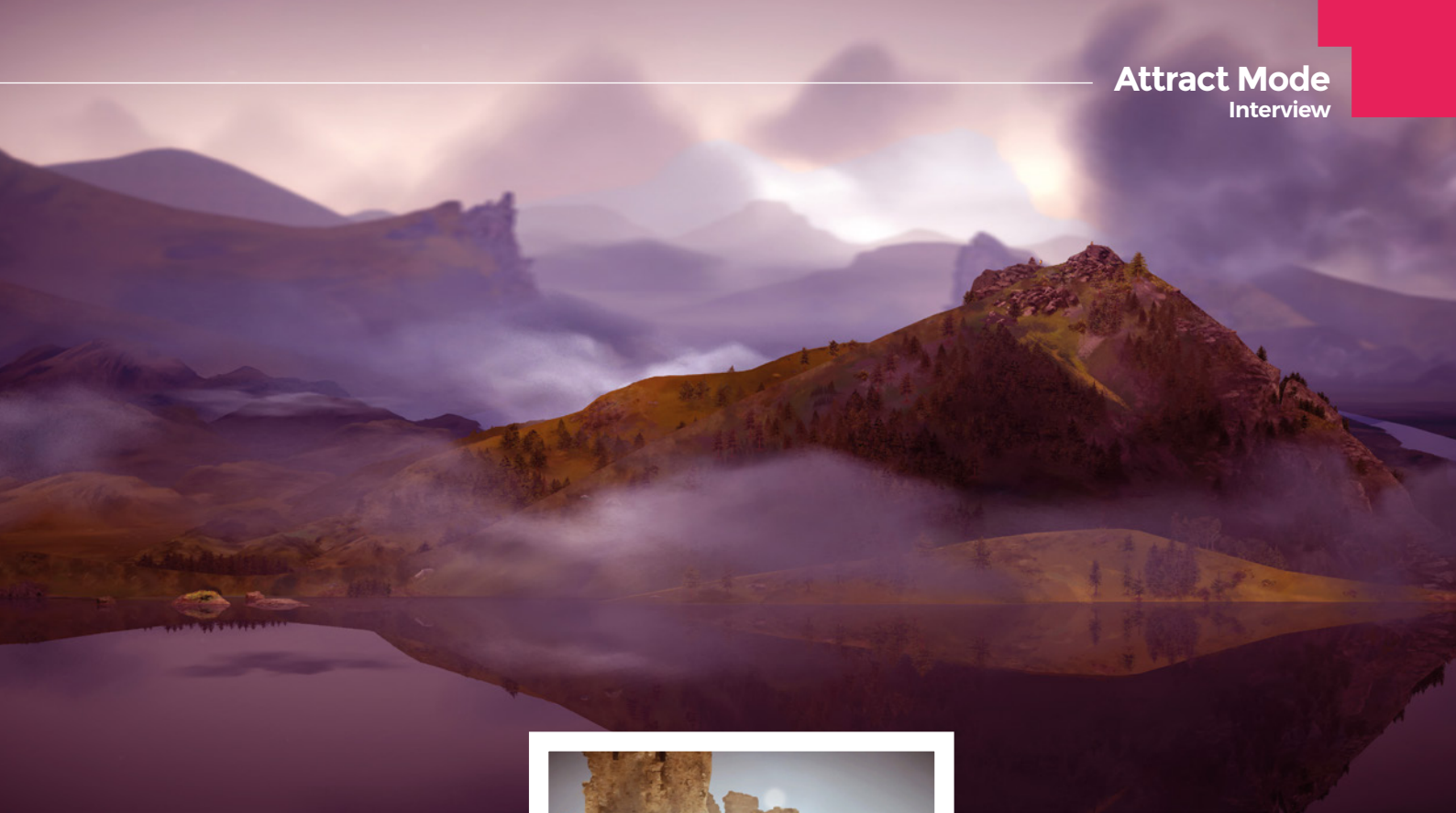
that, and so we try to make it clear to the player how it works. But it can work quite nicely, because if you keep jumping up layers and it goes into the screen, then you have this three-dimensional look to the way the mountain builds up.

In terms of the way it affects the tone of the game, we've got quite a painterly aesthetic, and we have a lot of 2D lighting effects that set the mood and tone. So as the sun sets, you get a warm orange glow over the mountains, and you can also find campfires that emit light. In fact, we're planning on turning the lighting into quite an important feature of the game. So you start off with a torch that quickly runs out of battery, and that means it's even more difficult when the sun goes down. And so, one mechanic we have is that you can find batteries around the game to charge up your torch, and that then allows you to explore further and go into caves and things like that. The darkness sets a tone of danger and foreboding when you're exploring.

Music's clearly important in the game – it's right there in the title – so could you talk a little bit about developing that side of the game?

The game has an important focus on music, and as you say, it's in the title. We're really excited to be licensing some authentic Scottish folk bands for the game. When we were looking around on Spotify, we had a couple of bands in mind. In fact, my co-founder Jon [Ingold] had seen a band called Ímar in Cambridge. I think it was one of their first live gigs... As it turned out, there was this one band-leader who was in three different bands – he led the band that Jon had seen in Cambridge, but coincidentally, he also led the band that was my favourite.





We've got rights to a bunch of his songs from two bands, one called Talisk, and one called Fourth Moon, and they're absolutely brilliant. We're really excited to be working with them, but then we're still working with Laurence Chapman, the composer for our previous projects. He's doing some of the ambient music that fills the rest of the game, and accompanies some of the more narrative moments, whereas Talisk and Fourth Moon are the ones doing the music for the rhythm action sections.

In terms of those rhythm mechanics and survival mechanics, was there a lot of discussion about how complex and challenging to make those?

Yeah, because there's definitely a balance between making it challenging, but at the same time, we didn't want it to be the type of game where you can't do a section, so you have to keep restarting it. The rhythm action sections are a lot more about flow, basically – keeping going. We aim to allow everyone to enjoy them and feel like they are moving in time to the music more than telling you, 'Oh, you failed. You have to restart this section. Do it again'. That would be really frustrating, especially in the context of a game that's about narrative progression.

In a survival game, if you're trying to get somewhere before nightfall and you just want to reach a particular point and you're

enjoying the flow state of running, but then you're being told to restart and restart, that puts certain constraints on the rhythm action sections. Those might work in *Guitar Hero* or something where that's the entire game – that's the enjoyable side of it. But for us, we want to make it feel challenging without actually telling you that you've failed.

How does the script compare to *Heaven's Vault*, say, in terms of size and complexity?

It's definitely a lot simpler compared to *Heaven's Vault*. We're explicitly going for a much lighter touch to the narrative. Especially since there's a lot more focus on other mechanics like exploration and climbing, so the narrative is much lighter and it's portrayed with shorter scenes scattered throughout the world. We use everything we've learned about how to adapt a story based on what the player chooses in the game... Our previous games had a lot more character-to-character interaction, and this is much more about exploring the environment and self-reflection. The narrative is just as important, but it's presented in a much lighter way than in previous games. ➔

- ▲ *A Highland Song* is built in Unity, but inkle's created its own in-house tools for things like 2D lighting and animation.
- ◀ One way *A Highland Song* takes inspiration from Studio Ghibli is in the personality of its backdrops.

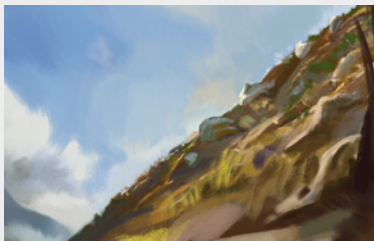
captain's blog

Where some studios keep their games veiled in secrecy, inkle's quite open about its creative process; head to its website, and you'll currently find regular updates on *A Highland Song's* development. So does Humfrey find it useful – perhaps even enjoyable – to diarize the process of making inkle games? "Basically, the grass is greener on the other side of the fence," he says. "When you're working on something in secret, you're desperate to share little tidbits, and then as soon as it's open... sticking to a schedule and showing your game can also be very exhausting – it's a full-time job in itself."

Still, the upsides are obvious: sharing progress helps generate interest, in turn prompting potential players to add the title to their Steam wishlists. For would-be designers and those simply interested in how games are made, meanwhile, inkle's dev blog provides a useful trove of observations and detail. You can keep up with *A Highland Song's* progress at inklestudios.com/highland.

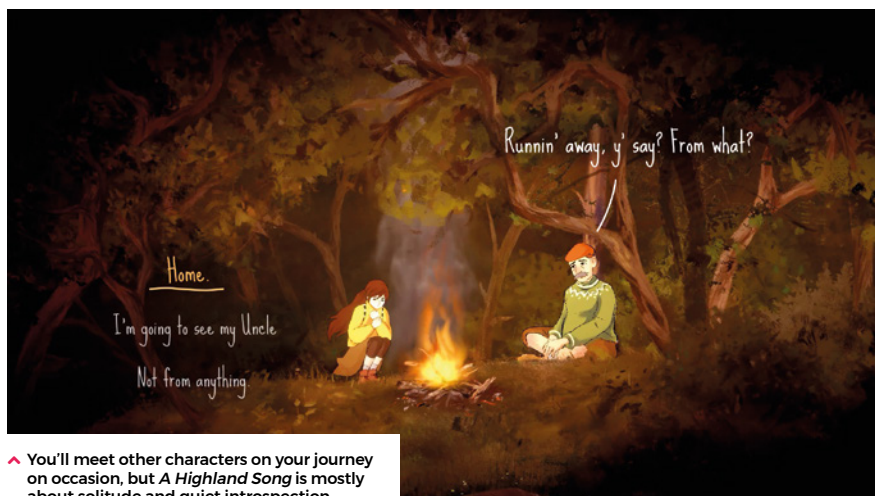


▲ Early concept art shows the painterly, atmospheric look inkle wanted to achieve with its digital Highlands.



▼ These pieces of terrain are procedurally generated and “assembled on the fly in response to the music”, says Humfrey, “each one representing a bar of a song”.





▲ You'll meet other characters on your journey on occasion, but *A Highland Song* is mostly about solitude and quiet introspection.

How much freedom does the player have to explore? Would you describe it as an open-world game, to an extent?

It's very open, but not as open as, say, an actual open-world game. So, basically, you're free to explore on the mountain range you're currently on. But as soon as you progress forwards into the next mountain range – we might change this, it's kind of up in the air – but currently, we're thinking you can't retreat backwards, so you're always moving forwards. But within the current section of the game, the current level you could call it, you have a lot of freedom, and it's a very branchy game, as well. So, part of the thing that we're expecting players to want to do is to give it a playthrough and then realise there's whole sections of the game they haven't explored and want to start again.

This is something we've done a lot in previous games: you can go back to the beginning and then explore other directions. You might decide you want to go east instead of west and see what else is there. And on each playthrough, you'll also retain a certain amount of stuff that you might have discovered along the way or certain information that you might have learned, so that on the next playthrough, a bit like *New Game Plus*, you might retain some of the knowledge or some of the items that you had from the previous playthrough.

“You might want to go east instead of west and see what else is there”

Is that a potential pitfall in narrative games, though – having so many branches that your script becomes too complex?

I should say Jon [Ingold] is the narrative expert, but along the way, I've certainly learned a thing or two. I think the important thing is to branch a lot, very early, to give the sense of the breadth to the game, but then try to close it up as you go through.

We do a lot of looking at what you did in the past to inform what happens in the future. You get a sense that your choices matter...

One of the best ways to demonstrate that something's branching is by reacting as quickly as possible to something [the player does] early in the game. It's a basic psychological technique: if you make a change, you should show the effect of that change as quickly as possible to reinforce to the player that what you're doing matters.

It feels like you're challenging yourself to sort of find new ways to tell stories within the framework of games. That genre doesn't necessarily matter – it's about the story itself.

Yes, exactly. I think we're really interested in experimenting and just kind of thinking, 'I wonder what it would be like if we put a story in that kind of environment or in that kind of setting'. And that's partly what happened when we were working on *Pendragon* as well; that was definitely a very experimental, 'What if you had a game

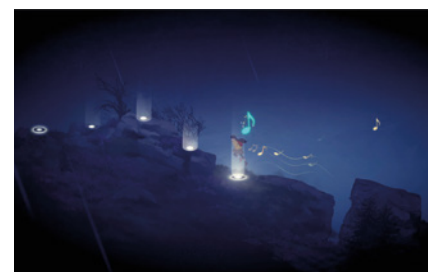
of chess and then you added a rich story and environment and setting'. It wasn't as successful as some of our other games, but we really enjoyed it from an experimental point of view.

You mentioned Studio Ghibli earlier. They seem to come up more and more frequently when I talk to developers. Why do you think they're such a big inspiration for artists and game designers?

It's a really good question... I think [Hayao] Miyazaki, the director, he's very strict about producing [his films] in really traditional ways and in a very wholesome manner, which is something I think some video game developers really aspire to. Because when you're working in such a technology-heavy industry, you sort of aspire to a certain element of tradition – a handmade, authentic aesthetic that's missing from all of the laser blasts and guns of traditional games. So I think there's a bit of a reaction against that side of the games industry.

I was wondering if being an indie developer means your games have the latitude to be more 'local' and deal with a specific place like the Highlands?

In some ways that's absolutely true. But we also talk about the 'indieocalypse' because of how competitive it's become and how many indies there are. Scotland is such a hugely important part of the game, but we have to play it down a bit because of how ruthlessly competitive the industry is. You also have to think, 'How much do people really care about Scotland?' And I think if we ask ourselves that question ▶



▲ The rhythm action elements are semi-procedurally generated based on the music, so change each time. The environments themselves, meanwhile, are carefully authored.



▲ The narrative will be relayed through Moira's memories and the letters sent to her from her uncle, Hamish.

indiepocalypse

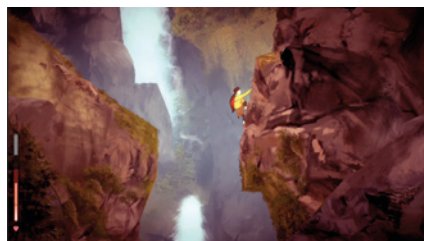
Given that inkle's been around for a decade now, Humfrey naturally has some thoughts on the state of the indie games scene. The sheer number of games fighting for attention makes success "extremely difficult" for new studios trying to break through, he says. "We're extremely lucky to have got our foot in the door, so whenever we announce projects, we don't have too much difficulty in getting a little bit of media attention, so we can sort of guarantee a certain level of sales."

Not that it's all bad news: Humfrey adds that platforms like YouTube and TikTok provide opportunities for developers to freely promote their work. "We're starting to experiment with TikTok right now," he explains, "and increasingly, you can get a bit of a following with platforms like that, even if you have zero followers. So, there are techniques that you can use. But it is extremely competitive, and it's not easy at all, especially if you're just starting out. Yeah, the indiepocalypse is real!"

seriously, 'Not very much' is probably the answer... So that informs the way we have to think about marketing the game – that we don't sell it to fans of Scotland, we sell it for what the beauty [of Scotland] can do for the game, basically, and then bring people on board with the Scottish culture as we go along. And of course, anyone who's a fan of Scotland will automatically be more interested.

Finally, then, how do you hope people will feel when they play the game?

I really hope that people allow themselves to become immersed in the game. I think what I found when I play games is that there's a certain level of trust you have to have for a game and the experience it's trying to portray. A lot of the time, I don't get into a game that others might because I can kind of see what's going on behind



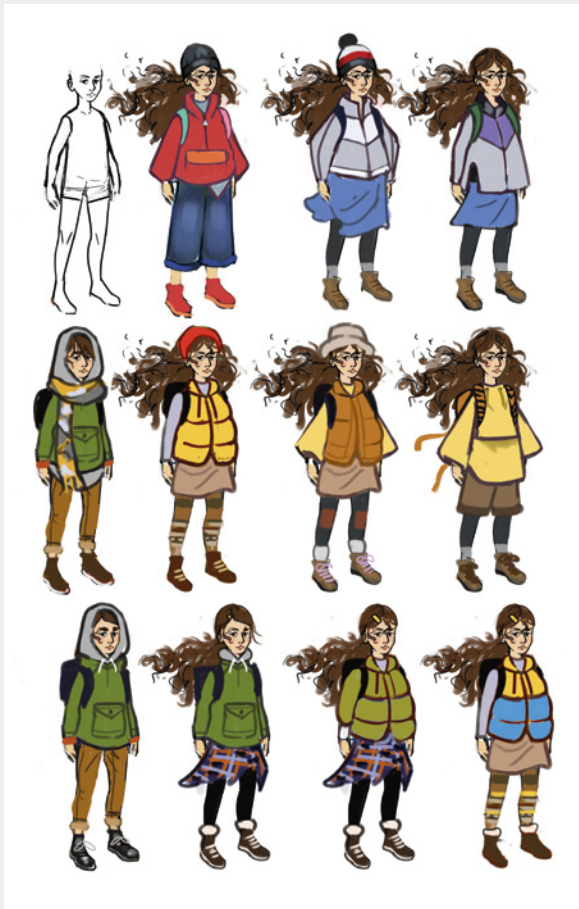
▲ Moira has a limited grip while climbing. inkle experimented with a visible grip meter, but this was dropped to minimise the UI and make climbing feel more intuitive.

the scenes, and I don't really believe what it's trying to tell me or what the narrative is trying to tell me – I don't believe that or I don't believe the world.

And so what I really hope is that when people sit down to play the game, they feel like they are present within that world, and that they believe in the mountains and the weather and everything – that it's a real taste of the Highlands that perhaps people who've been to Scotland will recognise. Hopefully we get that across with the game.

Occasionally I sit and think, 'if I could make any game in the world, what would it be?' And I think a few years ago, I sort of imagined myself sitting with a Switch just, you know, being there in nature. But we're way beyond the phase of games like *Dear Esther*, where you can get away with giving players a world that they can just wander around and enjoy without having anything particular to do.

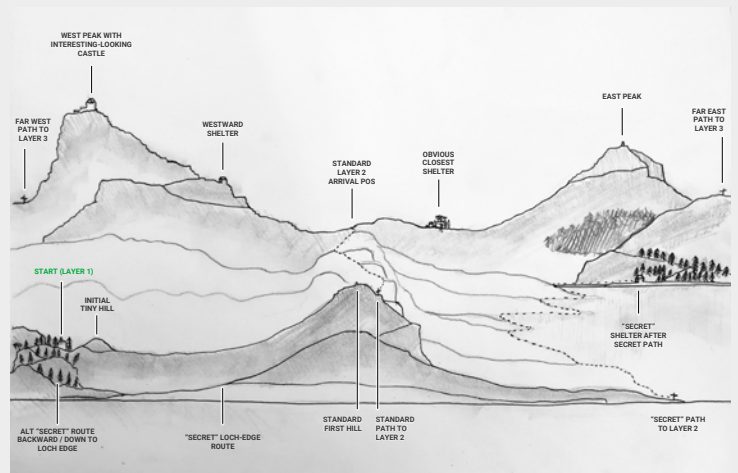
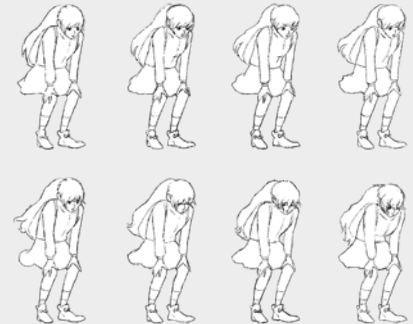
I really hope that the mechanics that we create will help drive people to enjoy the world we're creating. Because we're definitely a company that creates game mechanics to serve a purpose, to help people enjoy a game rather than to enjoy the game mechanics for themselves. So if we can get the game mechanics right, and they can enjoy the world and the story, then I think that's what we aspire to, basically. 🐼



◀ Moira went through a host of iterations in early development, from “whimsical” to more realistically proportioned to the mid-point we see today.

▶ Although *Heaven’s Vault* featured 2D animation, *A Highland Song* requires far more frames to achieve its fluid character movement.

✔ This level design sketch shows how *A Highland Song*’s map is built up from 2D layers.





Cracking the case **wide open**

Walking the voxelated city streets in *Shadows of Doubt*, a fully simulated detective thriller

Info

GENRE

Detective, stealth, simulation

FORMAT

PC

DEVELOPER

ColePowered Games

PUBLISHER

Fireshine Games

RELEASE

2022

SOCIAL

@ColePowered

The hyper-industrialised, eighties-inspired metropolis your character finds themselves in is full of unsolved mysteries. But that's OK, because developer ColePowered Games hasn't managed to solve them, either. Unlike most detective adventures, which lay down a predetermined trail of breadcrumbs to create the illusion of an investigation, in *Shadows of Doubt*, any clue or hint you piece together is procedurally generated. The only thing players can rely on, as they try to catch a killer on the loose, is their own wit and instinct. This is a game that will truly let them step into the role of a hard-boiled private eye.

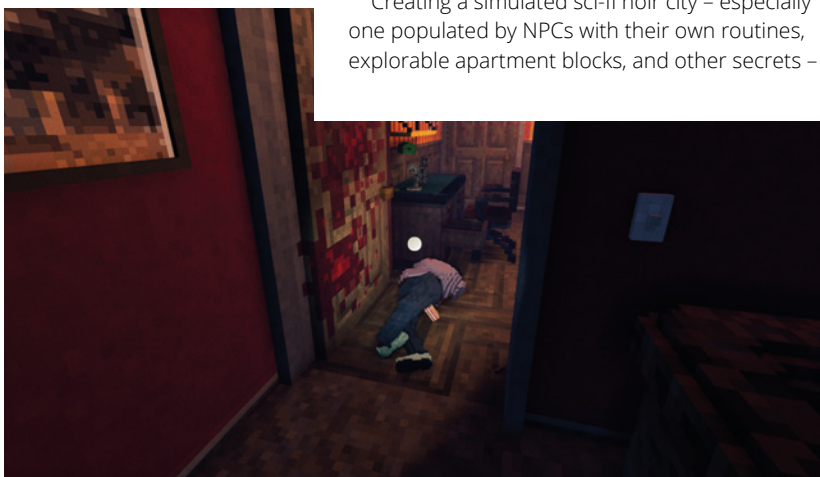
Creating a simulated sci-fi noir city – especially one populated by NPCs with their own routines, explorable apartment blocks, and other secrets –

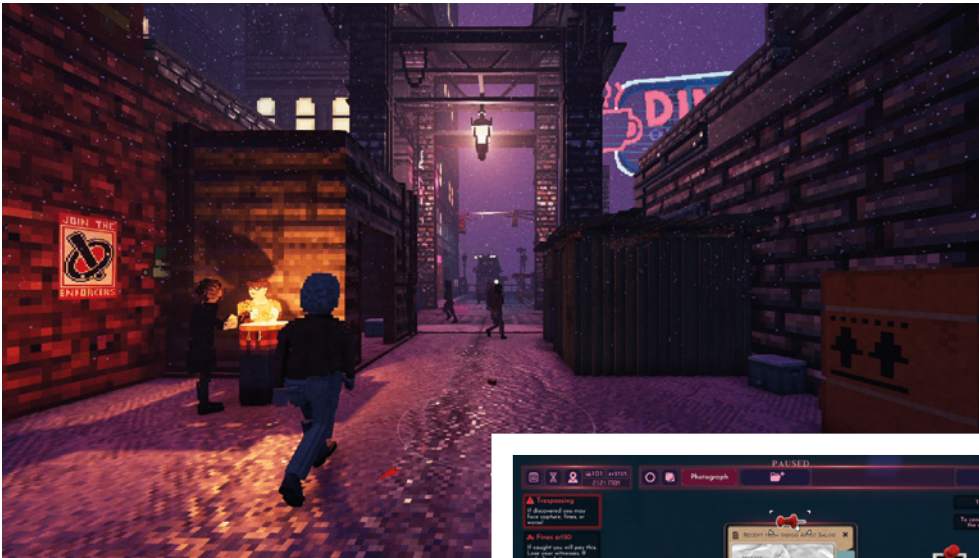
is a tall task, and it's one ColePowered has been hard at work on for almost seven years now. The studio already perfected the art of cityscape building (of a sorts) in 2015's *Concrete Jungle*, but giving players a whole randomised world to roam comes with a more complex level of design challenges – not least how to present it.

"*Shadows* actually started life as a top-down detective management game," explains lead developer Cole Jefferies. "The core of the concept was always the living world; let's simulate this really cool little city and have things play out according to the AI by having one of them be a serial killer, then it's your job as player to react to what it throws at you."

Cole and his team quickly discovered, however, that the top-down view divorced you from a lot of the simulated goings-on, and so opted for a first-person perspective to let players live among the citizens of the world itself. "Pivoting to that early in the project gave it a stronger direction, and made sure the simulation was front and centre to the experience," says Jefferies.

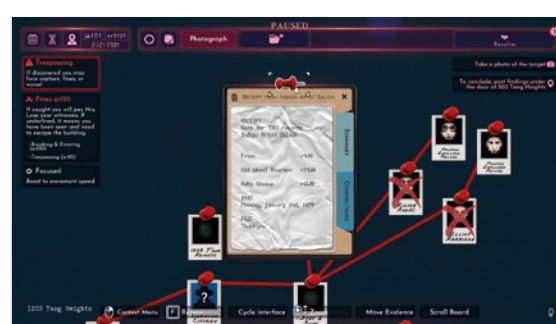
Tracking down the killer in *Shadows of Doubt* works much as you'd expect, via the gathering of evidence, interviewing strangers for hints, and using stealth tactics to break into key areas. Not every piece of information or item you find will be useful for tracking down the killer, but it all adds to the feeling that you're chasing leads on your own terms instead of being led along. Plus, with every player's set of clues and killer identity





◀ Jefferies cites noir movies like *Blade Runner* and *Brazil* as inspiration for the city's luminescent, gritty look.

◀ To keep track of all your clues and notes, *Shadows of Doubt* lets you access a caseboard at any time.



always being different, no online walkthrough or strategy guide will help. The onus is all on you.

“The biggest appeal is complete player agency,” continues Jefferies. “There’s a moment where you arrive at a crime scene and realise that the game isn’t pushing you towards any clues or anything; it’s truly up to you to find what’s there and decide when you’re done. Then decide what to do about it. There’s a lot that’s exciting about that freedom. It makes you feel like a detective rather than playing along as one. It makes you laugh when you realise how bad a detective you are, or feel accomplished if you’re actually effective!”

Cole acknowledges that with freedom comes a greater risk of people becoming frustrated or lost. *Shadows of Doubt* makes a point of guiding you through its voxelated city in the early hours with a scripted section that explains the mechanics, but after that you’re off the leash. Despite this, ColePowered has found ways to offer guidance and a sense of progression. “You earn money from cases,” Jefferies says. “The amount depends on which questions you’ve answered correctly and the difficulty of the case. You can spend money on various things in the world; gadgets, upgrades, and even your own apartment.”

Said gadgets serve a practical use, as you’re encouraged to hack security cameras that may otherwise trigger alarms, and there’s a handheld scanner that can read fingerprints. Decorating your apartment isn’t essential to the story, but it still helps immerse players in the fiction.

“We found in some of our testing that immersion, and role-playing within the city was something folks really enjoyed, so we’ve tried to

“It makes you laugh when you realise how bad a detective you are”

lean into that as much as possible and allow the player to live within the world.”

Additional puzzle pieces will generate over time should players ever become too stuck – it’s just one example of the trickery operating in the background, designed to help players avoid a fail state. “The killer you’re hunting will also keep killing,” Jefferies says. “If you don’t find enough [clues] at one crime scene, there will eventually be another.” The prospect is simple, then: use clues and resolve questions to catch the murderer in a timely manner or there’ll be no NPCs left to question.

After a lengthy development, rigorous bouts of QA, and more work besides, Jefferies is confident that the procedural sandbox he and ColePowered have created will be the perfect venue for players who want to live out their detective story fantasies. But would he do it all again, knowing what it took to realise this bold ambition? “The process starts with ambitious ideas, and then with time they get shaped into things that are realistic and achievable while keeping the core that makes them special and worthwhile,” he says. “The development has been a lot of fun, and a huge learning experience. I would undertake it again without a shadow of a doubt – but I’d want a decent break first.” 🍷

NAILING THE NOIR TONE

It wouldn’t be an authentic detective story without a splash of noir style. When it came to nailing this aesthetic, Cole Jefferies had plenty of inspiration to choose from. “Visually, the game is inspired by cinema, both old and new,” he explains. “The neon dystopia of films like *Blade Runner* are an obvious influence, while the ruined cityscapes and harsh shadows are hopefully reminiscent of classic noir [like] *The Third Man*. But thematically, Terry Gilliam’s *Brazil* is a good one; we’ve got a lot of dark quirkiness that runs throughout the world.”



Class is in session

Moulding the minds of tomorrow one unconventional college course at a time in *Two Point Campus*

Info

GENRE
Management, business simulation

FORMAT
PC / PS4 / PS5
/ XBO / XB S/X / Switch

DEVELOPER
Two Point Studios

PUBLISHER
Sega

RELEASE
9 August 2022

SOCIAL
@TwoPointStudios

For the next game set in its quirky county, developer Two Point Studios is taking us back to school – or university, to be more exact. This campus is sure to operate differently to most, though, simply because you get to design it yourself. *Spy School? Wizardry?* There's seemingly no class (however bonkers) that's off the table. *Two Point Campus* follows in the footsteps of *Two Point Hospital*, the team's 2018 spiritual successor to *Theme Hospital*, but this time madcap illnesses are swapped for courses with an expectedly oddball spin. Nurturing students from enrolment to graduation just became fun.

"We always, always love seeing what people do with the games," says design director Ben Huskins on the level of creativity he and the studio strive to offer players. "I think that the

same will be true with *Campus*." Riding off *Two Point Hospital's* critical and commercial high, the idea for a sequel set around the schooling system came relatively quickly for Huskins and his team. "The whole idea of the world of education, we kind of latched on to that because it felt relatable," he says. "Everyone's got their experiences of their eccentric teachers at school, if not college and university. And so it felt like it was going to have lots of relatable elements that we could lean into, that people would have some sort of memories from their own lives."

We doubt most people can relate to baking a pizza in a giant, ten-foot oven when taking gastronomy class, or learning how to joust and act chivalrously as part of Knight School. Such creative courses, though, are indicative of the tongue-in-cheek tone *Two Point Campus* goes for. Because sure, while running your dream campus requires a bit of a business brain in terms of hiring the best teachers, making the most of space, and implementing extra-curricular activities to keep your students happy, Huskins thinks it's crucial for players to never lose sight of what it's all in aid of. The game's appropriately silly courses are core to that, and more will become available as you move from campus to campus.

Was it tough to come up with an ingenious twist for each course? "We did a lot of brainstorming, because lots of things immediately



> As well as making courses fun and educational, extra-curricular activities are key to keeping students happy between classes.



◀ Progression in *Two Point Campus* works by having you visit different locations around the county and designing new academic years based on the surrounding environment.

sprung to mind,” Huskins says. “A little bit like *Two Point Hospital*, you’re visiting different locations around Two Point County. We want to structure the game so that you’re gradually being introduced to the features as you progress.”

Each location will grant you access to new courses themed around that area. “You start getting into stuff like Knight School, where students are training to be knights of the county, and they’ve got their little toy horses to do pretend jousts on and things like that. We just start to get into more peculiar courses as the game progresses.”

One of the biggest differences between *Hospital* and *Campus* is how the people you manage are handled. Whereas your objective in the former was to cure patients’ illnesses quickly, the sequel has you moulding young people’s minds. This new structure allowed Two Point Studios to imbue the NPCs roaming the university halls with a bit more personality, giving each their own behaviour and routines that players can recognise. It’s hoped that by spotting such unique traits, resolving their specific needs – boredom, friendship, etc. – will become second nature. Improved student happiness results in good feedback, which, results in more money to fund the next year.

“Having an education setting and students is a really nice opportunity for us to focus on these quirky characters and spend more time with them,” explains Huskins. “Because they’re not just in and out in a few minutes. They’re there for, say, a three-year course. That means we’ve

“We get into more peculiar courses as the game progresses”

flipped things around the other way. So it’s more about ‘What can I do for these students over a fixed time period?’ as opposed to ‘How fast can I get them through the system?’ It gives you that opportunity to spend more time following around a few individual students, getting to know different social groups, shaping their lives, and giving them a cool social life as well as a cool academic life.”

Two Point Campus may have suffered a delay from June into August, but it’s already clear from what we played that the studio has a class act on its hands. Having already parodied the medical field and now set to do similar for education, we can’t help but wonder if there’s an industry this zany business management formula wouldn’t work for. Could we see a *Two Point Space Colony* release one day?

“There are lots of ideas on the plate,” chuckles Huskins. “We’ve found plenty of reasons to explore unexpected locations within Two Point County. We wouldn’t want to close any doors.”



PERSONAL SPACE

One of the most important bits of feedback Two Point Studios received following *Hospital*’s release was how some players found rooms having preset sizes quite limiting. Hence why in *Two Point Campus* this is no longer the case; players can now smoothly adjust the size of areas by dragging across a grid. “People wanted to be able to decorate outside and actually tweak the shapes of buildings,” says Huskins. “It wouldn’t make sense to add that as an update to *Hospital* because the game wasn’t really balanced around it. Whereas starting *Two Point Campus*, it felt like this was actually a great opportunity for us to make that a pillar of the game so that players could have a lot more creative freedom.”



Personal details

Designer Elwin Gorman talks us through his two very different upcoming adventures: *NAIAD* and *PiAwk*

Info

GENRE
Adventure

FORMAT
PC / Mac

DEVELOPER
HiWarp

PUBLISHER
HiWarp

RELEASE
TBC

SOCIAL
@HiWarp

In picturesque Murcia, south-east Spain, indie developer Elwin Gorman has spent the past five years quietly making visually inventive, highly personal games. After a few false starts, he embarked on *PiAwk* in 2017 – an adventure-puzzler about a bird-like creature exploring a devastated 2D landscape. Two years later, during a bit of downtime, Gorman came up with the initial prototype for what would become *NAIAD*: the story of a water nymph and her journey up a lush river. According to Gorman, the two projects then “grew up in parallel”, with work on one occasionally giving way to the other. “Every day I think about *PiAwk* and *NAIAD*,” he tells us, “about how I’m going to solve a certain mechanic, how to tell a certain story, or want to create a certain emotion.”

With its monochrome visuals and side-on perspective, *PiAwk* might look like the more

straightforward of the two, but there’s real complexity lying beneath the surface: its world is non-linear, while its physics-based puzzles can be solved in a multitude of ways.

“In *PiAwk*, the character is a puzzle in itself,” says Gorman. “The player can decide to advance through a simpler game experience, or go deeper by discovering certain skills, interactions, and more complex paths.”

PiAwk’s hidden depths are neatly summed up in a short video, uploaded to Twitter back in 2018; it shows the player constructing a tiny raft from pieces of flotsam before sailing away across a hazy grey ocean. Gorman evidently relishes the process of coming up with all these different interactions.

“You can place all kinds of small objects on his head, on his back, carry them in his beak, look in eight directions,” he says of his avian protagonist. “*PiAwk* can sing different notes, drag or push large objects, jump, glide, and more. One of the most curious actions the character can perform is ‘thinking’ or ‘concentrating’. For example, if we ‘think,’ while carrying a flower, *PiAwk* will be able to perceive its smell.”

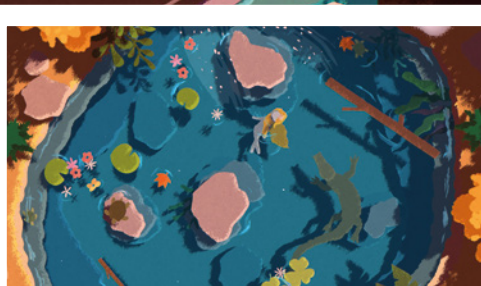
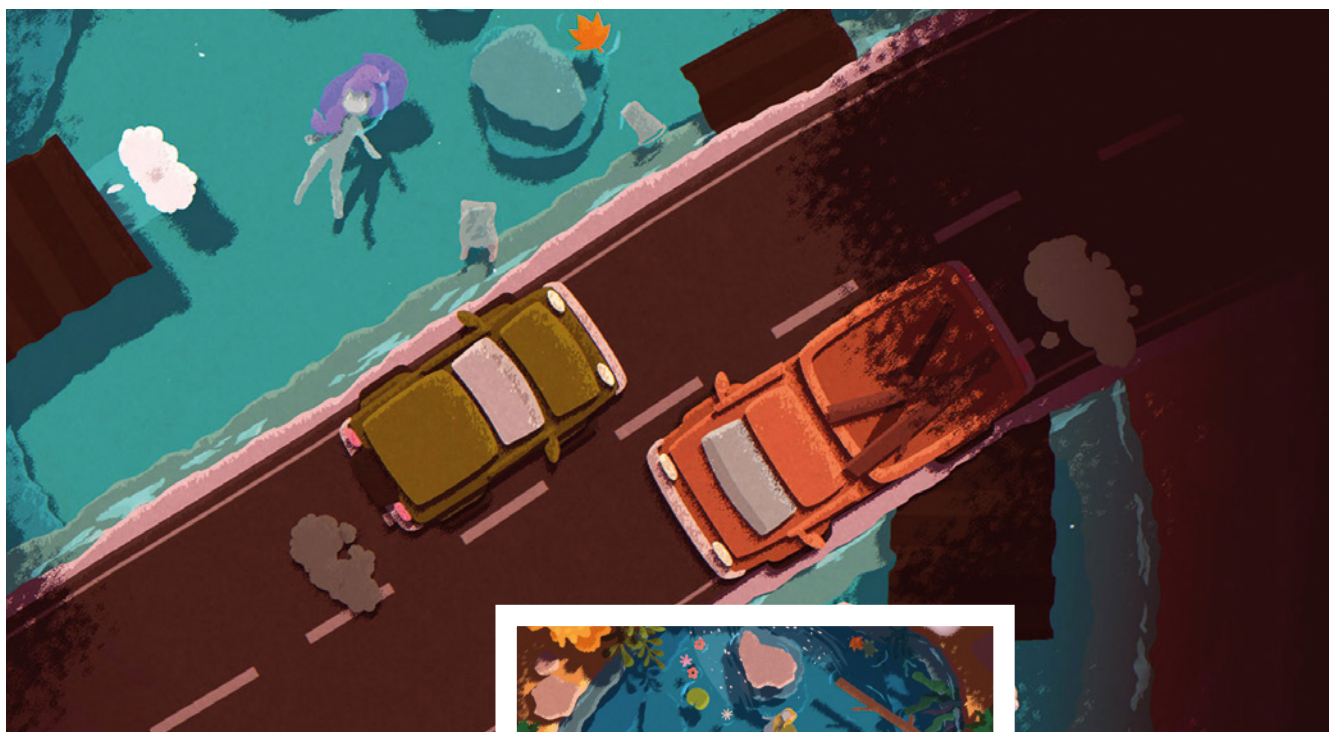
SHAPE OF WATER

NAIAD, meanwhile, is a more linear experience: a kind of three-hour meditation on the journey of life and humanity’s relationship with nature. As the water nymph makes her way down the river, she interacts with wildlife and experiences



^ A *PiAwk* moment Gorman conceived around four years ago: you can find bits and pieces on the beach and cobble together a raft.

> *PiAwk* began life in 2017 while Gorman was designing a typeface for his website.



the pollution wrought by humans. “Naiad is a personification of the river itself, so we’re travelling our own life’s path,” Gorman says. “It’s an allusion to nature, to the life cycle, the water cycle... along the river, Naiad will mature and discover that she doesn’t completely control her own destiny. We move forward at our own pace, finding small corners where we can stop for a moment to rest, where we can interact with animals or simply swim with the leaves floating in the water, discovering secrets.”

In contrast to *PiAwk*’s white space and bold, black lines, *NAIAD* has the vibrant, shimmering quality of a moving oil painting. It’s a look that has required the writing of shaders and a custom render pipeline, plus a lot of experimentation.

“I invested a lot of time in modifying the lighting,” Gorman says. “I experimented, broke a lot of things, and in the process, I found some results that surprised me. I’m still iterating the details, even today – yes, this close to release...”

While *PiAwk* and *NAIAD* are quite different games, they do have traits in common: both, Gorman says, share humour as well as hints of tragedy, and both are “full of symbolism, metaphors and mysteries to be discovered”. Another connection, we’d argue, is the creative glee that goes into their design – it’s easy to

“Creating something unique, experimental, involves taking a risk”

sense Gorman’s excitement when he talks about the expeditions he’s gone on to record the sounds of real birds and water on a riverbank, or how carefully he labours over the specific placement of details like rocks and trees.

Gorman appears to enjoy the process of creation to such a degree, in fact, that he says the greatest challenge is knowing when to stop.

“They’re like a living part of myself, so it’s a hard decision,” he admits.

“Finishing them means to stop experimenting and ‘playing’, and moving on to

fixing and closing things. It’s about turning them into something that players can understand and enjoy.”

Thankfully, *NAIAD* is nearing completion, with a release on PC and consoles due later this year. After that, it’s back onto *PiAwk*. “Finishing *NAIAD* has helped me to define even better what I’m going to offer in *PiAwk*,” Gorman says. “I’m really excited about sharing both projects with the world.”

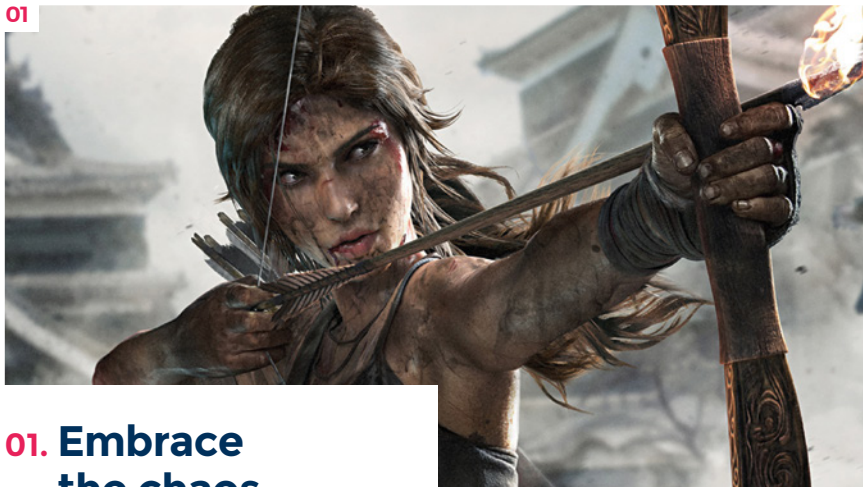
▲ Those pesky, polluting humans play an “antagonist” role in *NAIAD*, according to Gorman.

▲ Gorman spent two years working on *PiAwk*, and when he realised it was becoming “something more complex”, began the prototype for *NAIAD*. “I’m convinced that to finish *PiAwk*, I must first finish *NAIAD*.”

TRUST THE PROCESS

For Gorman, having the freedom to experiment is key to his approach to development. It means that ideas often fall by the wayside, but it also allows him to come up with new concepts that aren’t simple retreads of those seen in existing games. “Creating something unique, rare, experimental, involves taking a risk. It’s a lonely road because very few people are willing to believe the vision and jump into the void. But it is also a path where every step is exciting... It’s a risky formula that seems to work for me, and with which I feel comfortable. I think the key is to start from scratch, avoid looking at what works for others, try crazy ideas, and validate the results in each case. I think I’ve done the opposite of what successful experts usually recommend. But I don’t care – I want to create something beautiful and crazy.”

That was the month that was



01. Embrace the chaos

The year of major developer acquisitions rages on; Embracer Group's agreement to snap up revered studios like Crystal Dynamics, Eidos-Montréal, and others from Square Enix for the mere sum of \$300 million being the latest example. Such a move would be viewed as monumental a year ago, but now all bets are off since Microsoft's \$70 billion Activision Blizzard purchase. The reason for Square Enix selling off most of its western arm? "The transaction enables the launch of new businesses by moving forward with investments in fields including blockchain, AI, and the cloud," a statement read. Are you going to tell them, or should we?

02. Off the ball

Following months of rumours that FIFA and publisher EA would be parting ways, the latter has finally confirmed the news. This summer's *FIFA 23* will be the last football title to carry the name following the end of the 29-year partnership, with next year's instalment rebranding to the rather bland *EA Sports FC*. "Under the licensing conventions that we had agreed with FIFA ten years ago, there were some restrictions that weren't going to allow us to be able to build those experiences for players," said EA Sports' VP, David Jackson, on the split. Premier League teams are expected to remain.



03. Out of reach

The fact we hadn't yet seen a lick of gameplay from either *Starfield* or *Redfall* should have been clear indication that both Bethesda titles weren't anywhere close to making their planned 2022 release dates. That's why it came as no shock to see both delayed into the first half of next year. "We can't wait to share our first deep dive into the gameplay for both *Redfall* and *Starfield* soon," a Twitter post from Bethesda read. We should get a better look momentarily, then, but it does leave Xbox's holiday release slate looking a little bare. We're sure *Call of Duty* doesn't mind.

Gears of War may receive "Master Chief Collection-type treatment" in new remaster



Konami has its most profitable year due to *Yu-Gi-Oh! Master Duel*



05



04



06

04. Wake-ing Dead

The *Alan Wake* franchise recently turned 12, giving developer Remedy good cause to share more than a few updates on what to expect in future. Progress on the sequel was said to be going well according to creative director Sam Lake, while Nintendo Switch owners can look forward to a port of last year's remaster of the original. Most exciting, though, was news that a TV adaptation had found a home at AMC (home of *The Walking Dead*) following years of gestation. Now all we need is to get a bearded Jake Gyllenhaal cast as the show's lead.

05. False paradise

Following a former employee's allegations that Nintendo fired them after unionisation attempts, more reports began to surface, suggesting that the House of Mario mightn't be such a wholesome place to work. IGN's findings indicate that it's contractors in Nintendo of America's offices in particular who've the hardest time, not being given access to the same perks as full-time staffers, being criticised over time off for family emergencies, and struggling for routes to progression. "I didn't know I was on death planet until I left death planet," an anonymous Nintendo alumni stated. Mario sunshine? Not always, apparently.

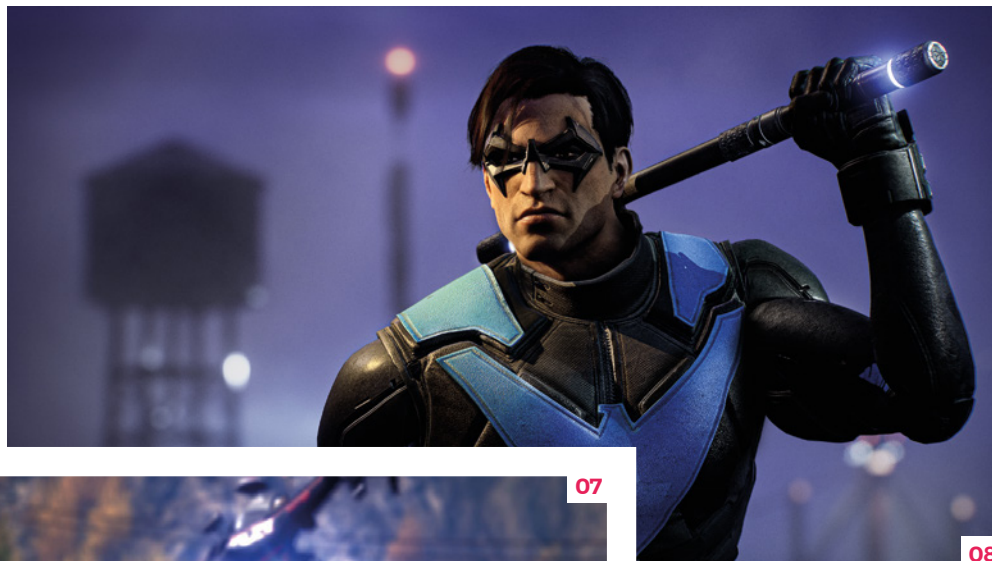
06. No flipping thanks

The same day that Square Enix announced it was selling off franchises like *Deus Ex*, *Tomb Raider*, and *Legacy of Kain* to expand into blockchain tech, cryptocurrencies across the board started to crash alongside the NFT market. It's almost as if an eco-system based on people purchasing imaginary ownership of images they didn't create wasn't sustainable in the first place. Who knew? "Flatlining" was the word The Wall Street Journal used to describe the NFT market's 92% value decrease since September of last year. With any luck, publishers like Sega, Ubisoft, and Square Enix will read the tea-leaves and get out before it's too late.

The next *Call of Duty* is *Modern Warfare 2*, a logo reveal teases



Chris Pratt's voice needs longer to warm up. The Mario movie is delayed to 2023



08



07



09

07. Going up a gear

Criterion – the originators of *Burnout* – being back on lead development duties for this year's *Need for Speed* incarnation was already exciting enough, but now doubly so due to its merger with another driving game veteran: Codemasters Cheshire. This new super-studio of sorts has been put together to cement a brighter future for EA's flagship racing franchise, building on an already established close partnership to "one Criterion studio with two location hubs", according to a Codemasters Twitter post. Two engines working as one? Here's hoping it results in a smoother ride for the series.

08. Next-gen Knights

The ongoing global chip shortage has rendered PS5 and Xbox Series X consoles still tough to find. Because of this, publishers have continued to release last-gen versions to cater to the larger install base...until now? *Batman* spin-off *Gotham Knights*, due to launch this October, was previously set to launch as a cross-generational release, until Warner Bros. announced (alongside a new 13-minute gameplay demo) that this is no longer the case. No specific reason was given, but if you want to fight crime as the Dark Knight's team of understudies, you'll need to jump to next-gen. Sorry, PS4 and Xbox One owners.

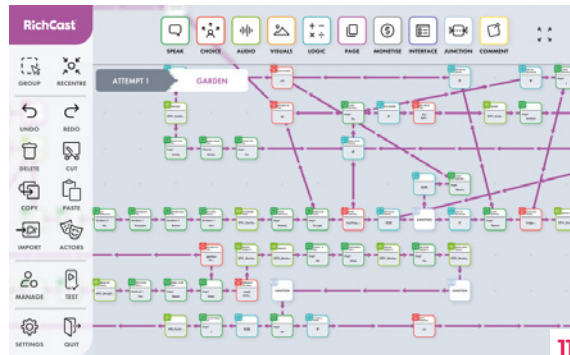
09. (Not so) wonderful world

Cyberpunk 2077 who? One of the most notable launch disasters from both a technical and design perspective was last year's *Balan Wonderworld*. What should have been a fantastical throwback to old-school 3D platformers instead better resembled a feverish nightmare, with undercooked one-button gameplay that suffered further from an incoherent story and characters. Ousted director Yuji Naka explained what went wrong in a series of explosive tweets, dubbing the game "a true disgrace" while citing issues with outsourcing studio Arzest and publisher Square Enix's disbelief in the project. According to Naka-san, neither company "cares about games nor their fans". Sheesh!



Leaked *Silent Hill* concept art indicates next game is set in the UK. *Silent Hill*?

Star Wars Jedi: Fallen Order sequel allegedly subtitled *Survivor*



10. Dreadfully good

Poor Samus Aran hasn't had the best track record when it comes to consistent releases, and that's partly because *Metroid* – as far as first-party Nintendo franchises go – just doesn't have the staying power or broad universal appeal as, say, *Super Mario* or *Zelda*. However, there's hope for us yet, as Nintendo revealed that *Dread* was the bestselling entry in the series by quite some way with 2.84 million units shifted. The previous titleholder was *Metroid Prime*. That game came out 20 years ago, so sailing past it is no mean feat.

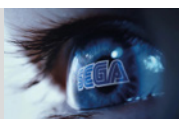
11. Cash RichCast

Code-free platform RichCast has set up a Creators Fund designed to get more storytellers to make interactive experiences. The firm behind RichCast, Panivox, has a fund of around £250,000 for the initiative, and is looking to commission 25 or so pieces of content for the platform. For the uninitiated, RichCast allows users to make voice-activated narrative games or other experiences using a tile-based interface. Initially launched for PC and Mac, the iOS and Android versions should be available by the time you read these words. You can find out more about the Creators Fund – and how to pitch your idea – over at wfmag.cc/richfund.



12. Beat it

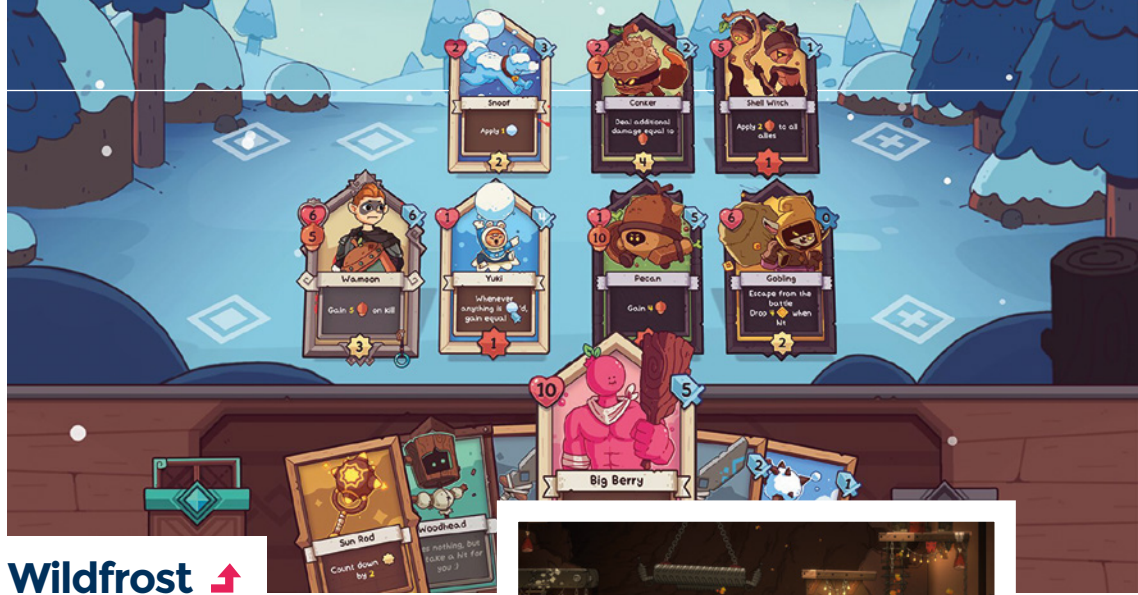
Doing the rounds for his newly released autobiography, *Disrupting the Game*, former Nintendo of America president Reggie Fils-Aimé dropped several earnest truth bombs about his time heading up the company. Certainly one of the most unusual (yet not necessarily unexpected) was his clear disdain for the GameCube's drum-based platformer, *Donkey Konga*. "As an executive, I hated *Donkey Konga*," he said, speaking to G4. "I fought with our parent company... I thought it was going to hurt the *Donkey Kong* brand. Personally, I didn't find it a lot of fun to play. I pushed back hard." His body, in that instance, wasn't ready.



Sega allegedly working on "multiple" remasters and remakes out before 2023

Netflix releases trailer for new live-action *Resident Evil* TV adaptation

Attract Mode



Wildfrost

Chucklefish's penchant for publishing indies with a cutesy art style runs right through *Wildfrost*, a new card-based roguelike appropriately set to arrive in winter this year. Banishing the titular blight and protecting the town of Snowdwell will involve recruiting an ever-changing suite of card companions, and equipping them with unique charms to buff your deck's powers. Endless replayability amidst the cold awaits!

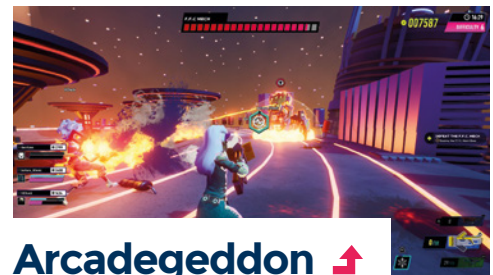


Warhammer 40,000: Shootas, Blood & Teef

Turn-based or RTS played from a top-down perspective not doing it for you? *Shootas, Blood & Teef* promises to be a more approachable way to indulge in the *Warhammer 40k* universe, especially if you enjoy gore-laden run-'n'-gunning and a hand-drawn 2D art style. We'd expect nothing less from the team behind *Guns, Gore & Cannoli*. The only difference here is that it's orc guts rather than Italian pastry covering the walls. Whether alone or with others online, wreaking carnage in space looks cartoonishly fun.

TMNT: Shredder's Revenge

Some of the best beat-'em-ups ever made – both at home and in arcades – centre on four anthropomorphic reptiles battling through the city streets in the name of pizza. That's why, as a 16-bit style throwback, *Teenage Mutant Ninja Turtles: Shredder's Revenge* looks well-positioned to recapture some nineties brawler magic. With its sprites and chiptune soundtrack inspired by the classic TV series, surely it'll be hard for developer Dotemu to cowa-bungle this affectionate homage (*You're fired* – Ed).



Arcadegeddon

This ever-evolving co-op shooter from IllFonic has been in Early Access for the better part of a year, but finally looks set for a full release soon. You blast your way through multiple psychedelic biomes in a varied collection of PvE and PvP modes, earning cred to improve your character's look and reputation in a world that sees the retro and the futuristic collide. Its modest but fervent fan base can look forward to new bosses to fight and biomes to explore at launch, alongside the already kaleidoscopic art style.





Saints Row ↗

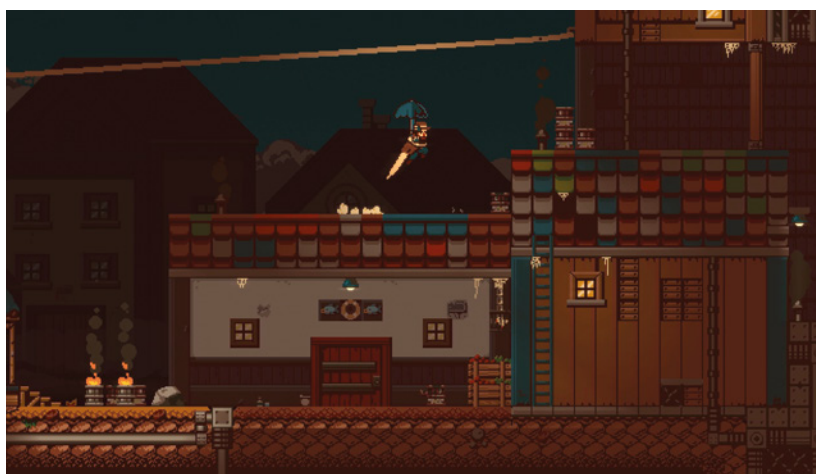
Said to be tonally sandwiched somewhere between the second and third *Saints Row* games, Volition's 2022 reboot severs its ties with childish humour to instead let players "be their own boss". In practice, this translates to a near-unprecedented level of customisation for an open-world game, with weapons, vehicles, and main character all coming with dozens of tweakable aesthetic options. Most are earned naturally as the storyline progresses, true, but you'd be surprised by how many rival gangs we'd be willing to mow down in order to dress ourselves up in a hot-dog suit. Despite the new approach, *Saints Row*'s colourful personality remains intact.

Leaving the cities of Stillwater and Steelport firmly in the rear-view mirror in favour of the more authentic Santo Ileso (based on southwest America) offers new sights and activities. The addition of sideswiping brings a new dynamic to high-speed chases and car combat. On the melee side of things, meanwhile, contextual finisher moves and equippable skills accessed via your phone make it easy to pulverise up-close enemies with a flaming punch. The new *Saints Row* needs to strike a specific balance between goofy and grounded, but one thing's for sure: this ain't no *Agents of Mayhem*.



Xenoblade Chronicles 3 ↗

JRPGs don't get more, well, JRPG-y than this Nintendo exclusive franchise, which sees a war between two hostile nations settled via skirmishes that take place on a giant beast's back. Because, of course. This threequel is perfectly poised to excite existing fans thanks to the casts of *Xenoblade Chronicles* and *Xenoblade Chronicles 2* colliding for the first time, while having a large environment to explore with up to six party members at once could entice newcomers. Wherever you fall, be sure to set 60+ hours aside to see all that the world of Aionios has to offer.



Gunbrella ↖

Brown is a colour the PS3/360 era swiftly taught us most games should probably avoid. That said, *Gunbrella*, with its inherently noir-punk tone and gritty action, uses it well. It's a 2D adventure that has you demolishing trash gangs from both the ground and air. Combining a gun and an umbrella creates a device good for offence and traversal, it turns out. We'll be sure not to leave home without one.

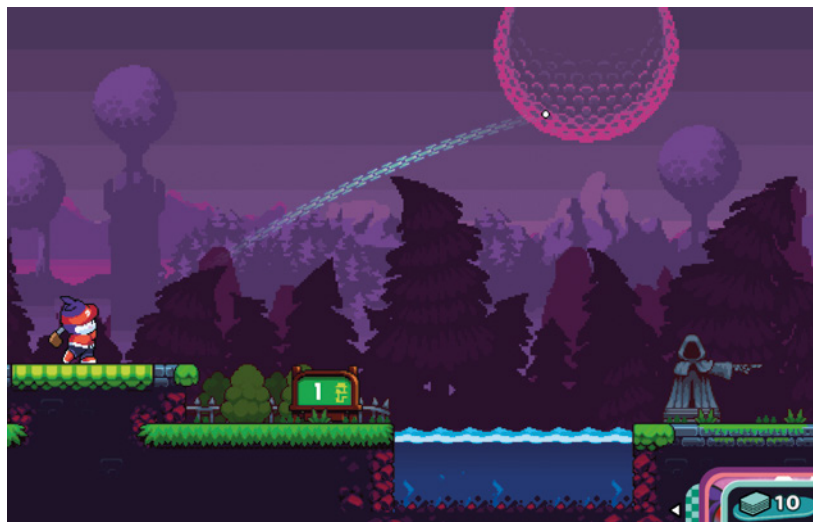


Digimon Survive ↗

Video games based on the other franchise concerning monsters that evolve (you know, the one that isn't *Pokémon*) haven't always had the best track record. *Digimon Survive*, though, is a visual novel with strategy-RPG elements, and it finally looks to be leaving development hell after first being announced back in 2018. This new adventure sees you head up a group of teenagers who must battle and look after more than 100 of the iconic critters. Multiple endings then encourage repeat playthroughs and emphasise player choice, all as you try to fulfil the role of a DigiDestined.

Cursed to Golf ↗

Golf happens to be hell. At least that's the case in this pixelated 2D swing-'em-up where you must putt your way out of purgatory. You do so under the instruction of a ghostly caddie, who tutors you in the supernatural art of golf in the hope of helping you return home. *Cursed to Golf* is just the latest in a long line of indies taking a lighter approach to the slower-paced sport, fusing fun and creative courses with a card-based skill system to test if you really are up to par.



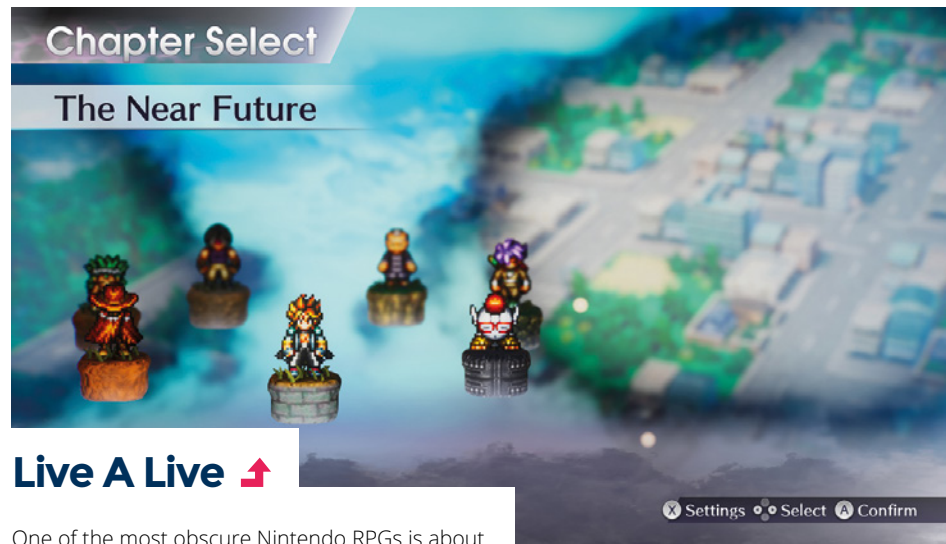
Another Crab's Treasure ↗

There's a fair case to be made that the so-called Soulsborne genre of hardcore action-RPGs has taken itself a bit too seriously lately. Sure, *Elden Ring* gave players more opportunities to stave off the inherent difficulty for a while by nature of its open-world structure, but the drab vibes might still be off-putting for some. Enter developer Aggro Crab, who finally lives up to its name with what it's calling a Shells-like. You read that correctly. *Another Crab's Treasure* features technical crustacean versus crustacean combat, set within a pastel underwater environment, challenging you to remove the trash worn by enemies so you can then use it as a shell yourself. With such a hook, how can it not be a crab-tastic time?



Steelrising ↗

Set in the late 18th century during the height of the French Revolution, *Steelrising* is an, shall we say, alternative reimagining of the historical rebellion against King Louis XVI; one where you must end his incessant thirst for bloodshed by keeping his mechanical robot army at bay. After all, as an automaton warrior yourself – named Aegis – there’s nobody else the innocent Parisians can rely on. And so the stage is set for a different type of third-person action game, full of intense combat encounters and an entire capital’s worth of streets, rooftops, and neighbourhoods to roam. Saving the city requires a heart (and nerves) of steel.



Live A Live ↗

One of the most obscure Nintendo RPGs is about to get a second lease of life thanks to a remake for the Switch. *Live A Live*’s lack of a western release only adds to its curio reputation, but a fully remade art style – riffing on *Triangle Strategy* and *Octopath Traveler*’s HD-2D look – gives it a good chance of finding a fresh audience almost two decades on, while Yoko Shimomura’s original music has also been remastered. This belated remake will finally let players experience the seven different stories of seven different characters. The order you play them in is entirely up to you.



Turbo Golf Racing ↗

Rocket League but with golf is the pitch behind Hugelcalf Studios’ *Turbo Golf Racing*. Recent betas have proven that the combination is more than just a gimmick, too, as trying to outpace and out-putt your friends amongst a gamut of colourfully crazy courses can be surprisingly addictive. Up to eight players can battle it out to be the best car golfer, hitting boost pads to zoom past your rivals, equipping power cores to improve your vehicle’s stats, and taking secret routes in order to find the sinkhole quicker. *Turbo Golf Racing* is in no way subtle about its influences, yet it makes for a fun racing formula that is far from par for the course.

Freedom Planet 2 ↘

The original *Freedom Planet* launched at a time when the series that inspired it, *Sonic the Hedgehog*, was in a bit of a weird spot. Since then, Sega’s blue blur has been revived in movie form to (sort of) critical acclaim and a newly announced game collection, meaning the pressure is on for GalaxyTrail’s vibrant sequel to deliver. Fortunately, levels look more diverse than ever, and having four playable characters right from the start should keep the fast-paced platforming interesting.



Don't Panic.

The Playdate injects a bit of whimsy into handheld gaming. We take a closer look

WRITTEN BY
RYAN LAMBIE



Well, here it is: the world's first hipster handheld. Announced in 2019, this is Panic Inc. and Teenage Engineering's artisanal, craft beer take on a portable console: it's retro, cute, and wilfully offbeat. Its talking point is, of course, the crank on the side – an addition that seems so counter-intuitive that it positively invites attention. How does it feel? Is it much more than a gimmick? The only way to find out, really, is by trying it out for yourself.

Measuring a diminutive 76 × 74 × 9 mm, the Playdate's considerably smaller than most mobile phones or other handheld gaming devices on the market – Valve's Steam Deck looks positively titanic by comparison. But it's also weighty and solid, and even the crank, which folds out from an aperture on the side of the console, feels like it'll stand up to hours of frantic twiddling.

The form factor isn't all good news, though: the Playdate's size and sharp edges means it feels a bit uncomfortable in the hands after prolonged use. Then there's the monochrome display: its pixels are pin-sharp, but the lack of a backlight means that it's not always easy to see. Sit in a dimly-lit room or outside on a sunny day, and you'll likely find the screen eye strain-inducing at times.

Hardware gripes aside, Playdate's interface fizzes with creative glee. Where most modern consoles take themselves incredibly seriously, Playdate aims to disarm you at every turn; switch the handheld on for the first time, and you're treated to a charming interactive animation that shows you how to use the crank. Waking the device up from its sleep mode requires you to tap the power button on the top; a pair of cartoon eyes will open up with each press.

Then there are the games. These are added to the Playdate automatically, bundled together in



▲ Asteroid-like arcade titles *HYPER METEOR* and *Star Sled* make good use of the Playdate's crank.



^ The story that unfolds (or more accurately, unrolls) between *Pick Pack Pup*'s rounds is consistently amusing.

seasons, and appear on the handheld as little gifts waiting for you to unwrap. The notion of games as digital surprises is a delightful one, and goes some way to justifying the Playdate's quite hefty \$179 retail price. That sum gets you 24 games, dished out regularly over the course of 12 weeks; at the time of writing, Panic hasn't confirmed a second season or whether it'll be free or not ("We're lining up more games, and we're working on cool ways to distribute them," is the line currently on the firm's website), but it's quite simple to obtain games directly from indie developers and side-load them onto the device yourself.

Inevitably, the games we've encountered in the Playdate's first season are a mixed bag. Genres range from arcade action to puzzlers to top-down RPG, so there's something to suit most tastes. Diego Garcia's birdwatching-themed adventure *Casual Birder* is adorable, though we'd argue that the Playdate's form factor makes it a somewhat inhospitable venue for lengthier experiences. The ones we found ourselves gravitating more towards were the games I could pick up and enjoy for an idle few minutes here and there; *Star Sled* and *HYPER METEOR* offer fun twists on *Asteroids*, and make good use of the crank.

Ah yes, the crank. We should talk about that in a bit more depth, shouldn't we? In some games, it's a natural fit; in others, its usage feels forced. Surfing game *Whitewater Wipeout* makes superb use of it, with small turns of the crank altering the trajectory of your board as you cut through the waves. It's in the games where you're asked to frantically turn the crank that things go awry; turning it makes the entire device shift and wobble in your hand. Couple this with the unlit screen and you'll find it's sometimes difficult to see what you're meant to be doing from one moment to the next.

"The notion of games as digital surprises is a delightful one"

Some duffers aside – *Battleship Godios* is a shooter where you catch your own bullet as it bounces back off enemies, which would be nice if you could actually see the bullet – there are some inspired moments in this first wave. My favourite's *Pick Pack Pup*, a puzzler that doubles as a takedown of late capitalism in general and Amazon-style fulfilment centres in particular.

It's games like these that point to where Playdate might head over the next few years. Its price and quirkiness mean it's never going to appeal to everybody, but then it clearly wasn't designed for a mass audience. It's aimed at a specific kind of gamer, and a particular stripe of indie developer, and it's how the latter will respond to the Playdate that has us most intrigued. The console's open source, and Panic have already provided a suite of free dev tools to help foster a creative community around the device. And if it can throw up clever titles like *Pick Pack Pup* at launch, then who knows what other developers will make in the future?

Turn the page, and you'll find out more about the Playdate's nascent indie dev scene, and just what those creators think about this cheeky little handheld. [w](#)



Top of the Pups.

Just when we thought there wasn't much scope for innovation left in the match-three puzzler genre, along comes *Pick Pack Pup* to prove us completely wrong. Its twists on established mechanics seem subtle at first, but quickly snowball into something strikingly unique. As a canine warehouse worker, it's your job to package up items and ship them off to customers. Match three or more items, and they'll automatically get boxed up. Click on a box and it'll be shipped. If you want to score more points, then you can create several boxes of matching items and ship them off all at once for a bonus. It's an ingenious, furiously addictive puzzler, made all the better by a hilarious wraparound story, largely told via comic book panels which you scroll through by turning the Playdate's crank.

Playing with Pulp.

Inside Playdate's budding game dev scene

We chat with the creators, developers,
and community members about the
potential for Panic's new handheld

WRITTEN BY
SHAUN HUGHES



Launched in April 2022, the Playdate is a pocket-sized console that, with its tiny crank jutting out of the side of its yellow case, is both striking and unique. Despite a series of production delays brought about by the pandemic, the Playdate enjoyed a positive release, with critics largely won over by its lo-fi charms and library of inventive games.

What makes Playdate such an intriguing proposition for indie developers, though, is that it's an open system, designed to encourage users to make and share their own games. Key to Playdate's ease of development is a small team of people at Panic Inc., the Portland, Oregon-based studio that produces the Playdate in tandem with Swedish company Teenage Engineering. Together, programmers Shaun Inman and Kyle Rimkus, along with designer and tester Neven Mrgan, created Pulp, an open-source development kit for Playdate which can be freely accessed via a web browser. "Pretty early on, we knew we wanted to make [Playdate] really developer-friendly, because we want people to make games for it," says Mrgan.

While the Playdate hardware itself began to take shape, the Pulp team was busily putting together a miniature studio that contained tools for making graphics and music, as well as its own dedicated scripting language, PulpScript.

Says Mrgan: "It became clear that [Pulp] wasn't just something we'd use internally or for making our own games, but it could also be a tool that other people could use. With it being web-based, it makes it so accessible to so many people out there."

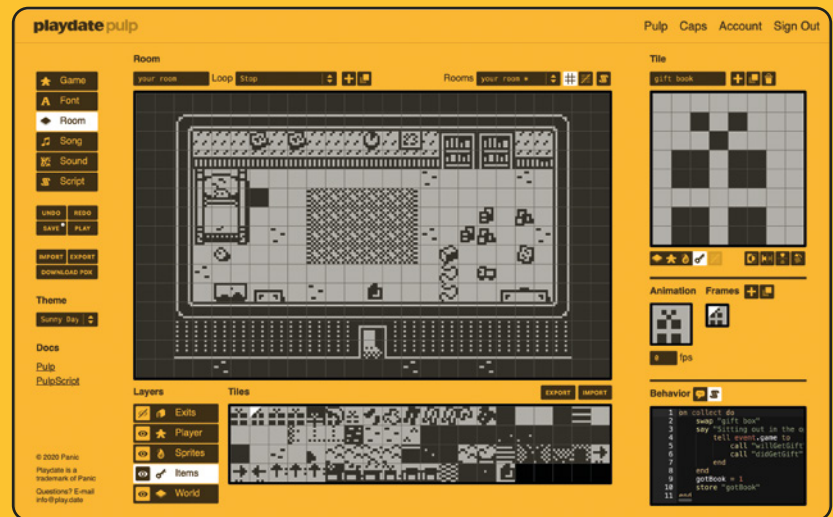
Turn, turn, turn.

With its black-and-white display and two-button input, the Playdate harks back to a bygone age of simple console design, even as the crank opens up the possibility of a range of new game mechanics. "For my game *Baba Yaga's Fortress*, I plan to use the crank as a puzzle device," says designer Alex Watkinson. "I can think of some interesting uses for it, such as stirring a cooking pot to reveal a key item, raising a bucket that contains an item from the bottom of a well, and reeling in a fishing rod that you find along the way."

"Performance is something we have to be really aware of"

It helped that, with relatively little development experience himself, Mrgan was able to put himself in the position of the console's audience, and create an approachable user interface that could be easily picked up by novices. "I don't know that much about programming, but I'm passionate about making a game," he says, "so I immediately started working on stuff."

Mrgan felt it important to establish exactly what Pulp "does and does not do" early on, and recognise the limitations of both the hardware and software. "Performance is something we have to be really aware of, because Pulp doesn't write native Playdate code," Mrgan says. "It doesn't write code at →



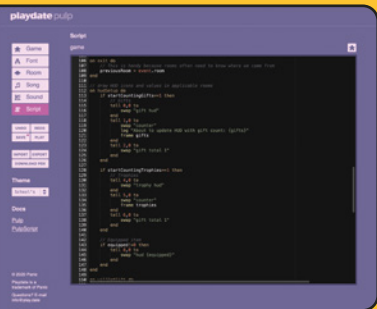
↗ The Pulp we see today has a carefully crafted interface in which everything fits cleanly on one screen.

↘ Using the crank limits the other hand to either the directional or A/B buttons, which means developers will have to think creatively how to use it.

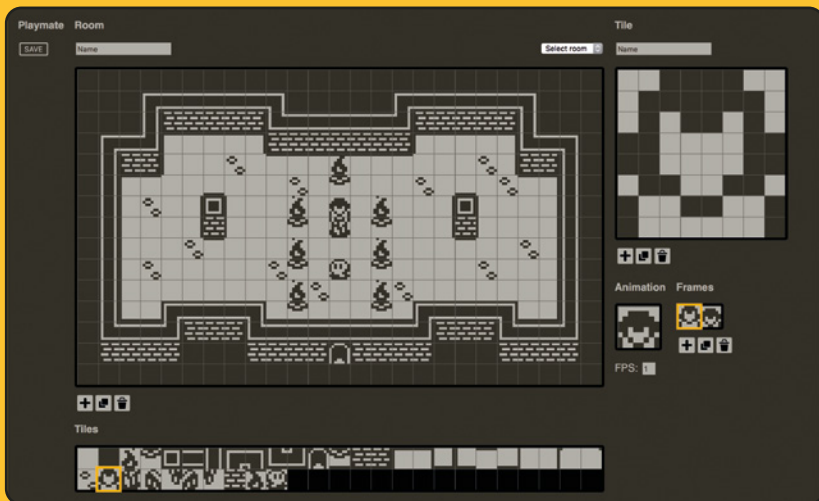


Interface Playing with Pulp.

- ▶ Pulp's Sound Editor is particularly streamlined and intuitive to use.
- ▼ Pulp uses its own language, PulpScript, while the Playdate SDK supports both C and Lua.



- ▼ Playmate was another early title for Pulp. Throughout its development, it's retained largely the same core design interface.

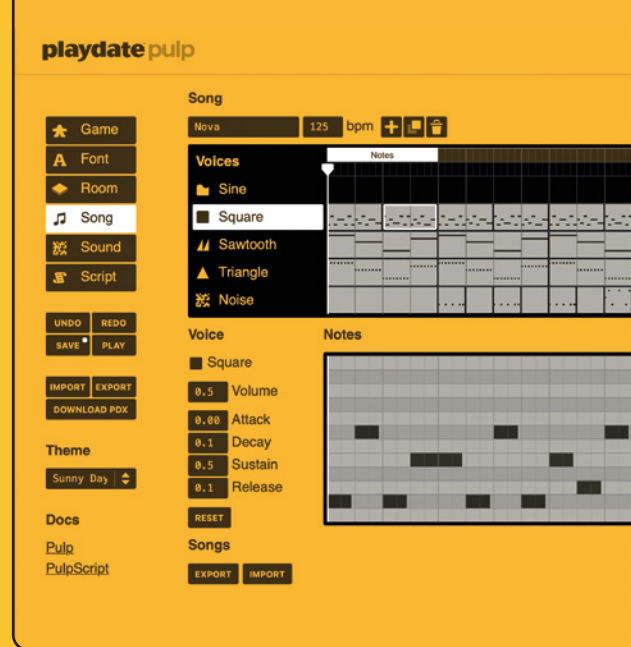


all; it's a set of instructions that the engine on Playdate steps through."

Soon after the public beta release of Pulp in January 2022, Panic announced its Playdate SDK (software development kit). Where Pulp is a more entry-level piece of software, the Playdate SDK offers a more in-depth set of tools for more advanced developers, and supports both Lua and C programming languages. And if creatives thought the potential for Playdate development was strong before, Shaun Inman's confident that Pulp and the SDK can be used alongside each other to make something truly special. "While the Pulp runtime's core rendering and update loop don't have a path forward from Pulp to the SDK," says Inman, "you can export songs and sounds created in the Pulp editor and download the Pulp Audio Runtime Lua library, which allows you to play Pulp audio in your SDK-based Playdate game. Pulp also allows you to export all or some of a Pulp game's graphics to PNGs which can be used by the SDK image and imageable functions."

Still, developing Pulp wasn't without its challenges, Inman tells us. "One of the harder things was wrestling with Web Audio APIs when trying to match the wave synthesis functions that are part of the SDK," he says, adding that the "inconsistent implementations of 'standards' across browsers, the deprecations of more mature JavaScript APIs, and browser bugs" were all factors.

The intention behind Pulp is clear: if you've never made a game before, or you're looking to try a fun, quirky sandbox for prototyping, Pulp



can scale from goofing around to building a full Playdate game. But what does the Playdate community make of Pulp? To find out more, we spoke to David Bédard, chief operating officer and narrative designer at Sweet Baby Inc. The studio's responsible for *Lost Your Marbles*, a branching-narrative adventure featured in Playdate's Season 1 launch line-up. The Playdate is, Bédard says, "open to newcomers; it's super-easy to make something playable and fun." This ensured he and the team were "able to make the game in a relatively short amount of time: in four months, in a very sustainable way, [with] everybody working reasonable hours."

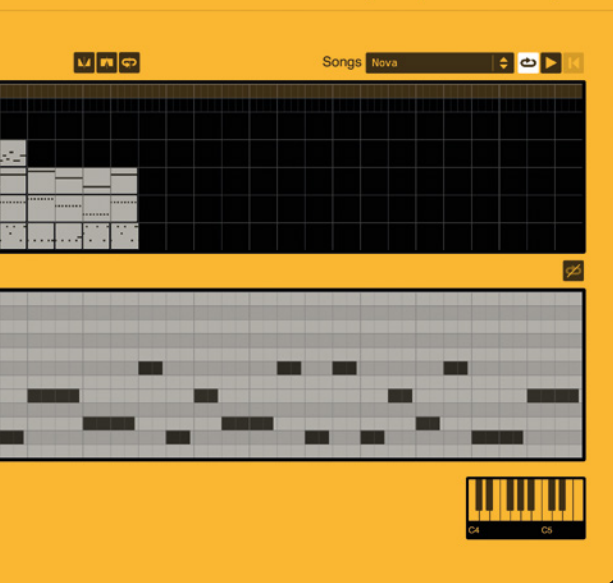
The development of *Lost Your Marbles* also gave its studio the chance to train its newer employees in the art of game design, Bédard explains. "We pitched to Playdate that we would pair mentors with juniors and put them on the same schedule, and work together to not only teach the juniors how to make a game but also make a real game together," he says, adding that "everybody got paid, everybody got credits, and everybody shipped a game."

CRANK: HIGH VOLTAGE

Playdate's unique selling point is, of course, that much-discussed crank, and, although some have voiced scepticism over its practicalities, Bédard argues that it should be an integral part of any game designed for the platform. "We'd be missing something out by not using the crank," he says. "The opportunity to make a game that uses a crank won't come from anywhere else."

It's a sentiment shared by Chris Makris, the developer behind the early Playdate adventure, *Saturday Edition*. "It's a great control mechanism with a lot of potential," he says, adding: "where the hell have all the cranks and dials been?"

With its monochrome LCD screen, the Playdate has what Makris describes as "obvious presentation limitation", but still, it's arguable



that those limitations encourage developers to think creatively around the handheld's diminutive hardware. "It forced me to reduce the design to black and white pixels, which I felt extremely comfortable with," agrees Makris. "I love that limitation – it's quite powerful."

Presentation challenges aside, Makris says that developing for Playdate is relatively easy. "It's helpful to know that a game will be played with this particular hardware," he says. "And it's a dream not to have to think about 'the build process' when compiling to [different] platforms."

British developer Alex Watkinson, founder of Gamebow Ltd, recently crowdfunded the Game Boy platformer *Planet Hop*, but is also developing his first game for Playdate, *Baba Yaga's Fortress*.

Watkinson praises Pulp for its user-friendly design – "I was able to pick it up and make a basic concept screen

for a potential game in minutes," he says – and favourably compares its ease of use to GB Studio, a game creator

for the Game Boy. "The way individual tiles can be animated is great, and allows developers to implement animated backgrounds with minimum effort," Watkinson says, adding that the music editor means users "effortlessly make basic ambient music loops and sound effects that sounded great and were easy to add to each scene."

His thoughts about the Playdate's crank, meanwhile, echo those of Makris and Bédard. "The crank's a great little novelty to consider incorporating into a game," he says, "and adds a unique element of fun that is hard to replicate on other devices."

Another prominent community member is hobbyist game developer, Atsu Suzuki, known on YouTube as SquidGodDev. He's been making Pulp tutorials since its release (you can find them

"We'd be missing something out by not using the crank"

at wfmag.cc/SquidGodDev), and concurs that Pulp's an approachable tool for newcomers. "It offers a simplified language that eases you into programming, along with giving you a visual editor to draw tiles and place them," he says. "[Mrgan and Inman] have done a great job building a great UI that allows you to quickly get to making something that's playable and feels like your own, with an easy-to-use tile-based editor and fun sound and music editors."

The developers we spoke to agree Pulp could be made even more simple to use, though, with

Watkinson arguing that an entirely script-free solution – akin to Scratch or RichCast, say – would "open up Pulp game development to a much

broader user base, as many talented artists are often not technically minded enough to script but have a passion for game development."

Suzuki alludes to this, too. "There's a small learning curve when getting into Pulp for the first time," he says. "If you want to build something more complex than just the most basic narrative game, you need to learn PulpScript, the programming language used for Pulp, along with Pulp's event system, which takes a bit to wrap your head around."

Those caveats aside, there's a purity to the design philosophy of Playdate and its Pulp dev tools, and a sense that this little yellow handheld console could open doors to people who were previously a bit nervous about trying their hand at game design. In short, the future really is bright for Playdate – or bright yellow, at least. [w](#)

Interface Playing with Pulp.



^ "I wanted the graphics to help guide the story, because I'm not an experienced writer," says Chris Makris, designer of the adventure, *Saturday Edition*.

Keep it simple.

The Playdate may be a simple piece of tech, but making both the hardware and its development software approachable was a design goal from the beginning, Shaun Inman tells us. "The Playdate hardware's a modest device, relatively speaking," he says. "PulpScript is designed very intentionally to be limited in scope, both because it fits with the aesthetic and ethos of Pulp as a whole – simple, accessible, little to no code – and the realities of running a PulpScript interpreter in a Lua interpreter on constrained hardware."

Chasing the waves



KIM JUSTICE

Kim Justice is a YouTuber, streamer, and writer who specialises in the world of retrogaming. If she isn't making lengthy documentary videos about old games and companies, she's probably chatting and mouthing off about them live to a dedicated handful of people.

On 9 May, it was announced that David Ward, the co-founder of Ocean Software, had sadly passed away at the age of 75. Ward and his business partner, Jon Woods, were serial entrepreneurs who saw an opportunity to get into the business of computer games in the early 1980s, and they rose to become one of the UK's, and indeed the world's, biggest games companies – responsible for such hits as *RoboCop*, *Wizball*, *Daley Thompson's Decathlon*, and hundreds of other titles besides, on platforms like the ZX Spectrum and the Commodore Amiga. Ward's steady hand and trust in his employees was integral to the company's success, and his passing represents another severed link to the glorious days of yore, and a tragic loss. Not only that, it also brings into focus the importance of making sure that the stories of these people, and these companies, are preserved.

It's fortunate that Ward, and many other ex-Ocean employees, have been able to relay their stories and experiences of the company,

in magazines such as *Retro Gamer* and books like Chris Wilkins and Roger Kean's excellent *The History of Ocean Software*. They paint a picture of an ambitious company, with a drive and talent that far exceeds the somewhat negative reputation it had for an excess of movie tie-in games, or the occasional turkey that comes with such a large output (the memories of *Highlander* may haunt some people forever).

In many ways, it's taken the telling of these stories for more people to realise just how good Ocean Software was, and how much it's been missed since it ebbed away in 1998. Just look at the sheer talent that was crammed into the so-called 'dungeon' in the Quaker building on Manchester's Central Street: the likes of Mike Lamb, Jim Bagley, and the late Jonathan "Joffa" Smith, all concentrated in one small space.

Even if the story of a major company such as Ocean is well documented, there are still many stones left to turn over from that breakneck boomtime in the 1980s – from the simplest of mysteries to large and notable chasms, a full tapestry of the UK games industry in the microcomputer era is still yet to be finished. In fact, it may never be completed at all, but as time marches on, it remains critically important to continue to try and recover as much of these details as possible, as we're sadly reminded further of the unsolvable problem that is mortality.

The art of preservation deals with many different areas – not just the excavation of long-lost gems and unfinished works on dusty ROM cartridges, but also the lived experiences of the people who were there, who may well be befuddled that some people are so interested in the jobs they did 30-plus years ago.

But hopefully this interest and eagerness to continue to add to the tale of the microcomputers isn't something that will gradually fade away. 🙏



▲ From some of the biggest hits of the decade to the creative likes of *Wizball*, David Ward's Ocean Software was one of the UK games industry's leaders.

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GAMING HISTORY

with Mr Biffo

The Mega Drive's forgotten Treasure trove



MR BIFFO

Mr Biffo, better known as Paul Rose, was the creator of the legendary Digitiser. Check him out on wfmag.cc/digitiser

“Treasure realised that the Mega Drive could do things that Nintendo’s 16-bit couldn’t”

On legendary Japanese studio Treasure’s 30th anniversary, Mr Biffo wonders: was the Mega Drive just getting started when Sega moved on?

One of the biggest criticisms levelled at modern cinema is that it’s too reliant on sequels, or spin-offs, or world-building. It’s understandable from an artistic perspective that cinema connoisseurs don’t want to be served the same reheated meal over and over again. Inevitably, from a business angle, original, untested ideas are a risky proposition, whereas you can guarantee that *Fish Man 5* will do a billion at the box office because it has a three-second cameo from Trimbley Bimbly after the credits.

It was precisely this sort of palpable tension between artists and accountants which led to the creation of one of the Mega Drive’s greatest game studios – Treasure.

As history records, Treasure was formed in June 1992, when a bunch of Konami employees grew weary of the company’s reliance on sequels to its established franchises. Masato Maegawa wanted to create original games, and not just

perform for Konami’s bottom line. Thus was born Treasure – and much to the surprise of many, its format of choice was the Sega Mega Drive.

Though wisdom at the time suggested that the SNES was the more powerful gaming hardware, Treasure realised that the Mega Drive could still do things that Nintendo’s 16-bit couldn’t. Specifically, it knew the sort of gameplay it was striving for, and that only Mega Drive’s Motorola 68000 microprocessor could deliver it.

This is what marked Treasure out from so many of its contemporaries; a perfect harmony between hardware and creativity.

The studio immediately showed off its chops with *Gunstar Heroes*, thrashing the Mega Drive beyond its limits. Or, at least, that’s how it felt. It did things with the system that few thought possible, resulting in a true arcade-style shoot-em-up that left many SNES owners green with envy.

Commercial pressures led to Treasure’s second release being a licence. Specifically, *McDonald’s Treasure Land Adventure*. Though you’d have been forgiven for dismissing the game due to its Ronald McDonald-fronted cover art and the apparent cash-in nature of the licence, it was a far better game than it had any right to be. In an era where the likes of Ocean were putting out one identikit licensed platform game after another, Treasure wasn’t content to rest on its laurels. It might not be as fondly remembered as *Gunstar Heroes*, but *Treasure Land Adventure* still managed to push the Mega Drive. With a less overtly violent message, if you can get past the harrowing clown and the eat-more-junk branding, it’s the perfect companion game.





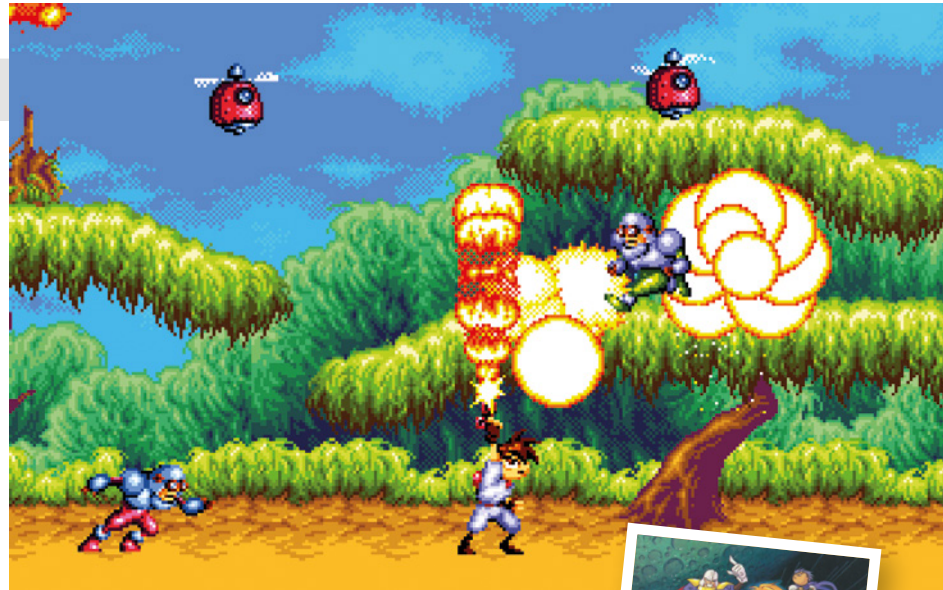
Then came what I view as Treasure's magnum opus: *Dynamite Headdy*. Replete with all the colour and character of its previous two games, it's an unpredictable, rapid-fire assault on the senses, bordering on the Gilliam-esque.

One idea after another comes at you, to the point it's almost the platform game equivalent of *WarioWare*, or being trapped in a lift with a comedian trying out new material. One minute you're barrelling down a hill, the next assaulting a giant baby head, the next playing a basketball-themed minigame or playing a shoot-'em-up level. It's utterly unhinged – perhaps a little too out-there and esoteric for some players, which could explain why it failed to achieve quite the same legendary status as *Gunstar Heroes*.

THE BITTER END

If we ignore *Yu Yu Hakusho: Makyō Tōitsusen*, a fighting game which only saw a release in Japan and South America, Treasure released its final two Mega Drive titles in 1995, during the console's death throes. For its penultimate release on the machine, Treasure returned to the genre that had started it all just a few years before. *Alien Soldier's* run-and-gun gameplay was stymied by virtue of taking two years to develop, within which time Sega announced both the 32X and the Mega Drive's successor, the Saturn. Consequently, it isn't the game that it was intended to be, as time and budget ran dry.

There's an argument to be had that to compensate for losing many of its planned ideas, Treasure ratcheted up the difficulty to proper hardcore levels. It had begun as a labour of love for its originator Hideyuki Suganami, so he must have taken some comfort from



the positive reviews it got from the 'git gud' gameplay aficionados.

Finally, *Light Crusader* largely slipped through the cracks of history – in part because most Mega Drive owners already had their eyes on the future – but the isometric action game, with (very) light RPG dressing, once again manages to squeeze more out of the hardware than anyone thought possible. That said, it's one probably best filed in the drawer marked 'brave experiment'.

And that was it as far as Treasure went on the Mega Drive. The world moved on from the 16-bit era, and CD-ROM format of choice (unless you were Nintendo, stubbornly still wearing flares when everyone else was in skinny jeans). Treasure never seemed to stand out as much in the new world. There were highlights – *Radiant Silvergun*, *Bangai-O*, and an occasional return to the world of *Gunstar Heroes* – but Treasure had lost its reason for being. It came into existence specifically to develop games for the Mega Drive, and never again did it recapture the spirit that led to its creation. Its later output was beset with legal troubles and poor review scores.

In some respects, Treasure arrived too late in the Mega Drive's life. Had it been around a few years earlier, who knows what the company could've achieved, how far it could've pushed that hardware, or what sort of trail it would've blazed for others? As it stands, Treasure's output demonstrates one of the most perfect marriages ever between creators and hardware. Furthermore, it shows that the death rattle which accompanies the life of a console often brings with it evidence of a life ended too soon. 🍷



DYNAMITE HARDY

Depending on which version of it you play, *Dynamite Headdy* could be relatively easy to breeze through... or a total headache (pun totally intended). Why? The North American version is twice as difficult, as Sega of America didn't want it being completed too quickly by anyone who rented a copy.



THE JOY OF
MODDING
HANDHELD
CONSOLES



There's a thriving scene around repairing and upgrading handheld consoles. We talk to a few people who help make it all possible



WRITTEN BY
RYAN LAMBIE





▲ If you'd like to build your own backlit Game Boy Advance, check out Tito Perez's step-by-step guide in Wireframe #52: wfmag.cc/52.

What began as a casual experiment has grown into an obsession. It all began when I purchased a Sega Game Gear – a battered relic from the early nineties that, like so many others, had long since stopped working. But doing a bit of research online revealed that it's actually quite simple to resurrect a Game Gear by changing its capacitors – and so, despite not having touched a soldering iron for years, I ordered the components and set about trying to get the tired old console working again. Flushed with success, I fixed another Game Gear. Then I discovered that it's possible to buy replacement screens – modern LCD screens that offer a substantial upgrade over the existing one – so I installed one of those. Before I knew it, my desk was covered in newly purchased equipment – a soldering iron, a hot air rework station, and, most recently, a budget oscilloscope – and I'd embarked on a whole new hobby.

"I HAD NO SOLDERING SKILLS WHATSOEVER, BUT I REALLY ENJOYED IT"



▲ Straight from Mathijs Nilwik's garage in the Netherlands: a Game Gear main board. Perfect for bringing a dead system back to life.



▲ Over on YouTube, Tito Perez's channel (wfmag.cc/macho-nacho) regularly explores the wealth of mods available for Nintendo handhelds and beyond.

It turns out I'm far from alone in all this: from Facebook groups to Discord channels, there's a lively and thriving community around the handheld refurbishing scene. Take Andrew Hendrick, for example: he too had fond childhood memories of the Sega Game Gear, and so, with the UK in lockdown due to the pandemic, he brought one to play around with in his spare time. Once again, the Game Gear was broken – because the leaky capacitors Sega used in these handhelds mean they all break eventually – but Hendrick decided to see if he could fix it. "In November [2020], I just decided to buy myself one," he says. "I recapped it, and it worked. Then I did some research, and found the [replacement] screen. I had no soldering skills whatsoever, but I really enjoyed it. So I thought, 'What else can I do with it?' So I decided to paint one."

Thus began an entire new pastime – and growing side business – for Hendrick. He began painting Game Gear shells with an airbrush and selling them on eBay, and then in March 2021 set up his own website, Retro Gear Customs, where he could sell refurbished, customised Game Gears. Meanwhile, he was practising and refining his approach to painting his shells: "Rather than painting the outside, I painted the inside of the shell. Everything I do is handmade – it's not printed. I started painting them in lockdown and that's how it [all began]." ➔



SECOND LIFE

While it's possible to revive old consoles, the underlying technology is still of a certain vintage. So how much longer is a 30-year-old Game Gear CPU likely to last? Mathijs Nilwik says he recently asked an electrical engineer that same question, and she explained that the chips in consumer devices are only designed to last for around ten years – after that, the silicon will start to degrade. That degradation can be worsened by small static shocks, which can shorten the life or outright destroy CPUs. Luke Malpass, meanwhile, thinks that a console's CPU could last much longer – perhaps as long as 80 years. He points to early devices like the Game & Watch, which often still work today. "The official thing people say is, 'Oh, ten years', but there are still Commodores and Spectrums around."

Malpass does add, though, that the life of a CPU depends on "the cycles – how much it's charged and discharged". And with the chips unique to our favourite handhelds no longer in production, there's currently only one way to extend their lives: stop playing them. "I'd say now's the time to collect the good consoles, repair them, turn them off, and leave them in storage," says Malpass. "Because there'll be a point where they get rare, and the price just keeps going up."



▲ An upgraded Game Boy, with a replacement screen and other parts from retrosix.co.uk.

GHOST IN THE SHELL

Hendrick is but one of a growing number of hobbyists and professionals who've begun making replacement shells and other parts for handhelds over the past few years. Although founded in 2013, British company RetroSix has really seen its sales explode since 2020, with its online shop offering repairs and a wealth of mods and replacement parts for everything from the original Game Boy to current-gen home consoles.

RetroSix's first product was a replacement shell for the Game Boy Advance – a business decision

that, according to founder LukeMalpass, was partly born out of frustration. "I started it because the quality of the actual plastic was terrible," he tells us of the existing shells he found on the market. "It was the only thing available – these cheap Chinese shells that don't fit very well. So I made the 3D models, the moulds, the injection moulding, perfected it all, and released it. And that's what I got known for – high-quality moulds."

Today, it's possible to take a tired, broken old handheld console and give it a new lease of life. You can replace the shells and buttons, improve the audio with better speakers and soundboards; even replace the Game Boy and early Game Boy Advance's dim, un-backlit screens with pin-sharp, modern ones. Thanks to the handheld modding community, you'll also find replacement parts for more obscure systems like the Atari Lynx or Neo Geo Pocket, and even replacement LCD screens for the PlayStation Portable.

One hobbyist who's really pushed the modding boundaries, though, is Mathijs Nilwik from the Netherlands. An engineer by trade, he began his console repair pastime around four years ago. "I've been repairing Game Gears for years –



▼ If you have a worn-out Game Boy lying around, it's relatively simple to refresh it with a new screen, shell, and buttons.





swapping capacitors, mainly, and later, replacing screens. I was just buying and selling them.”

Gradually, though, Nilwik noticed just how many Game Gears he was encountering that were completely destroyed, either because of leaky capacitors or battery acid eating into the systems’ boards. His curiosity piqued, Nilwik began to see if he could reverse-engineer a replacement motherboard, while at the same time refining it to reduce the number of components. “I have experience in redrawing boards, so it took a few days to reproduce the original board and fill in all the details,” he says. “Then removing the components took time, because I needed to understand what I could remove and what I couldn’t.”

Making a replacement motherboard meant that Nilwik could take an otherwise broken Game Gear and breathe life back into it: as long as the main CPU, brightness wheel, and cartridge connector were in working condition, he could install those on his new board and get the handheld working again. And thanks to the wealth of replacement parts now available, it’s possible to build a Game Gear that is almost entirely new – at the time of writing, RetroSix is on the cusp of putting new replacement cartridge connectors on sale, so all that’s needed is that original ASIC chip from a donor Game Gear. (A later revision of Nilwik’s board allowed the use of a modern brightness wheel, since the originals are no longer in production.)

“IT TAKES A LOT OF MONEY TO START – IT’S NOT A FEW HUNDRED EUROS”

Nilwik first unveiled the SYF board in late 2021, and the sheer level of interest caught him by surprise. “I didn’t expect the demand for it,” he tells us. “I expected [to get orders for] maybe 50 boards, but then I saw the amount of attention it got; that was a challenge. I either needed to outsource my assembly or do my own.”

After ruling out the possibility of getting his boards produced in China, Nilwik made a surprising decision: he’d simply assemble them himself, in his own garage. “I have a pick and place machine – I brought a used one from a company here in the Netherlands that

makes hi-fi amplifiers. I saw it up for sale and I told my wife, ‘I want to get this and give it a try.’”

Before long, Nilwik had all the equipment he needed to generate the boards and install its array of surface-mount components. “That was also a learning curve for me,” Nilwik says. “I knew those machines existed, but I had to figure out how it worked. It was a Chinese machine, so I had to translate the interface into English.”

Creating products like these is something of a leap of faith, since installing a miniature assembly plant in your garage requires a fairly substantial financial outlay (“It takes a lot of money to start – it’s not a few hundred euros,” says Nilwik). And ▶

▲ The wealth of replacement shells available means you can create a very different-looking console from the ones that rolled off the production line all those years ago.

Interface

The joy of modding handheld consoles



▲ There are all kinds of drop-in mods for the Game Boy Advance, making it one of the friendlier handhelds to upgrade.

when you're dealing with something relatively niche like the Sega Game Gear, you're taking a potentially big risk, as Malpass points out. "Nobody's stupid enough to spend the amount of money I did on something that takes a long time to sell," he says. "We needed a warehouse's worth of space to store a small production – you have to make 1000 shells, minimum. So we ended up with 16,000 Game Gear shells [in different colours... we've made the money back now since we were successful with it, but it's hard to get right."

There's a reason why people like Malpass, Nilwik, and Hendrick are so into modding consoles, though: there's something satisfying about taking something tired or broken and making it feel like new. You could call it a video



CHIP'S CHALLENGE

Mathijs Nilwik's Game Gear motherboard could help revive hundreds of once-broken systems, but there's a catch: it only supports the chip found in early models. Nilwik is "thinking about" designing a board that supports later revisions of the Game Gear, or the so-called '2 ASIC' versions. "The problem with the 2 ASIC board is that there are actually three chips on it, and it's manufactured on both sides, so one ROM chip is on the top side and the other two are on the back," he says. "Two-sided assembly's a pain, so I want all the parts on one layer... It'll really be a challenge because you need to make space on the board, which is fairly limited. But it's something in my mind that I want to work on."



▲ At retrogearcustoms.com, Andrew Hendrick sells restored Game Gears, rehoused in hand-painted custom shells.

gaming twist on the so-called 'IKEA effect': the notion that we all have a greater connection to something we've made or repaired ourselves. "People get the experience and pleasure of putting them together for themselves," says Malpass. "They've put things together and it's started working... it's like LEGO, isn't it? You feel like you've accomplished something, even though all you've done is followed a bunch of steps. You enjoy it more than if someone bought you a [pre-built] LEGO statue."

"Bringing something back to life from the 1990s is so satisfying," Hendrick concurs. "It's therapeutic as well."

This might even explain the dedicated online community that's clustered around the Sega Game Gear in recent years. A less solidly built machine than its contemporary, the Game Boy, the Game Gear's fragility helps endear it to a group of enthusiasts who enjoy nursing the consoles back to health. "There's something about Game Gears," Hendrick says. "With Nintendo, they just work."

"Nintendo products don't break," adds Nilwik. "You can clean them a bit, and they work. But Game Gears are always broken, so it's always a bit of a challenge to repair them."

RIISING PRICES

With a growing market for all things retro, however, comes rising prices. For years, old handhelds were readily available from online auctions and car boot sales for just a few pounds; today, even a tired, broken system can easily



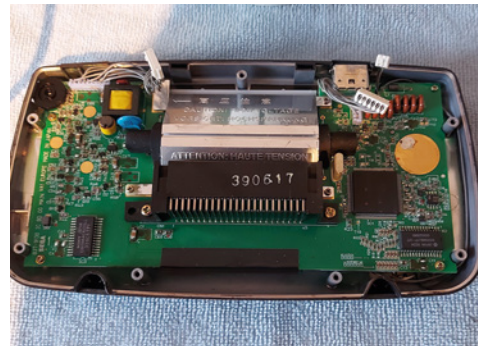
sell for £30 or more. “Two years ago, when I started, I could go to a retro event and pay £4 for a Game Gear,” Malpass says. “Some people would even just give them to me, saying, ‘These don’t work’. Now, it’s £40 or £50 just for a broken one. But still, I like to think I’ve helped grow the scene again.”

“When I started, I was buying Game Gears off eBay for £20–25 each,” agrees Hendrick. “Now I’m struggling to find them below £35–40 – they’ve gone up a lot.”

At one stage, Malpass says he was able to buy as many as 40 broken Game Boys from eBay and have them delivered the next day; today, he’s finding it much harder to readily source units that he can refurbish and resell. “That means we put our prices up. I started selling them at £65 two years ago; then they went up to £130 a year ago. Now we’re selling them at close to £300. We sell five consoles a day, seven days a week, so people are willing to pay for quality. But as the consoles get rarer, the prices have to go up.”

Assuming you can stomach the rising costs of those old consoles, though, the cost of upgrading them isn’t necessarily exorbitant if you’re willing to do the mods yourself; even once-expensive modifications like replacement screens are cheaper and easier to install than they were a couple of years ago.

As a starting point, Malpass and Hendrick agree that the original Game Boy or Game Boy Advance are ideal for newcomers. “I’d start with the Game Boy Advance, because you can literally fit a screen with no soldering,” says Malpass. “You just place it in, connect the ribbon, and then you can replace



◀ Replacing the capacitors in a Game Gear may sound daunting if you’re a beginner, but there’s plenty of help available online; retrosix.wiki, for example, has numerous detailed repair guides.

“BRINGING SOMETHING BACK TO LIFE FROM THE 1990S IS SO SATISFYING”

the buttons and shell without too much work. It’s definitely the easiest of the consoles, I’d say.”

“I’d say, don’t try and mod a Game Gear straight away,” adds Hendrick. “Do something slightly easier... you really want to start on a Nintendo [Game Boy Advance] because there’s usually little to no soldering on those – the modifications have been built that way.”

Beware, though: as I’ve already discovered, reviving these ageing, much-loved systems can be addictive. “Oh yeah, we rarely get a person buying one thing,” Malpass says. “They’ll come back for more and more. They’ll build themselves an orange [handheld], but then they need an excuse to build another one – until they have a room full of them...” 🗨



♥ You’ll find a number of screen mods for the Game Gear, made by the likes of McWill, BennVenn, RetroKAI, and RetroSix. All are far superior to the original, blurry panel.



Toolbox

The art, theory, and production of video games

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Why making a successful game is about more than good ideas

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Konstantinos lists his favourite cities, both real and virtual

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Put the final touches to your coin-grabbing Game Boy title

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How to get your indie game playtested for under £50

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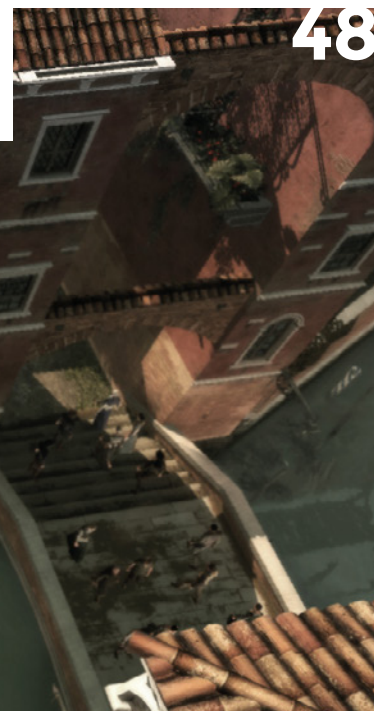
Make your own Guitar Hero-style controller from spare parts

66. Source Code

Code a lo-fi homage to Nintendo's Game & Watch series



^ Finish up your coin-collecting Game Boy infinite runner with part two of our guide. See page 50.



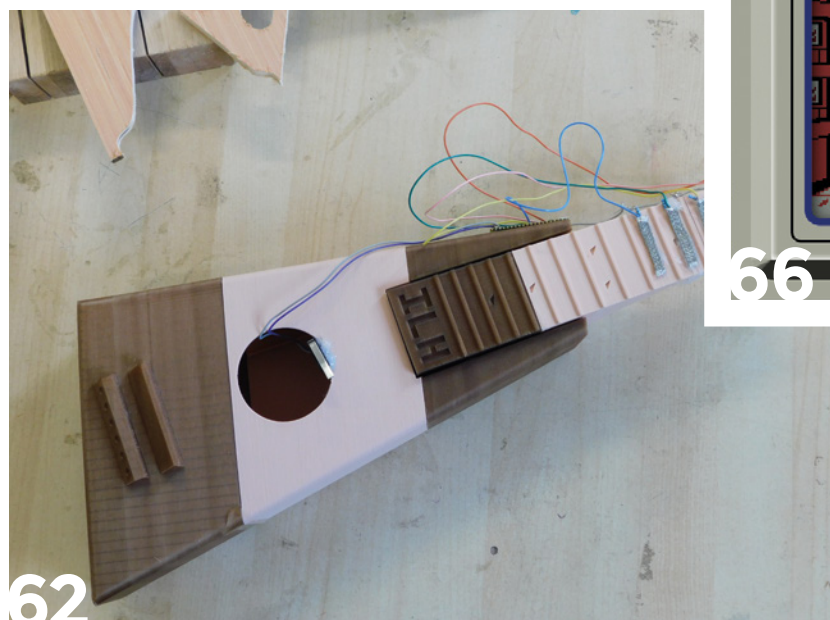
^ We bid farewell to Konstantinos Dimopoulos. Read his final CityCraft on page 48.





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^ Playtesting will help you make better games - and it needn't cost the earth. Read more on page 54.



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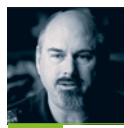
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^ Revisit Nintendo's earliest handheld titles with this month's Source Code - see page 66.

< You too can make a *Guitar Hero*-style controller with a few odds and ends. Find out how on page 62.

The principles of game design

It's easier than ever to become a game designer or filmmaker. But how do we ensure our work finds an audience in a cluttered media landscape?



AUTHOR
HOWARD SCOTT WARSHAW

Howard is a video game pioneer who authored several of Atari's most famous and infamous titles. His new book, *Once Upon Atari: How I Made History by Killing an Industry*, is out now. onceuponatari.com

Let's go back in time, before there was video on demand (VOD) or flat-screen TVs. Before I could go to a store and check out a wall of movies, pick any ones I like, and take them home for a pittance. Before there were VCRs and videotape, with inconsistent, low-resolution images that had to be stabilised with a knob. Before there were multiplexes where I could see a variety of movies in one location just by walking across the hall. Way back in time, there was a young boy getting popcorn from a concession stand. Bag in hand, he went to find a seat as near to the centre of the theatre as he could manage. He sat down, eating his popcorn, thinking, "Oh boy, what's going to happen on the big screen in front of me now?"

And it was a big screen, because theatres were big. They didn't have to accommodate

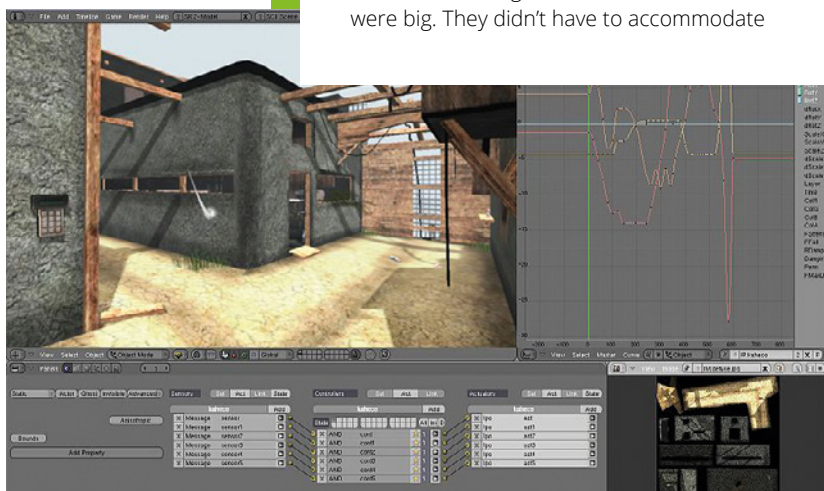
twelve different current releases. The rule was: one building, one movie screen. And there the young lad sat, excitedly anticipating the adventure ahead. And occasionally, he thought to himself how great it would be to grow up and make a movie himself someday.

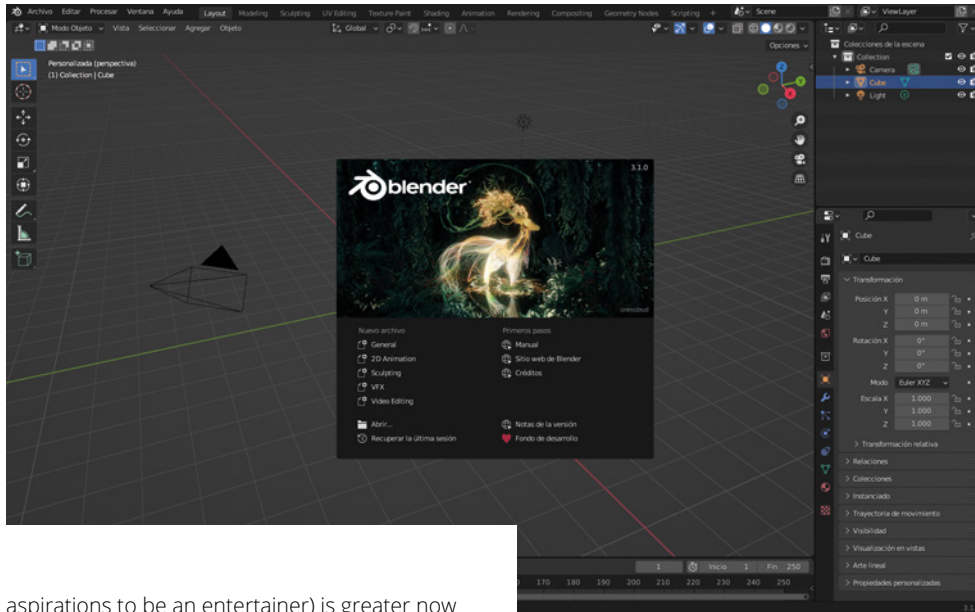
You may be thinking this boy was me, but you'd be mistaken. He was the boy sitting next to me in the theatre. Nonetheless, I knew I loved movies and I knew there were people who made movies, and wouldn't it be cool to make one myself. Then people like him would be excited to come to the theatre and watch *my* movie!

And lo, the fantasy of becoming an entertainment provider was born. For me as a child, it was just that, a fantasy. And given that movie equipment and film development cost money (and time), it was all the more likely to remain a fantasy. This was a bummer in some ways, but it had some upsides to it as well.

These barriers to entry made me less likely to suffer the reality crashes that occur when I venture out of fantasyland and try to produce something. Society benefitted as well. These barriers spared us from countless abominations (from the awful to the lame). No one ever saw them because it was too much effort or money or time to make those things come true. Whenever the threshold effort to create something increases, it happens less often.

Now, anyone can make movies incredibly easily. And to some extent, they can make video games as well. In fact, the ability to realise your childhood dreams (especially in terms of





◀ Free tools like Blender (left) and Unity (bottom left) have democratised game dev, but the scale of the games market makes success difficult. As Inkle's Joseph Humfrey said earlier in this issue, "The indiepocalypse is real".

aspirations to be an entertainer) is greater now than it has ever been. The dream factory has franchised its development. The world is my SDK!

But has this helped? Even though it's far easier now to realise my production dreams, what's easier still is to produce rubbish and pop it out there. And people do... constantly. Today's earthlings collectively generate an unbelievable volume of content. According to Tubefilter, more than 500 hours of video are uploaded to YouTube every minute worldwide. This means every 60 seconds I fall another three *weeks* behind in my viewing. It's impossible to keep up with that. Fortunately, no one needs to. The vast majority isn't worth viewing. We spend much of our time sifting through an ever-widening river of digital sludge, looking for worthwhile nuggets.

It's all about signal-to-noise ratios. It used to be that finding anything at all was novel because there wasn't much signal (or noise, or anything at all) – it was mostly silence. Lately, the SETI (Search for Extra-Terrestrial Intelligence) Institute takes care of the finding-something-from-nothing department. The main trick now is finding *meaningful* signals amid the constant bombardment all around us. That's a very different challenge, and it calls for a different approach. But then again, that's about finding something that's already there.

When it comes to design, and especially designing video games, it's not about finding something that's already there but rather creating something that never was. This brings us to the reality of creating entertainment. Can I create

“There's no more solid feedback than hard numbers”

a signal worth receiving? Am I clever enough? Visionary enough? Skilled enough to pull it off? This is a challenge that hits us right in the ego.

It's easier now than ever in the history of humanity to create and distribute audio or video content. But making something worth seeing? That hasn't really gotten easier. People create and distribute content with alarming alacrity, but how much attention is paid to the fundamental issue of quality? At the root of it all lies one crucial question: Is it any good?

I have my opinion, but what is that worth? Virtually anything uploaded carries the inherent 'seal of approval' of the uploader.

But if the point is to garner attention and positive feedback, the provider isn't all that important. It doesn't matter if I think it's good, the market will tell me with sales/hits/likes/comments. There's no more solid feedback than hard numbers. They're great when you can rest on them, but brutal when they fall and hit you!

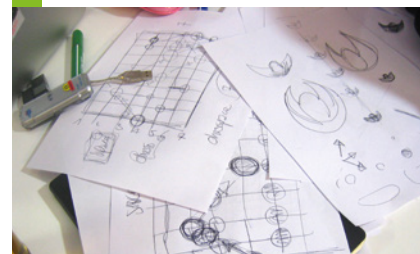
Handling feedback is the surest way for any developer to gain insight and find direction on a project. Some welcome this with open laptops, seeking to address problems which get revealed. Others respond with denial, refusing to let the intrusions of others impinge on their grand vision. But in the final analysis, most content is simply looking for an audience. And it's never been easier – or quicker – to see if I'm finding one.

I do wonder, though: will that kid who used to sit next to me in the theatre ever see this? 🤖

GOOD IDEA?

All creative production starts with ideas, but ideas are not enough. We all have ideas. Many have a great movie or novel in their head, and some even have an idea for a great video game. Ideas are great, but no one watches an idea or pays to see a thought. Frank Herbert, author of the *Dune* series, had this to say: "Ideas are a dime a dozen. It's execution that counts." Ideas always work great in my head, but only after execution can I see if it works anywhere else.

▼ You've come up with a game concept that sounds great on paper. But how will players respond to it in practice? There's only one way to find out...



My favourite cities: real and virtual

CityCraft says goodbye, and attempts to inspire with some of its favourite virtual and real cities



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riting CityCraft has been an incredibly rewarding experience. I had to carefully think about, and often re-evaluate, the ways imaginary

cities need to be designed. I had to distil almost instinctive choices and methods into articles that made sense to readers, and thus get to examine my own thought processes. I learned a lot, had great fun, and hope this series has been equally enlightening for Wireframe's readers.

In this final entry, I'd like to thank you all for your support, kind emails, and questions. Additionally, I want to thank the Wireframe team for putting up with me, the talented people who masterfully edited my words, and our wonderful editor, Ryan Lambie, for the opportunity to share and discuss game cities with such a brilliant audience. Four years and 70,000 words later, however, and it's time to bring this journey to an end. We've taken in fundamentals, case studies, tips and rules, and even a few interviews and retrospectives.



Though I do hope to occasionally return to the pages of Wireframe with a feature or two, this article will be the end of my public writing on game cities for a while. So, what better way to close things off than with a selection of the real and imaginary places that have inspired my work?

REAL-LIFE CITIES

Studying real places is a must when designing virtual cities. From the ways buildings intermix and sidewalks curve, to architectural variations on dominant styles and transportation, physical city spaces can provide us with useful observations. Systems, patterns, rhythms, and solutions are all waiting to be noticed as every city offers layer on layer of useful information.

My go-to city has always been Paris. Besides being a place I love, it's a city I studied in detail, and is second only to my native Athens when it comes to familiarity. Its richly documented history encapsulates the often violent and aesthetically fascinating evolutions of urban space and society. On top of beautiful Montmartre lies a hated cathedral built to remind workers of their slaughter; medieval streets and architecture were documented and then destroyed to pave the way for capitalist innovations like the boulevards, with their maximised shopfronts. Every corner has a little story to tell about the city's three revolutions, ancient past, and ambitious future. Cafés, bars, antique bookshops, working-class suburbs, downtown districts, exorbitantly priced restaurants, and indie artists coexist in a menagerie of medieval, baroque, modernist, and post-modernist buildings.

> Gordon Freeman's train journey into City 17 helped immerse players in *Half-Life 2*'s dystopia.



◀ A glimpse of the beautiful canals of Venice, as rendered in *Assassin's Creed 2*.

Venice, on the other hand, is a more unified and simpler agglomeration. It's also the most beautiful city in the world. This early islandic democracy is a densely packed museum of exquisite architecture, and one of the rare places where Byzantine styles have survived. Murano was the glass-makers' island, Burano specialised in lace, and the Ghetto was where the Jewish population was restricted. Its canals, criss-crossed by bridges, not only gave Venice much of its character, but also led to the birth of a new form of transportation: the gondola.

Then there's New York. I was in awe of Manhattan the first time I visited it – and I still am. The skyscrapers, Central Park, the brownstone and brick buildings, and the sheer vibrancy and cultural weight of the city are inescapable. Via countless movies, TV series, books, and games, images such as steam rising from the roads, ill-kept subways, vast crowds, or elevated trains are indelible, while the Statue of Liberty is one of the most recognisable urban landmarks in the world.

VIRTUAL CITIES

Video game cities allow us to appreciate how talented developers have abstracted the urban fabric and condensed its physiognomy. Exploring them lets us see how systems interlock, how geography is implied, how navigation is supported, or how lines of sight are taken into account. While enjoying them, we can note the problems their creators solved in order to support gameplay and create a sense of place.

“Studying real places is a must when designing virtual cities”

Half-Life 2's City 17 remains one of the finest and most economically designed virtual cities. It's a futuristic metropolis built using a minimal number of assets, arranged along planned routes that imply much and show little. City 17 instantly conjures a dystopian atmosphere with its surveillance, propaganda, and cops in riot gear. The city urged players to fix its problems, and, with the Citadel dominating the landscape, provided them with both a goal and a symbol of its oppression.

Beautifully recreated from 2D pixel art, the original *Gabriel Knight*'s New Orleans consisted of a handful of locations, but despite essentially being a collection of interactive backgrounds, the city felt cohesive, expansive, and impressively real. The density of detail in each location established a wider urban world, while its maps helped players build a larger space in their imaginations.

What's more, the image and atmosphere of New Orleans was masterfully

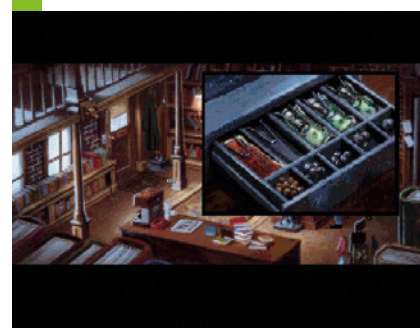
distilled and represented as a place of voodoo, jazz, blues, Spanish moss, and intricate balcony railings.

Finally, *The Witcher 3*'s Novigrad is arguably one of the largest and most thoroughly fleshed-out fantasy cities in gaming. Supported by extensive historical research, *Witcher* lore, and well-picked inspirations ranging from the towers of San Gimignano to the docks of Gdańsk, Novigrad is both memorable and grounded in reality. Every district has an emphatic class and functional character, crowds are lively and purposeful, and the city is wisely treated as a continuous work in progress. 🌐

A CITYCRAFT ARCHIVE

Are you interested in finding out about a specific subject this series covered but don't remember the issue it appeared in? Do you need an archive of every CityCraft article, complete with links to the respective issues? If so, follow this link: wfmag.cc/citycraft.

▼ The amount of detail and interactive hotspots in *Gabriel Knight*'s location helped flesh out its world, and hinted at a more complex setting.



Write your own Game Boy game in C

Adding the finishing touches to your Drop Bear infinite runner with part two of our guide



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elcome back! Last time, we created a bootable Game Boy program from scratch with a title screen, scrolling background, and a moveable player

character. If you didn't pick up a copy of issue 62, you can get it at wfmag.cc/62. Once you're up to speed with part one, come back here and we can finish making our game. This month, we're going to move on to making our work into a playable game with objectives, timers, and end game states – so let's get started...

ADDING COINS

Our game is beginning to come together, but we need something for our player sprite to interact with during the game loop. A simple thing we can add will be a set of randomly generated collectable items that appear and move on

screen that we can move our sprite around to collect. We can then keep a count of how many were collected and present them at the end of the loop as a score. How about some coins?

We'll need to load in some sprite data for the coins, like we did for the bear. We can represent a coin with far fewer pixels than a bear, so we can use a single tile per coin to save on memory.

Again, feel free to make your own assets, but I've prepared some simple 'Koins' with the sprite data below. Add this outside of your main function again:

```
unsigned char coins_tile_map[] =
{
    129,
};

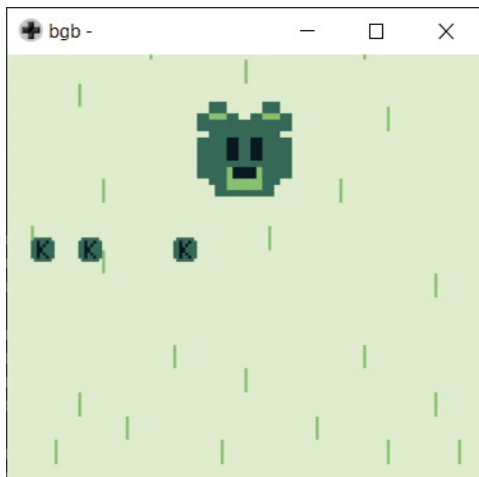
/* Start of tile array. */
unsigned char coins_tile_set[] =
{
    0x00,0x7E,0x24,0xFF,0x28,0xFF,0x30,0xFF,
    0x30,0xFF,0x28,0xFF,0x24,0xFF,0x00,0x7E,
    0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
    0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00
}
```

We'll start out with three coins so, right under where you defined the `player_x` and `player_y` variables, add the following lines:

```
UINT8 coin_a_x = 16;
UINT8 coin_a_y = 0;
```



› We're using the EZ-Flash cartridge to play our ROM on original Game Boy hardware. Find these at wfmag.cc/ezflash.



^ **Figure 1:** Here you can see our coin repeated three times. As it's only one 8x8 sprite, it's easy to place copies of it around the screen.

```
UINT8 coin_b_x = 32;
UINT8 coin_b_y = 0;
UINT8 coin_c_x = 64;
UINT8 coin_c_y = 0;
```

We'll need to load these into sprite memory as before, so add these lines just before the main `while` loop inside of the main function:

```
// Load the the coin 'sprites' tile
into sprite memory
set_sprite_data(BEAR_TILE_SET_COUNT,
1, coins_tile_set);

// set the coin sprites to load in
memory after the bear sprite.
for (UINT8 i = 0; i < 3; i++)
{
    set_sprite_tile(i + BEAR_TILE_MAP_
SIZE, 0x0E);
}
```

We'll need to make sure they move up the screen, so add the following just before the `wait_vbl_done()` call inside the `while` loop:

```
// move coins
coin_a_y -= 2;
coin_b_y -= 2;
coin_c_y -= 2;
move_sprite(BEAR_TILE_MAP_SIZE + 0,
coin_a_x, coin_a_y);
move_sprite(BEAR_TILE_MAP_SIZE + 1,
coin_b_x, coin_b_y);
move_sprite(BEAR_TILE_MAP_SIZE + 2,
coin_c_x, coin_c_y);
```

BEARS LOVE CASH

We're using the size of the bear sprite tilemap to find the three sprites we loaded in to be coins, then we're moving them every frame by two pixels. Recompile and run the game; you should see the coins move up the screen – see **Figure 1**.

To make our bear able to collect our coins, we can add a little collision-checking code in our `while` loop just below where we change the coin `y` values. We know the bear's `y` position never changes, so we just need to check if the coin sprite is inside the bear in any way. If so, we can increment a counter to represent the score and reset the position of the coin so that the player can keep collecting them.

First, add a score to where you defined the coin `x` and `y` values like so:

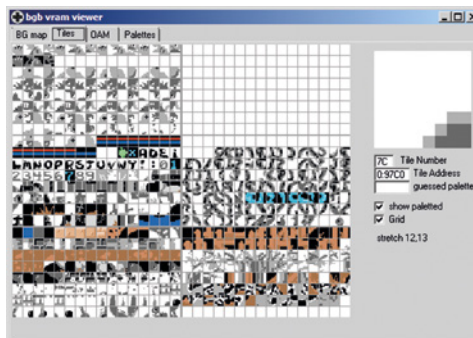
```
UINT16 score = 0;
```

We'll use a 16-bit number here to make sure there's no chance somebody can get a large enough score to cause an overflow and set their score back to 0. Next, make sure to reset it to 0 just before the `while` loop so that scores don't get bigger every time you play:

```
score = 0;
```

Now we can add some collision-checking code just under where we move the player sprite left and right inside the `while` loop like so:

```
if(coin_a_y < player_y + 32 && coin_a_x
> player_x && coin_a_x < player_x + 32)
{
    coin_a_y = 0;
    score++;
}
```



RECYCLING

You might have noticed that we never actually remove coins when they are collected, we just 'recycle' them. This is a well-known technique called 'object pooling' and it means we never need to dynamically allocate or deallocate memory. There are always three coins, although, to the player, it looks like they are being picked up by the player sprite.

◀ If you don't have access to a flash cartridge or an old Game Boy, you can still play your ROM via an emulator. We're using BCB (wfmag.cc/BCB).

GAME PAK

If you've found yourself bitten by the Game Boy development bug, then you're not alone: there's a small but dedicated homebrew scene making games for original Nintendo hardware. One recent example is *Super JetPak DX*, an action game based on Ultimate Play The Game's ZX Spectrum classic, *JetPac*. Its retro action is perfectly suited to the Game Boy's tiny screen, and an example of what can be done with a freely available dev tool like GBDK.

```

        if(coin_b_y < player_y + 32 && coin_b_x
> player_x && coin_b_x < player_x + 32)
        {
            coin_b_y = 0;
            score++;
        }

        if(coin_c_y < player_y + 32 && coin_c_x
> player_x && coin_c_x < player_x + 32)
        {
            coin_c_y = 0;
            score++;
        }

```

Now we just need to print the score before the game ends. Add the following code before your `goto` statement at the bottom of the main function:

```

HIDE_SPRITES;
cls();
move_bkg(0, 0);
gotoxy(0, 5);
printf(" HI SCORE: %u ", score);
gotoxy(0, 9);
printf(" PRESS START ");

waitpadup();
waitpad(J_START);

//jump back to the start of the program
goto start;

```



> **Figure 2:** Here, you can see the score screen with a count of how many coins you picked up. Notice how the score is dynamic and can change compared to the other text.

The preceding code hides the on-screen sprites, clears the background, then prints some text. It then waits for the user to press Start a second time before reloading the splash screen and starting over. If you try it for yourself and collect a few coins, you should see a nifty-looking 'end game' screen which looks like **Figure 2**.

We're really close to having a full game now! The last thing we need to do is to make the coins a bit more random, as you've probably noticed that it's not much fun to collect things when you know exactly where they will start from and move to. To do so, we'll need to update the `includes` at the top of the file like so:

```

#include <gb/gb.h>
#include <gb/console.h>
#include <stdio.h>
#include <rand.h>

```

TOTALLY RANDOM

Next, we'll need to write some code that generates random values for us so we can use this whenever the coins are 'collected'. We'll need to do this in a few places, so rather than cut and paste the same code over and over, we'll use a function to do this for us. Add this new function above your main function like this:

```

UINT8 get_random_coin_x_position()
{
    static UINT8 random;
    random = (UINT8)rand();

    return (random % 152) + 8;
}

```

This function will get us an X value for coins randomly within the confines of the screen, so coins won't get lost 'off screen' where players cannot collect them.

The Game Boy hardware has no real source to create randomness with, so a common trick is to create a pseudo random value chain seeded with the value of some external system such as a system register. This means that although our randomisation code isn't going to be truly random, it should seem to be to the casual observer. The same seed would produce the same sequence of numbers, so it's important to try to use a different seed each time. To do this, add this single line of code just under the first `waitpad(J_START)`; call inside the main function:

```
initarand(DIV_REG);
```

We'll use the macro `DIV_REG` to access the current value of the DIV register which is constantly changing as code runs. As it's unlikely a user will press the Start key at the exact same time each run, the seed should be different, meaning our coins will be able to use seemingly random X positions if we change the reset code by calling our new function like so:

```
if(coin_a_y < player_y + 32 &&
coin_a_x > player_x && coin_a_x < player_x +
32)
{
    coin_a_y = 0;
    coin_a_x = get_random_coin_x_
position();
    score++;
}
```

```
if(coin_b_y < player_y + 32 &&
coin_b_x > player_x && coin_b_x < player_x +
32)
{
    coin_b_y = 0;
    coin_b_x = get_random_coin_x_
position();
    score++;
}
```

```
if(coin_c_y < player_y + 32 &&
coin_c_x > player_x && coin_c_x < player_x +
32)
{
    coin_c_y = 0;
    coin_c_x = get_random_coin_x_
position();
    score++;
}
```

Rebuild the game and try it out in an emulator. You should notice that now, when we pick up coins, they appear to be replaced by new randomly positioned coins ready for collection, adding challenge to the game.

If you have had any trouble with the code so far, you can find the finished code available on our GitHub page to compare with your own, where you can see how to fix any bugs you may be encountering: wfmag.cc/gb-comp-code. If you're happy with your game and have a Game Boy and a flash cart, as mentioned earlier, now



▲ Made in GBDK, developer Quang Nguyen's action title *Super JetPak DX* got a physical release in 2020.

is the time to compile your ROM one last time; move it onto the flash cart and boot it up for real.

With that, the core loop of our game is complete! We have an attractive title screen, a game loop, and a scoring screen, so we have an incentive to try to see how high a score we can get against ourselves or others. You may have noticed that this code could be improved in places. This is by design to make it easier to document, but also to leave optimisation to the reader. You could change the game significantly by creating your own sprites and game modes. How about printing the current score to screen while playing via the window layer? Anything is possible.

AND THAT'S A WRAP

I hope this experience has helped demystify creating a retro game and C. I grew up playing Game Boy games, and I find it magical that with modern tools it's easier than ever to make programs on the Game Boy that I can run myself. I recommend reading the GBDK Manual (wfmag.cc/gbdk-manual) to see what else you can do. You can read about adding sounds, save states, and more. I look forward to seeing what you come up with. 🎮

How to playtest your game for under £50

If you're a cash-strapped indie dev, Steve has some affordable and practical playtesting advice for teams of all sizes



AUTHOR
STEVE BROMLEY

Steve Bromley is a user researcher who has worked in games for over a decade. He is enthusiastic about making better playtesting accessible to game teams of all sizes. Get some free tools to help run your playtest at playtestkit.com

Playtesting and iterative development are the secret weapons for game developers. By understanding what players currently think or do, we can make changes to improve games pre-launch. This leads to more successful launches, and a game that people love.

In my career, I've spent over 25,000 hours with players and seen the value of playtesting firsthand. Big game studios employ user researchers, or hire outside agencies to run playtests throughout development because they know it works. Many studios don't have the resources to dedicate a full-time role to organising playtests, though, and are forced to do it themselves.

I've been fascinated in understanding this space, and have spent the last year interviewing

people who organise playtests in addition to their 'main' role – including solo developers, designers, producers, community managers, QA, UX designers, and more. I asked them about how they ran playtests and what made it difficult – hoping that we could bring some of the experience of user research to make playtesting easier for everyone.

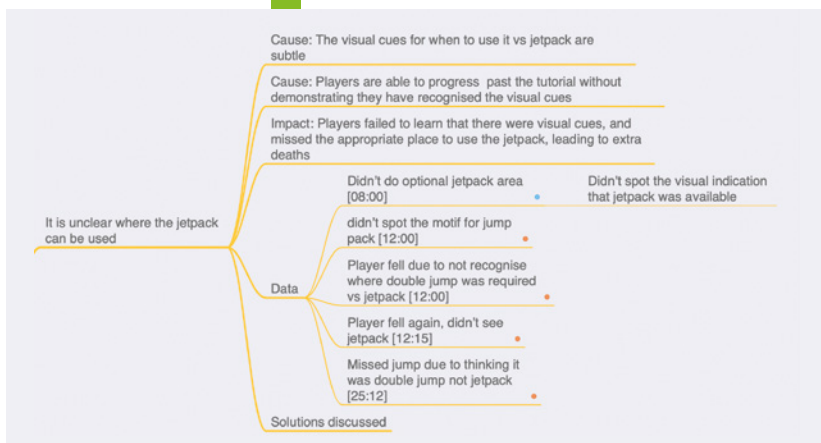
These interviews revealed some easy-to-implement changes to how some teams currently run playtests, that incorporate best practices from UX and user research. This includes how to find appropriate playtesters, how to interpret playtest data, and how to find and answer the most important questions throughout development. I heard repeatedly that finding money is difficult, so I'm going to try and keep the cost of a playtest below £50, but describe options for when more budget is available.

RUN PLAYTESTS EARLY

It's really tempting to put off playtesting until later. Sentiments such as "It'll be better when the final graphics are in" and "What's the point if we don't have the tutorial ready" can be used to delay playtesting indefinitely. It's also scary to put your ideas out into the world and expose them to critique, so it's an understandable human reaction to hesitate.

This is extremely dangerous for game development, however, where the best ideas are exposed and refined through iteration. Reducing playtesting takes away opportunities for iteration and leads to a disappointing experience

✓ A thorough analysis of the cause and impact of issues will make it easier to decide what to do.





at launch (and hasty post-launch changes!). Instead, it's best practice to tie your playtesting into decision-making. Consider what decisions your team is making currently – across all the design disciplines. That might include traversal, combat, level design, UI, etc. Then rank them by risk – which are most crucial to the success of the game, and which would derail the game if they weren't experienced by players as expected.

Then test those risky things. Now. While someone is still thinking about designing and implementing it. This sometimes requires creativity – mocking up tutorials that aren't in yet, telling players to ignore some known bugs, or dropping players in half-finished, grey box experiences. But it does mean you get immediate feedback on what players don't understand, aren't able to do, or aren't experiencing in the right way – while still in the position to react.

These playtests don't need to be huge – watching five people go through a five-minute grey box experience might be enough. Planning regular playtesting linked with design decisions, rather than 'one big playtest' at beta, leads to more reactive game development, and ultimately more successful games.

GET THE RIGHT KIND OF PLAYERS

During my interviews with game developers, I heard repeatedly how difficult it is to get



playtesters. Teams rely on friends, family members, or a network of fans to playtest their game. Not because they are the right kind of players, but because they're the only people around.

Unfortunately, this can seriously compromise the value of playtesting. They're not like your 'typical' players, and what you learn won't be applicable to the audience who'll buy your game. Some won't play this kind of game and so might behave strangely in it. Many will have

pre-existing knowledge about the game that a 'real' player wouldn't have, which will influence their behaviour in the game. Others will know you personally and not feel comfortable giving critical feedback.

Start by defining your players. Ignore demographics and focus on their behaviour – what other games will people who buy your game usually play? What games have they bought recently? How often have they bought a game this year? Asking these sort of questions allows →

“The best ideas are exposed and refined through iteration”

- ▲ Define players by their behaviours – what they buy and play.
- ◀ “What this game needs is a shotgun”. Remember: not all suggestions need to be implemented. We'd be intrigued to play *Animal Crossing* with shotguns, though, don't get us wrong.



▲ Failing to playtest your game early can lead to a disappointing launch and all kinds of post-release fixes. On an unrelated note, here's *Anthem*.

ASKING UNBIASED QUESTIONS

It can be hard to ask players questions without leading them to the answer. It's best to start vague, and not assume they have understood what they are doing. You can't go far wrong starting with 'What's happening currently?', and 'What are you currently doing?' and using their response to inspire follow-up questions.

you to narrow down a profile of what kind of person would buy your game.

Now we need to find these people. This is the most impactful place to spend our £50 to make playtesting better.

A great place to find people is Reddit. Ignore the dedicated playtesting forums, as the participants there are largely devs themselves. Instead, look to the more general help forums, such as **r/forhire** or (the unfortunately named) **r/slavelabour**. Use your player definition to create a 'screening' questionnaire, to weed out the wrong type of players. Offer everyone who passes a £10 Amazon voucher to take part in playtesting.

If you're doing your playtesting in real life (rather than online), coffee shops, university campuses, and game shops are great places to catch people with some free time – but remember to use your screener to check they're the right kind of player. If you have more budget available to you, professional research participant recruitment companies (like research-i in the UK) can take away all of the burden – you tell them who you want, when you want them to turn up, and then they do all the hard work to make it happen.

MAKE THE MOST OF PLAYER TIME

As we've heard, it's difficult to find the right players to take part in playtests. Making the most of the ones we do find is sensible. Many studios are most comfortable with a survey or free-form

chat – asking players to fill out a questionnaire after playing the game, or writing their comments in a Discord channel. This is because it's easiest to administer, and feels like it takes the least time.

This does miss a lot of the potential from playtesting, though. Surveys are best set up to measure numbers (how do players rate this level, how many times did players attempt it), but a lot of what we want to learn isn't a number. Understanding why these numbers occurred is a lot more useful for inspiring decisions – such as why players give that rating, or why it took them

20 attempts to complete the level. For most stages of development, there's infinitely more useful, actionable information from studying a few players

in depth than getting shallow insights from a large group. To do this, we want to watch people actually play the game.

This can be done live by putting them in front of the game, or giving them your phone with a build installed, and watching them play. Recording the session (and what the player says) will allow you to analyse it in detail later. In person this can be done easily, or you can do it remotely screen sharing over Google Meet or Zoom (which also records the screen and audio for you).

Live sessions aren't always possible, so we've also had success with asking players to record themselves playing and talk out loud about their thoughts. OBS is free screen-recording software that can be used to ask players to record their screen and voice while playing the game –

“Offer everyone who passes a £10 Amazon voucher to take part”



^ Video conferencing tools allow players to take part in live playtests wherever they are.

although it can be a bit technical to set up, so players will need instructions. If you have budget available, websites like PlaytestCloud or Antidote can handle this for you – but they do have a fee.

DEALING WITH PLAYER DATA

Playtests generate a lot of data. There's behavioural data (what people did when they played) and opinion data (what people said about it, or how they rated it). Teams can find large quantities of uncategorised data overwhelming and difficult to deal with. To tackle this, treat the data differently based on what it is.

Behavioural data is generated by watching people play, or analytics in the game. This is the safest data to take action on. Hopefully we've designed a playtest where we can watch players do something in the game, and understand why they did it. For example, seeing a player fail to find where to spend their in-game currency because they didn't recognise the right menu option, or players wandering the wrong way on a level because they didn't see a door.

This behavioural data is easiest to interpret. Having understood why the issue occurred (the player didn't see the button), it's possible to decide what an appropriate fix could be (put a label on the button). Then understanding what impact it had on the player (they got lost), you can decide how important it is to fix it (it meant they never finished the level). When we know how hard a fix would be, and how big a deal the problem is, we can make an informed decision about the priority of fixing it and schedule that in the backlog of tasks.

Opinion data is trickier, and is where I see teams go wrong most often. Players will tell you what is wrong with the game, or what should be different. "This enemy is annoying as it's hard to beat" or "This game would be better if you had a shotgun". The worst thing you can do at that time is to immediately go and implement their

suggestion. Instead, we need to step back and add some context.

This requires first understanding why they gave that feedback. What happened in their gameplay that caused them to describe the enemy as annoying, or say that they needed a shotgun. This can be uncovered by asking them questions, or watching recordings of their gameplay. Then compare that experience to the experience you intended to make. Perhaps the enemy was meant to be annoying, or the horde was supposed to be overwhelming, and the player was receiving the emotional experience you intended. In that case, no action is necessary.

If their experience isn't the one you intend, by understanding how it differed, you can generate potential ways to change the player experience. Remember, you're the professional game designer – not them. By pushing their proposed solutions back into the 'problem space', you can hopefully come up with a wider range of options for fixing it, and create a more successful experience.

TOOLS FOR PLAYTESTING

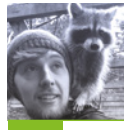
I've made some free templates to help with the logistics of playtesting: a checklist for planning the study, a non-disclosure agreement, and some tools for defining and finding your players. You can download them all for free from playtestkit.com. They're part of a growing suite of tools I'm making to help make playtesting easier. If you'd like to read more about playtesting, also see Jesse Schell's *The Art Of Game Design* which has a chapter on advice about playtesting. 🙌

^ Live playtesting can be as simple as putting your phone in someone's hands.



How to create dramatic video game characters

Ever felt your game's character was flat? Get inspired by Antony's method for generating depth



AUTHOR
ANTONY DE FAULT

Antony is Wireframe's writing and narrative design columnist. He's also a freelance video game storyteller, and you can find his work on [default.games](#) or [@antony_de_fault](#) on Twitter.

W

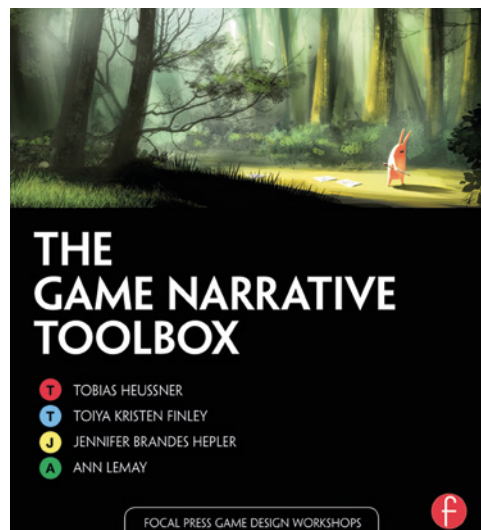
hen I began writing, I often encountered approaches to developing dramatic characters which resembled form-filling.

For example, one of the more popular instructional books on game writing is *The Game Narrative Toolbox*. In it, there's an exercise where the reader creates characters by populating a 40-field template, filling in sections such as 'Attitude Toward Law', 'What Makes Them Laugh', and a catch-all titled 'Character Development'. Another version of this is a 'Needs vs Wants' approach, in which every character must have a set of innate needs which is opposed

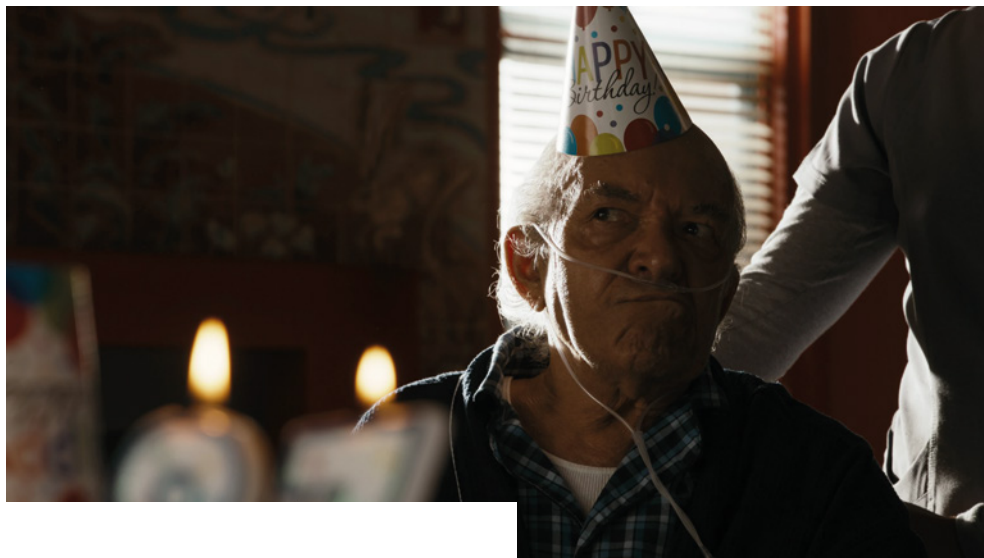
by their aspirations (although other interpretations exist). This is intended to create inner conflict, and it does. But the problem with both exercises as I understand them is this: writing isn't about filling blank pages; it's about filling them effectively. It's knowing which inner conflicts will be intriguing, and about designing characters who, by exploring common themes, are more than the sum of their parts.

When I used these approaches, I also often felt that there were aspects of personhood being left by the wayside, falling between the gaps between needs and wants, so I felt that it couldn't be the whole story. For example, when the exercise is to produce a contrasting list of needs and wants, we immediately miss off examples where, in real people, they have needs and wants which already align. After all, if a person existed whose inner needs and inner wants were completely exclusive of each other, they really wouldn't function at all, they'd be constantly torn over the smallest things. And then consider *Red Dead Redemption 2*'s Arthur Morgan: is his allegiance to his outlaw family a want or a need? Isn't it both? And what about his desire to morally redeem himself once he realises he's dying? Is that a want, a need, or both? I'd say it's much more complex than that.

Instead, the character creation process I've developed is to invent two extreme, whole versions of them, then see what's in the middle. To explain, I think that at any one time, a real person contains three versions of themselves, a model I've loosely plundered from Freudian theory of mind. We have our subconscious self



> Gurus are helpful, but take with a pinch of salt: long term, no one else's methodology will work perfectly for you.



◀ **Breaking Bad's Hector:** power and impotence. His superego is a drug god, his id rash and ineffectual, battling inside an uncooperative body. Dramatic character perfection.

(id), the part of us that has habits, tics, vague preferences, and emotions. It's the version of us we would be if we surrendered all thought and simply acted as what people call their 'true' self. Then we have our idealised self (superego, roughly), which is the version we wish to be. This person is a hero or protector, a true artist, or contented, or close with nature, a hermit, or whatever it may be. We are not this person, but it's who we strive to be, who we'd be if we could design our lives from the outside like a Sim. Then, in my mind, there's the bit in the middle (ego), which is the person we actually are. It's torn from pillar to post, a compromise, the seat of our inner struggles. Our nature drags us toward id, our rationality drags us toward superego, and our circumstances drag us into reality. We end up using our minds to suppress some habits, emotions, etc., though we surrender to others. But we also use our minds to attempt to be idealised, though we can never achieve it, and some parts of that dream-like self we cut our losses and ignore; I'll never win that Oscar my idealised self possesses.

So when I think about a new character, I often try to dream up an animalistic id of who they really are when nobody, not even themselves, is watching. This has needs, wants, habits, preferences, and irrationalities, all of which may or may not be consistent with each other. Then I'll construct an idealised superego, who they would be if they had infinite energy and willpower to determine their own life. This also has needs, wants, habits, and the rest, and may also not be consistent or realistic. Like Saul Goodman, this person might in a day spend ten hours as a

“At any one time, a real person contains three versions of themselves”

genius conman, ten hours saving lives with proper lawyering, get a full eight hours sleep, and never burn out. Inconsistent, unrealistic, multitudinous. Most importantly, I'll dream these up with the piece's core themes and topics in mind, ensuring each 'self' engages with them.

At this point, I'll get a clear idea of what this person's key conflicts and arcs will be, by simply, empathically, reconciling these two extreme selves. Who is the person once you factor these opposing selves in, plus: the rat race, their job, existential anxiety, living in a fantasy/horror-genre world? This part is 95% intuition and empathy, asking myself:

‘Who would I be if I lived in that world and had these two people in my head?’, then writing down the answer. Unfortunately, this is difficult to capture in

breezy, approachable documentation for your team's benefit. A list of needs and wants that sometimes but not always clash is still handy shorthand, then, as might a clear answer to a character's 'Attitude Toward Law'. But it's more important to clearly write, in personal language, who this person is to you, and who those two inner versions of themselves are, and then provide an exemplar (a short story told to show your team who the character is – see my column in issue 62).

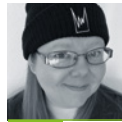
Now, every writer must arrive at their own methodology. This job's more magic than science, and whatever story-summoning ritual makes sense to you, do it. But when creating characters, it seems to me that one's interpretation of any technique must centre psychological depth and a meaningful, not arbitrary, core set of conflicts. 🍷

NEEDS VS NEEDS

Luke Skywalker begins *A New Hope* both needing and wanting to be part of something bigger than himself, such as the Rebellion, and the only reason he isn't is because he also both needs and wants his family. Taken literally, a needs vs wants approach implies that there's no conflict between different needs, for example, but as we see in Luke, he begins the story needing both connection to family and adventure, which are mutually exclusive. External forces intervene, but if they hadn't, he would have had to face this inner need-conflict eventually.

Make 3D adventures with Unity and the Raspberry Pi Foundation

How to take your first steps in creating virtual worlds using Unity and the Foundation's free resources



AUTHOR
LIZ SMART

A Learning Manager at the Raspberry Pi Foundation who's passionate about removing barriers for young people to create with technology. wfmag.cc/rpipaths

IT'S A BUG HUNT

Our projects include frequent debugging tips and have instructions that are hidden away but can be expanded if needed. We like our young creators to celebrate finding bugs and problem-solving to resolve them, so encourage them to tell us about other bugs they have come across and the process they used to fix them.

➤ The path was designed for young creators across the world to use in clubs or when learning at home.

Earlier this year, the Raspberry Pi Foundation and Unity partnered to build a free set of projects which introduces young people to Unity software. Aimed at beginners who are completely new to the engine, and potentially to C# too, the projects grow real-world skills and provide experience in making Unity-based 3D adventures.

PLANNING THE PATH

When designing a new learning path, we talk to young creators in our global community to find out what they'd like to make – and they don't hold back. Their Unity wish list covered video games, short animations, interactive stories, and more.



Armed with this information, we decided our path needed to progress our creators from being complete beginners to creating their own unique 3D adventures, whatever they may be, in just six projects.


We mapped out the elements our learners would need and provided them with the skills to make controllable player characters, non-player characters, items to interact with, scenery, and a user interface. We also added extra elements such as particle systems, character animations, and sound.

BRINGING 3D ADVENTURES TO LIFE

Our learning paths (wfmag.cc/rpipaths) follow a '3, 2, 1, Make!' principle, with opportunities to learn and practice skills while also growing in confidence and independence to make something unique. The path encourages learners to experiment with 3D shapes so that they can learn to model their own **gameObjects**, but an existing package of free, professional assets has also been included for creators to use. The set includes a variety of character models with vehicles and both anthropomorphic and naturally posed animals. Also included are urban and rural scenery, collectable items, as well as textures, materials, animations, and sounds.

Test: Try moving around in Play mode and make sure your character can move around.

Adjust the speed settings to get the right effect for your character.



Tip: If you change the speed properties in the Inspector, then those values will be used instead of the defaults. Default values are useful if you want to reuse the script in other scenes or projects.

Some project tasks have debug tips available in collapsible sections. They can be expanded to investigate the solution if needed.

The first three projects work together and introduce all the new skills needed for the path. Following step-by-step instructions, creators make a *Star Collector* game with an animated player character, spinning collectable stars with sparkle effects, a UI to keep track of score and time, and non-player characters moving in a variety of ways to both help and hinder the player.

In the next two projects, creators design and build a 3D world with scenery and particle systems, then populate it with characters. They add multiple quests to their worlds for the player character to complete. These quests could be to collect recipe items, escort other characters, or fetch multiple objects. Using the UI, they add dialogue and display variables so the player can keep track of progress in the quests.

The final project gives learners the chance to make their own 3D adventure. They can make all their own design decisions and choose which skills they need to use to build their project. They are then able to share it with the Raspberry Pi Foundation community to provide inspiration for others.

WHAT OUR CREATORS HAVE MADE SO FAR

The Introduction to Unity path launched in January this year, and since then, we've seen over 1200 creators complete the final project. We've featured some of the creations on our



There are examples through the path of characters created from models or crafted from 3D shapes.

project pages (wfmag.cc/3d-adventure) and are really pleased to see the variety of 3D adventures being made by young people at home, in Code Clubs, or CoderDojos. And it's not just our young creators who have been busy making adventures – we've had projects shared by adult creators, too.

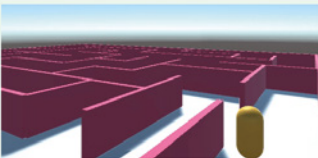
Earlier this month, registration opened for Coolest Projects Global 2022 (wfmag.cc/coolest), an online showcase for people aged 18 and under. We've seen a few Unity entries in previous years, so we're really excited that the new path will lead to more Unity entries this year. We can't wait to try them all out.

WHAT'S NEXT?

We've started to translate the projects from English into other languages, and hope to have those versions available very soon. In a future edition of Wireframe, we'll walk you through our first project, Explore a 3D world (wfmag.cc/3d-world). If you're eager to get started with the path now, though, you can head over to wfmag.cc/unity-intro. We'd love for you to try it for yourself, share your 3D adventures with us, and inspire our global community of young creators. 

Test: Play your scene and walk around. You might want to adjust the camera angle to work well with the scenery you've chosen.

Transform				
Position	X 0	Y 3	Z -10	
Rotation	X 0	Y -30	Z 0	
Scale	X 1	Y 1	Z 1	



This task is an example that encourages decisions based on playing experience. In this case, the editing of camera position settings.

Build a Guitar Hero-style game controller

From the pages of HackSpace magazine, editor Ben Everard shows you how to build your own rock 'n' roll-ready guitar controller



AUTHOR
BEN EVERARD

Ben's house is slowly being taken over by 3D printers. He plans to solve this by printing an extension, once he gets enough printers. hsmag.cc



Over at HackSpace magazine, we tried to 3D-print a guitar, but misunderstood the stresses on the neck and oriented the neck in the wrong direction on the print bed.

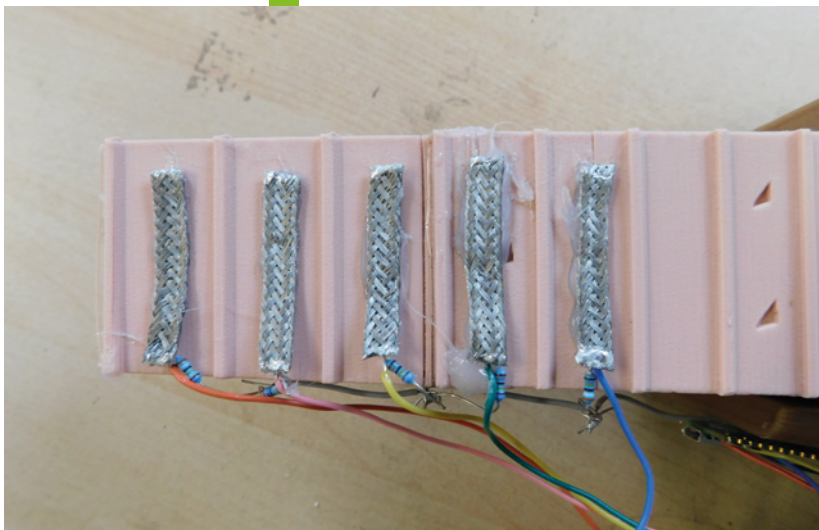
This was made worse by us printing in a cold room that may have affected the layer adhesion strength. It may not have worked even if we'd done everything right, since there are a lot of forces on the neck of a guitar and it has to hold up to them very well in order to work. The end result was that the neck snapped in many places.

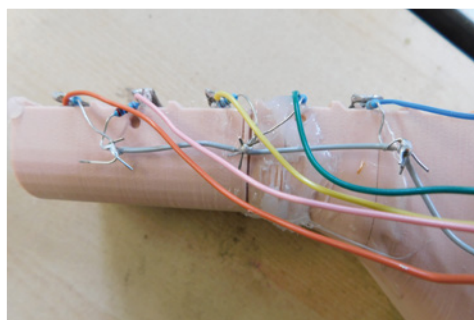
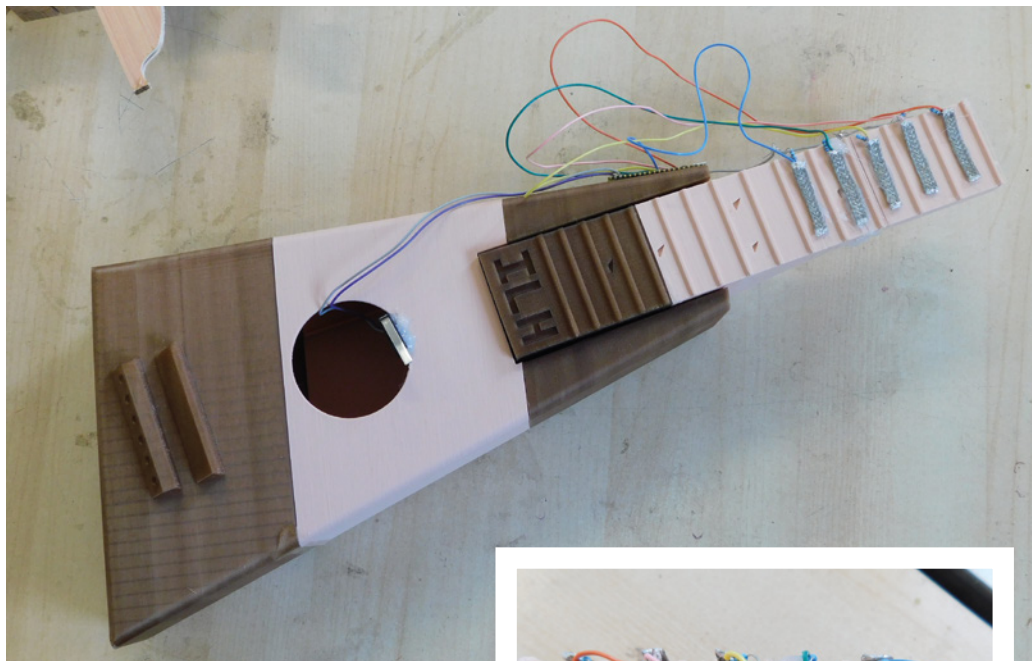
This tutorial, however, isn't about making musical instruments, or even 3D printing. It's about what we did after we ended up with a non-functional guitar-shaped object made of the pieces we glued back together.

In last month's Source Code, we showed you how to make a *Guitar Hero*-style rhythm action game. If you've not played *Guitar Hero*, the basic premise is that you have to play a song on the controller. One button selects the note, and the another strums. Strum at the right time while holding the correct note and you score points. In the original game, this is done with a guitar-shaped controller, but in issue 62's re-implementation, it's done with keys on the keyboard. If you missed that edition, don't worry – you'll find all the code you need for this tutorial at wfmag.cc/wfmag63.

Of course, we couldn't let this stand. A guitar-playing game needs a guitar-shaped controller. We had a guitar (well, about three-quarters of a guitar, to be honest), a Raspberry Pi Pico, and enough gubbins to build a replica controller for replica *Guitar Hero*. In this tutorial, we'll build our own controller. If you don't have a broken 3D-printed guitar, don't worry – this is just what holds everything together. You could use almost anything. The simplest would be a wooden plank, but you could be creative: an old tennis racket would give classic air-guitar vibes, or you could cut a guitar shape out of sheet material (such as plywood or MDF) with a jigsaw. If you really want

▼ The pads can be anything conductive – we've used cable shielding hot-glued on, but you can use whatever you have to hand.





^ All the pads are connected to a common ground wire (the grey one) via 1 MΩ resistors.

to go the whole hog, you could also 3D-print your own guitar – the design files are at wfmag.cc/tinyguitars, but we wouldn't recommend using the same alignment we used.

Since our game took input from the keyboard, we just have to set Pico up as a keyboard, then we can get our program to send keystrokes to the computer and the game will interpret them as though they'd come from any normal keyboard. It's actually very easy for some microcontrollers to behave like keyboards, and you can do this in a range of languages, but we find CircuitPython to be the easiest option – you can find it at circuitpython.org. Since our Source Code game is also written in Python, this means that both the game and controller are in a single language, which keeps things simple.

We'll look at the code shortly, but we can use the `adafruit_hid` module's `keyboard` object which exposes `press()` and `release()` methods that let you press and release buttons. Let's first look at the hardware.

We'll treat the two inputs (note and strum) a little differently. For the notes, we'll use touchpads, and for the strum we'll use a microswitch. This arrangement fitted our guitar well, but you could use all buttons for the notes

“A guitar-playing game needs a guitar-shaped controller”

if you prefer. A touchpad is just an exposed conductor. Wire, tinfoil, screws, and sheet steel all work, but we used a wire mesh designed for protecting cables because we had some to hand. A bead of solder along each cut edge

stopped it fraying and also protects fingers from the stray strands.

Raspberry Pi Pico doesn't have in-built capabilities for touch sensing, but

that doesn't matter; we can still use the `TouchIO` CircuitPython module as long as we connect the touchpad to ground via a 1 MΩ resistor. Other than that, the touchpad just needs to be connected to any I/O pin.

When working with touch-sensitive circuits, you need to be a little mindful of the whole system. Although we said that a touchpad is an exposed connector, you'll still get some reading if you ▶

◀ From the broken parts of a failed guitar, we built a game controller.



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Toolbox

Build a Guitar Hero-style game controller

touch the wire, and you can get some cross-talk between pads. We've addressed some of this in the code, but it's better to minimise it in the circuit as well, so keep the wires as short as possible and don't route them where they'll come into contact with your hands or body.

The microswitch will have three connectors: one common, one normally open, and one normally closed. We need two of these – normally open and common. These may be marked on your microswitch, or find them with a multimeter – set it to the continuity setting (where it beeps when the two probes are electrically connected), then find the pair of terminals that don't beep when the switch isn't pressed, but do when it is. You need to attach one of these connections to ground and the other to any unused I/O pin.

That's all there is to the circuit – just physically attach everything to the part of the controller you want. There are probably some clever ways of doing this, but we just hot-glued it all in place.

Let's now take a look at the code (this should be saved as `code.py` on your device):

```
import time
import board
import touchio
from digitalio import DigitalInOut, Direction, Pull
import usb_hid
from adafruit_hid.keyboard import Keyboard
from adafruit_hid.keyboard_layout_us import
```

```
KeyboardLayoutUS
from adafruit_hid.keycode import Keycode
```

```
touch_pad_z = board.GP2
touch_z = touchio.TouchIn(touch_pad_z)
```

```
touch_pad_x = board.GP3
touch_x = touchio.TouchIn(touch_pad_x)
```

```
touch_pad_c = board.GP4
touch_c = touchio.TouchIn(touch_pad_c)
```

```
touch_pad_v = board.GP5
touch_v = touchio.TouchIn(touch_pad_v)
```

```
touch_pad_b = board.GP6
touch_b = touchio.TouchIn(touch_pad_b)
```

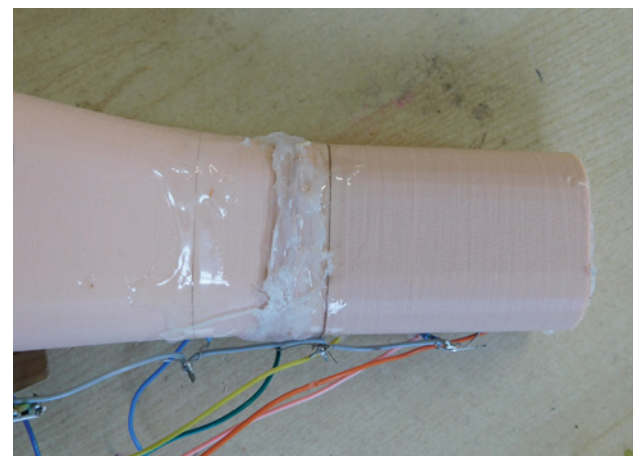
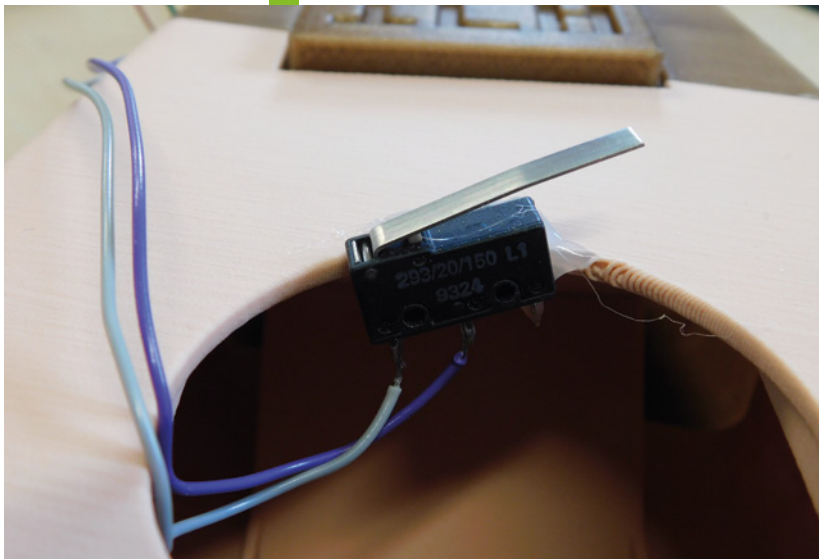
```
touchpads = [touch_z, touch_x, touch_c,
              touch_v, touch_b]
keycodes = [Keycode.Z, Keycode.X, Keycode.C,
            Keycode.V, Keycode.B]
```

```
thresh_jump = 2500
for pad in touchpads:
    current = pad.raw_value
    pad.threshold = current+thresh_jump
```

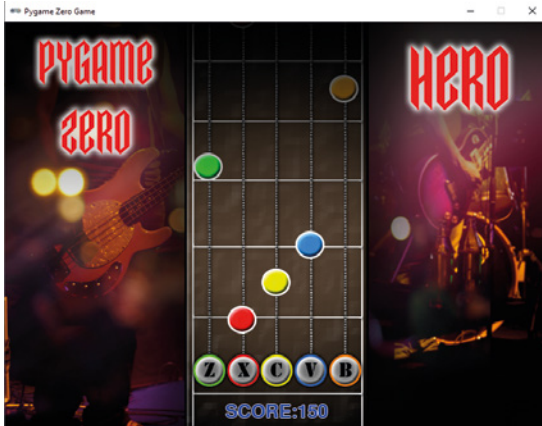
```
switch = DigitalInOut(board.GP17)
switch.direction = Direction.INPUT
switch.pull = Pull.UP
```

```
keyboard = Keyboard(usb_hid.devices)
keyboard_layout = KeyboardLayoutUS(keyboard)
```

✓ You can use any type of switch as the strum switch, but we like the twanginess of a microswitch.



^ For the record, this is a terrible way to 3D-print a guitar, but that doesn't mean we should let it go to waste.



^ Our *Guitar Hero*-esque Source Code from issue 62. You can get that edition from wfmag.cc/62.

```

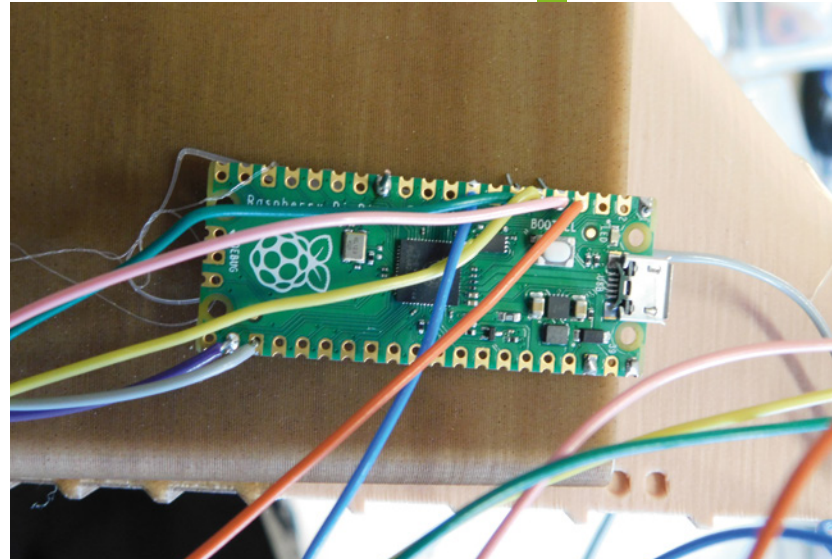
touch_thresh = 3500
currently_pressed = False
currently_pressed_index = 0

while True:
    pressed = False
    max_value = 0
    max_index = 0
    last_key = ""
    for i in range(5):
        value = touchpads[i].raw_value
        if value > touch_thresh:
            pressed = True
            if value > max_value:
                max_value = value
                max_index = i
    if (pressed):
        print(max_index)
        if (not currently_pressed) or
        currently_pressed_index != max_index:
            keyboard.release(keycodes[currently_
            pressed_index])
            keyboard.press(keycodes[max_index])
            currently_pressed = True
            currently_pressed_index = max_index

    if (not pressed) and currently_pressed:
        keyboard.release(keycodes[currently_
        pressed_index])
        currently_pressed = False

    time.sleep(0.05)
    if not switch.value:
        keyboard.press(Keycode.SPACE)
    else:
        keyboard.release(Keycode.SPACE)

```



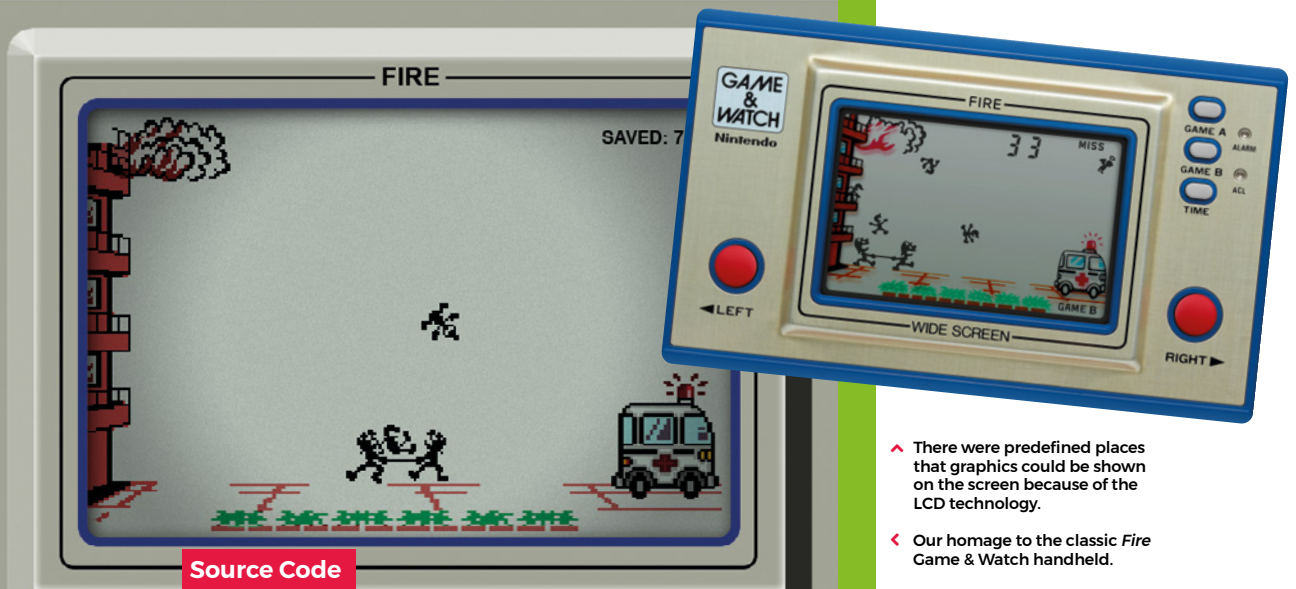
^ Raspberry Pi Pico does have mounting holes, so you can use screws to hold it in place, but as we're retrofitting it, we've just hot-glued it in place.

Normally, with TouchIO, you can just use the `value` property (which will be true if the pad is currently touched and false if not) to see if the pad is currently touched, but this was triggering a lot of false positives for us. Instead, we set a fixed threshold and tested to see if any of the pads exceeded this threshold – if they did, then it checks to see which of the pads had the highest `raw_value` (which is basically an indication of the capacitance of the pad, which will increase if you touch it), and it treats the highest one as touched.

Using this, we were able to accurately detect which pad as touched, but the downside is that it can only detect a single note press at a time. This isn't a problem in our original Source Code game, but could potentially limit future songs. You may find that you have to tune the threshold value for your build. Increase it if you're getting false presses and decrease it if it's not registering presses at all.

In order to run this, you'll first need to download CircuitPython and flash it to your device. You'll also need the libraries bundle, and copy across the `adafruit_hid` module to the `lib` folder on your Pico. Finally, you'll need to save this code to your device as `code.py` (you can download the full listing from wfmag.cc/wfmag63).

With that all in place, you should be able to fire up your controller and rock out to a *Guitar Hero*-like game with your own controller, both written in Python. 🎸



▲ There were predefined places that graphics could be shown on the screen because of the LCD technology.

◀ Our homage to the classic *Fire* Game & Watch handheld.

Code an homage to a Game & Watch classic



AUTHOR
MARK VANSTONE

Revisit Nintendo's early gaming years with our homage to *Fire*

As the seventies turned into the eighties, Nintendo began a line of handheld games: the Game & Watch. Created by Gunpei Yokoi, these featured a liquid crystal screen and simple controls – often just left and right buttons. One such game was *Fire*, where the player had to control a pair of firefighters as they attempted to save people jumping out of a burning building. Although the moving graphics were monochrome, there was a colour overlay showing the burning building, the ground, and the ambulance.

These LCD game graphics weren't drawn with a matrix of pixels like a computer game, but had a defined set of areas on the screen where shapes could appear. This limited the variations of possible graphics in one game, and due to the speed of the electronics behind the handheld, the refresh rate was considerably slower than most computer games: only around two frames per second.

For this example, we're going to recreate the look and feel of the original *Fire* with Pygame Zero. As we have in previous editions of Source Code, we've downloaded our graphics from spriters-resource.com.

The first thing we need to do is sort out that frame rate. We want the `draw()` function to draw every update, but we only want the game objects to move every 30 updates, so what we do is have a `count` variable and only fire the `doUpdate()` function if `count%30` is zero. The `%` sign returns the remainder when we divide by 30, so we'll get numbers between 0 and 29 in this case.

We draw the background image first, and then we need to have our two firefighters move between three positions along the ground. We can catch the left and right arrow key presses, but we only want to have one movement per refresh, so we set a `movement` variable to -1 or 1 and then do the movement when the next refresh happens. We actually have three Actors for the firefighters, one for each position, and only draw the one at the current position.

Now for the people jumping out of the building. There are only 22 positions which a jumping person can be in, so we can put them in a list of tuples which represent the x and y co-ordinates of the positions on the screen. We also have a different image for each position on the screen, so as our person moves, their image is changed to

reflect the position on the screen. We start the game by making a new jumping person in the form of an actor and add that to a list of jumpers. Then, each update we move all the jumpers in the list along by one frame and change their image. When we get to the `draw()` function, we draw all our jumpers at the co-ordinates for their frame.

So now we have a game that we can control the firefighters left and right, and have people jumping out of the building following a predefined set of positions on the screen. We need to detect if the firefighters are stopping the people from hitting the ground, so we test to see if a jumper is at any of the frames where they need to be caught, and if so, are the firefighters in the right position to catch them? If not, the person will fall to the ground and the game's over. If the firefighters are in the right position to save the person all the way across the screen, however, they'll bounce into the ambulance and the player's score increases.

With that, the game's pretty much complete. The original *Fire* gave you three lives and two difficulty levels, but as always, we'll leave you to add those features in for yourself. ☺

Python & Watch

Here's Mark's code for a *Fire*-style action game in Python. To get it running on your system, you'll first need to install Pygame Zero. You can find full instructions at wfmag.cc/pgzero.



```
# Fire
import pgzrun
count = catcherPos = moveCatcher = gameState = score = 0
catchers = []
jumpers = []
jumperPositions = [(130,220),(190,260),(210,320),(220,360),(240,410),
(260,360),
(270,320),(290,250),(320,220),(340,250),(360,300),
(380,360),
(390,410),(420,360),(430,300),(470,250),(500,300),
(520,360),
(538,410),(580,360),(600,320),(620,350)]
for c in range(3):
    catchers.append(Actor('catcher'+str(c), center=(240+(c*150), 425)))

def draw():
    screen.blit("background",(0,0))
    for c in range(3):
        if catcherPos == c: catchers[c].draw()
    for j in jumpers:
        if j.state == 0: j.draw()
        if j.state == -1 and count%2 == 0: j.draw()
    screen.draw.text("SAVED: "+str(score), topleft = (580, 120),
color=(0,0,0) , fontsize=25)

def update():
    global count
    count += 1
    if(count%30 == 0) : doUpdate()
    if(count%2000 == 0) : makeJumper()

def doUpdate():
    global catcherPos, moveCatcher, gameState, score
    if gameState == 0:
        catcherPos = limit(catcherPos+moveCatcher, 0, 2)
        moveCatcher = 0
    for j in jumpers:
        if (j.frame < 21 and j.state == 0):
            j.frame += 1
            j.image = "jumper"+str(j.frame)
            j.pos = jumperPositions[j.frame]
        else:
            if j.state == 0:
                j.state = 1
                score += 1
                makeJumper()
```

```
        if (j.frame == 4 and catcherPos != 0) or (j.frame == 12 and
catcherPos != 1) or (j.frame == 18 and catcherPos != 2):
            j.state = -1
            j.image = "jumperdropped"
            j.y += 50
            gameState = 1

def on_key_down(key):
    global moveCatcher
    if key.name == "LEFT":
        moveCatcher = -1
    if key.name == "RIGHT":
        moveCatcher = 1

def makeJumper():
    if len(jumpers)%5 == 4:
        jumpers.append(Actor('jumper0', center=(130, 270)))
        jumpers[len(jumpers)-1].frame = 1
    else:
        jumpers.append(Actor('jumper0', center=(130, 220)))
        jumpers[len(jumpers)-1].frame = 0
        jumpers[len(jumpers)-1].state = 0

def limit(n, minn, maxx):
    return max(min(maxn, n), minn)

makeJumper()

pgzrun.go()
```



^ Nintendo started releasing the Game & Watch series in 1980. *Fire* Game & Watch had two versions: the silver version and the wide-screen version.

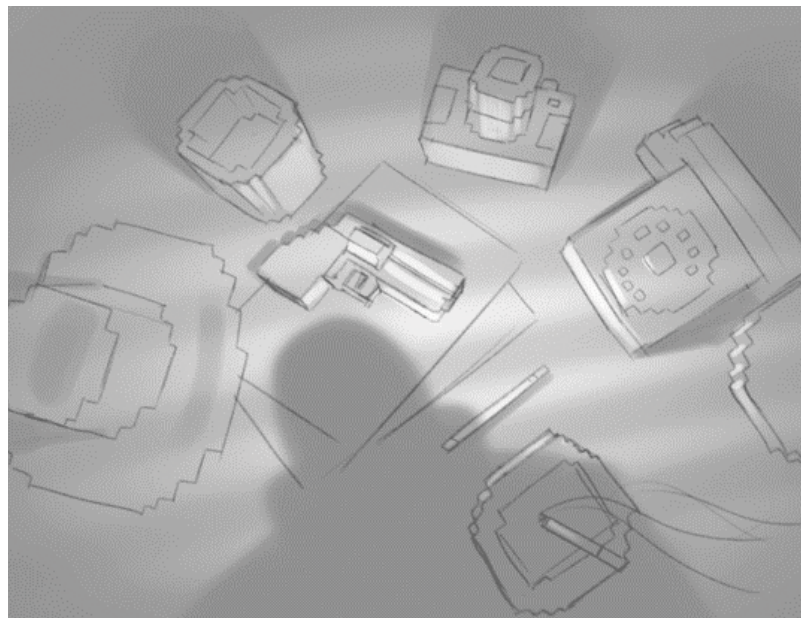


GAME
Shadows of Doubt

DEVELOPER
ColePowered Games

RELEASE
2022

WEBSITE
colepowered.com





Shadows of Doubt

**READ
MORE**
turn to
page 14

Although the mystery players are tasked with solving is always entirely randomised, lead developer Cole Jefferies still cites *Shadows of Doubt* (see page 14) as having elements of handcrafted design that helps complement the city's procedurally generated elements elsewhere. Such a healthy blend ensures that a fresh experience is offered up every time, while the environment still retains its noir atmosphere – making it feel like a living, breathing place. “When you boil a procedural game down enough, you’ll usually find elements that need to be handcrafted and modularised to some extent,” says Jefferies. “For us, it’s mostly about the space; the interiors of buildings feature manually designed layouts with designated areas for different purposes – think apartments, shops, bars, etc. But then individually within those addresses the proc gen takes over and generates dividing walls, rooms, décor, and furniture.”



任天堂株式会社

FROM CARDS TO CARTRIDGES

EXPLORING NINTENDO'S
EARLY YEARS

WRITTEN BY
JACK YARWOOD

How Nintendo grew from a small playing card business to the gaming giant we know today

Nintendo is globally recognised as the company behind hits such as *Super Mario Bros.*, *Metroid*, and *The Legend of Zelda*. But its history goes much further back than the period

in the 1980s when it first became a household name. In 1889, Japanese businessman Fusajirō Yamauchi founded Nintendo as Nintendo Koppai, a card manufacturer on Shōmen-dōri street in Kyoto. From these humble beginnings, it grew into one of Japan's largest playing card companies, before pivoting into other products like toys and electronics.

Nintendo rarely talks at length about its pre-video game history, but it helps explain how the company came to be: from its early targeting of families with its products to why it prioritises older, cheaper hardware over cutting-edge technology. In order to find out more, we spoke to historians,

collectors, and archivists about Nintendo's growth into the company we know today. But before we do that, we first need to talk about its founder.

CEMENT TO PLAYING CARDS

Fusajirō Yamauchi wasn't born a Yamauchi, but was instead adopted at an early age. Naoshichi Yamauchi, the owner of the local cement company Haiko Honten, had no children and needed an heir to take over after he retired, so Naoshichi adopted Fusajirō and changed his surname. Fusajirō started working at the factory as a teenager, and in 1880 succeeded Naoshichi as president, becoming involved with projects like the Lake Biwa Canal in Kyoto. The company's success continued under his leadership, but Fusajirō had other interests he wanted to pursue outside of cement.

In his spare time, Fusajirō often played with Hanafuda. These were pictorial 'flower cards' containing twelve suits, each one representing a



^ Nintendo produced various styles of playing cards over the years. Here are just a few examples. (Image: Before Mario)

different month, and encompassing four ranks. In the past, playing cards had been outlawed under the Tokugawa Shogunate, but were legalised again in 1885 after the Meiji government softened its position on gambling.

Florent Gorges, co-author of *The History of Nintendo 1889–1980*, says: "Around [1885],

Japan started to change its philosophy, its ways of life, and the government again allowed the possibility to gamble with cards. Mr Yamauchi loved to drink

saké with his friends after work and to gamble with playing cards for money. And because [Kyoto] was considered a pleasure city, he asked himself, 'Why can't we do a card-manufacturing business?'"

"There was a new opportunity," adds Alexander Smith, author of *They Create Worlds*, a book about the key figures behind the video game industry. "Hanafuda had just been legalised again, so there really weren't that many manufacturers. There was an opportunity to start a small workshop, and that's how Nintendo started – just a side →

"Nintendo rarely talks about its pre-video game history"

HISTORY OF HANAFUDA

Portuguese sailors introduced playing cards to Japan in the 1600s. But, from 1603 to 1868, the Tokugawa Shogunate, the military dictatorship in control of the country, closed it off from the rest of the world and prohibited gambling with foreign playing cards. Gambling remained illegal for over two centuries, but that didn't stop people from playing with cards. The Japanese continued to gamble and came up with different games and cards to try and get around prohibition. It was out of this that Hanafuda was born. It was only after the Meiji Restoration in 1868, when the emperor was restored to Kyoto, that authorities in Japan started tolerating playing cards like Hanafuda. In 1885, gambling with playing cards was finally legalised.



▲ Hyakunin Isshu (or Uta-garuta) is a matching game based on a classical anthology of Japanese poems. (Image: Fabrice Heilig)

business in 1889 in a small building, with maybe only a dozen artisans hand-crafting these Hanafuda cards."

Nintendo's first Hanafuda set, the Daitōryō ("president") line, featured the image of Napoleon Bonaparte on the cover and was aimed at the higher end of the market, such as gambling houses and those with more expendable income. Nintendo later released another deck called the Tengu line – comprising cards of a slightly lower quality.

The Tengu (literally "Heavenly Dog" or "Heavenly Sentinel") is a legendary figure in Japanese folklore, commonly depicted with a long nose and a red face. They were already associated with gambling, because the Japanese words for "nose" (hana) and "flower" (hana) have a similar pronunciation, and potential players would often rub their nose to indicate that they were looking for gambling games during prohibition.

For years, it had been assumed that the name Nintendo means "Leave Luck to Heaven", but Hiroshi Yamauchi has admitted in interviews that its true meaning has been lost to time. Gorges therefore speculates that because of the cultural connection between the Tengu and gambling, and due to the ten in Nintendo using the same kanji as in Tengu, it's possible the company was partially named after the figure instead.

MODERNISATION

The success of Nintendo's products resulted in continued growth over the next two decades, but that success also brought with it some challenges. During the Russo-Japanese War



▲ Nintendo produced Disneyfied takes on traditional games like Iroha Karuta, but also western-style playing cards for kids. (Image: Before Mario)

(1904–1905), the Japanese government imposed a stamp tax on playing cards – a system that continued to exist up until 1989 (before being replaced with another tax similar to VAT). This change hit some card companies hard, but Nintendo managed to weather these changes due to its various partnerships and growing catalogue of playing cards.

Having grown Nintendo from a small side business into a profitable venture in its own

"They managed to stick around by being a propaganda company"

right, Fusajirō retired in 1929. He selected Sekiryō Yamauchi, the husband of his daughter, Tei, to take over from him, and immediately Sekiryō modernised Nintendo. He introduced a new management structure and introduced production lines. But difficult times were ahead. In 1941, Japan entered World War II and the public's interest in leisure activities fell dramatically. To survive, Nintendo took a contract from the Japanese nationalist government to produce Aikoku Hyakunin Isshu (a patriotic take on the popular poetry game). It's a controversial part of the company's history which Nintendo has never discussed. "During wartime, you can't really be a leisure company," says Kelsey Lewin, co-director of the Video Game History Foundation. "So they managed to stick around by being a propaganda company for the Japanese nationalists. They made cards with nationalist slogans on them which were distributed to soldiers."

"Nintendo printed them and shared them all around Japan," says Gorges. "And they had orders from all the schools. For Nintendo, it was a great opportunity for them to survive, because nobody was in the mood to play games. All the men were at war. The women were all working. And the kids were at school. So the entertainment industry in Japan was in a bad situation."

NINTENDO'S LOVE HOTELS?

Many articles claim that Nintendo once owned a collection of short-stay hotels (also known as love hotels) as well as a string of taxi businesses. This claim originally came from David Sheff's 1993 book *Game Over: How Nintendo Zapped an American Industry, Captured Your Dollars, and Enslaved Your Children*. But modern historians have struggled to verify this. "With my friends and myself, we tried to search all the businesses' financial documents, and we searched for over 20 years and found nothing concerning [Nintendo owning] love hotels," says Gorges. "But what we discovered was Mr Yamauchi gave some of his own money to invest in other businesses, including a hotel business. We're not really sure if it's a love hotel or a [regular] hotel. As for the taxi business, it's more directly involved with Nintendo. But, of course, at that time, the taxis weren't called Nintendo taxis."



▲ For the 1964 Tokyo Olympics, Nintendo released a deck of cards featuring Mickey and friends. These underperformed, however, as Japanese children shifted their attention from playing cards to plastic toys. (Image: Fabrice Heilig)

This wasn't necessarily unique to the Japanese wartime experience, with some American companies like Disney also having to survive through signing contracts with their nation's armed forces. Nevertheless, Nintendo emerged from the war because of this work, and like other Japanese companies, it began to rebuild. Sekiryu established another business called Marufuku Co. Ltd in 1947, to help with distribution of Nintendo products. But, in 1949, he suffered a stroke and ceded control of the company to his grandson, Hiroshi.

Hiroshi Yamauchi wasn't the first choice to take over as president of Nintendo, as he was still quite young at the time. Instead, Shikanojo Inaba, Hiroshi's father and Sekiryu's son-in-law, was first in line to succeed. But Shikanojo had abandoned his family and fled from his responsibilities, so Hiroshi became president at only 22 years of age.

STRIKES, DISNEY, AND TOYS

Hiroshi took a draconian approach to management, bringing about a number of dramatic changes that frustrated long-time employees. In 1951, he consolidated the family's corporate entities and centralised production, leading to a number of factory closures and layoffs. Employees voiced their disappointment with the young president and organised a protest in 1955, with many workers expecting him to fold under the pressure. But Hiroshi instead laid off his biggest critics, forcing employees to fall in line or face punishment.

The next year, Hiroshi visited the world's largest card manufacturer: the United States Playing Card Company, in Cincinnati. It was on this visit →

LINKS TO THE PAST

THE NES ZAPPER

Nintendo didn't stop producing lightguns in the 1970s. It released an electronic lightgun accessory for the Famicom, called the Video Shooting Series Light Gun, in 1984. The following year, it was released in the US as the NES Zapper.



N&B BLOCKS IN SUPER MARIO LAND 2

N&B Blocks still pop up in Nintendo games every now and then, such as Game Boy title *Super Mario Land 2: 6 Golden Coins*, which Yoko produced. (Image credit: Before Mario, Fabrice Heilig)



THE ULTRA HAND IN SUPER MARIO KART 8

The Ultra Hand has made a cameo in numerous Nintendo games, including *Mario Kart 8 Deluxe*. (Image credit: Fabrice Heilig)



THE ULTRA MACHINE

Half a century before folks were playing *Wii Sports*, they were swinging a Nintendo-branded bat to hit home runs in their backyard. (Image Credit: Before Mario)



◀ Nintendo released translated versions of US board games like *Twister* and *Hip Flip* in Japan. These were considered risqué for the time, as they required players to get up close and personal with each other. (Image: Before Mario)

THE LEFTY RX

In the early 1970s, Nintendo gave Yokoi the task of making its next product as cheap as possible. Its solution was to create a racing car that could only turn left to cut down on manufacturing costs. The resulting toy was much cheaper than its competitors, but meant that players would have to specifically design their racing tracks to feature no right turns. Nintendo collector Erik Voskuil believes this philosophy of devising “new play opportunities that are affordable (for the customer) and profitable (for the company)” is reflective of Nintendo’s later work in video games, with the Nintendo Game Boy and Nintendo Wii. Both products were less advanced, compared to their competitors, but came at a reasonable-enough price point to achieve mass success.

that Hiroshi realised that Nintendo would need to diversify its business in order to survive. “When he visited the United States, it was to get a sense of what the card business looked like there,” says Smith. “And it was kind of a revelation to him that children were playing cards. Because it just wasn’t [common] in Japan. And this was one of the reasons why he shifted focus [to children]. It’s also kind of when he learned the power of licensing.”

Gorges says: “When Mr. Yamauchi went to the US, he wasn’t impressed when he discovered that the world’s biggest playing card company wasn’t so different to Nintendo at that time. He was disappointed because he had such great ambition, and didn’t see any great future for his business.”

In 1959, Hiroshi began diversifying Nintendo, signing a licensing deal with Disney to make cards based on its animated characters. This new range was an instant hit with Japanese kids, and Hiroshi took the company public soon after in 1962.

A year later, Hiroshi changed the company’s name to Nintendo co., dropping the reference to playing cards for the first time. Plastic toys were



▲ The Nintendo Beam Gun was produced in collaboration with Sharp’s Masayuki Uemura. Uemura later joined Nintendo and designed the original Famicom. (Image: Fabrice Heilig)

becoming increasingly popular with Japanese children, and with the playing card market plummeting in 1964, Nintendo needed to expand into other areas.

From 1965 onwards, Nintendo produced a variety of board games based on characters from Disney films and Japanese media; and existing products by Milton Bradley and the Parker Brothers. At this stage, the company was yet to develop its own original ideas, but all that was about to change with the arrival of one young engineer, Gunpei Yokoi, in 1965.

Yokoi initially maintained the card-cutting machinery on Nintendo’s factory floor. He liked to tinker, and during his shifts would often build contraptions out of materials he found around the factory. The story goes that, one day, Yokoi was bored and tinkering with an extendible-hand toy he’d built, when management took notice and brought him up to the office. Yokoi thought he was about to be punished, but Yamauchi instead promoted Yokoi to an R&D position and asked him to produce more. Nintendo released the toy as the Ultra Hand in 1966 to commercial success, giving the company a new-found confidence.

GAME & WATCH

Yokoi’s emphasis was on creating cheaper products using technology that was easy to source and manufacture. In 1967 came Yokoi’s next invention, a plastic batting toy called the Ultra Machine, followed by Nintendo’s own take on LEGO called N&B Blocks. Nintendo also started to produce electronic products around this time, including a Love Tester, a light-sensitive Beam Gun, and a remote-control car called the Nintendo Lefty RX. “There’s this Yokoi philosophy that extends into Nintendo even now,” says Lewin. “He called it ‘lateral thinking with withered technology’. What that means is taking parts that are cheaper now, off-the-shelf and not cutting edge, and making something really good and

► The original Color TV-Game contained six variations on Pong. Like other Nintendo products, the system was much cheaper than many of its competitors. (Image: Before Mario)



interesting with them. That way you can have something that's affordable, but not sacrifice quality too much."

Nintendo had some initial successes with this philosophy, and some notable failures, too. One such failure was the Laser Clay system in 1973 – Yokoi's idea to transform the nation's deserted bowling alleys into toy shooting galleries. Together with fellow R&D members Masayuki Uemura and Genyo Takeda, Yokoi came up with a kit that used projectors to simulate a shooting gallery. When a person fired their gun, mirrors would track the light and detect whether the target was hit, switching the projector image based on this input. The attraction was initially popular, but the Japanese oil crisis and recession led investors and business partners to pull out, causing Nintendo to lose millions.

The company was in trouble; one of its biggest projects had fallen apart, and toys were becoming more expensive to produce due to the rising costs of manufacturing. Nintendo again needed to pivot to survive – and luckily, coin-operated amusements were on hand.

In 1974, Nintendo released a mini version of its laser-clay shooting system: the arcade machine, *Wild Gunman*. It was a modest hit, and Nintendo followed this with other coin-operated amusements like Genyo Takeda's *EVR Race* and *Sky Hawk*. The company started to prioritise video games over toys, and in the late 1970s, after the success of Atari's home version of *Pong*, Nintendo acquired a licence from Magnavox (*Pong*'s original creators) to create its clone consoles for the home market.

Together with Mitsubishi Electronics, Nintendo released the Color TV-Game 6 and Color TV-Game 15 – home consoles packaged with variations on *Pong*. Other systems followed, including the *Racing 112*, a driving game, and *Block Kuzushi*, a clone of Atari's *Breakout*. Despite these consoles selling particularly well, the company wasn't in the clear. In 1980, however, its fortunes started to change.

As Yokoi was riding home on the bullet train one day, he spotted a bored businessman playing with the buttons on his calculator. This gave him an idea, and pretty soon he came up with

**"He called it
'lateral thinking with
withered technology'"**

a proposal for a portable LCD gaming device, using button-cell batteries which were cheaper to source. He called it the Game & Watch, and it would go on to become the hit the company needed. Nintendo released the first version of the Game & Watch in 1980, and over the next few years, it created more variations with various different games included, like *Life Boat*, *Rain Shower*, and *Mario Bros*.

Following this, the story of Nintendo becomes more familiar. In the early 1980s, it released arcade cabinets for *Donkey Kong* and *Mario Bros*. It then followed this in 1983 with the release of the Family Computer (or Famicom), a console designed by Masayuki Uemura. With each subsequent release, Nintendo built a reputation for quality and innovation through "lateral thinking" – skills that came about from raw talent and financial necessity.

Today, Nintendo only really acknowledges its pre-video game history in the form of easy-to-miss Easter eggs. But if you look closer, its influence can be seen in many of its products, whether it's the Wii, Wii U, and Switch, or peripherals like Labo and *Mario Kart Live: Home Circuit*. The company rarely tries to dominate its rivals with superior technology, instead offering affordable experiences that appeal to a broad audience. It's an approach that has served the company well for years, and one that it will likely continue far into the future. 🎮



▲ The Game & Watch had over 50 variations, including several multi-screen handhelds. (Image: Before Mario)

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Interactive / The Gecko Gods

How a developer's respite from university work led to a relaxing, 3D Zelda-like adventure

Are you a solo developer working on a game you want to share with Wireframe? If you'd like to have your project featured in these pages, get in touch with us at wfmag.cc/hello

Like many people during March 2020's initial lockdown, history undergrad Louis Waloschek sought a creative avenue that he could pour time into when not tied up with university work.

Having already made a small name for himself by making mods within the *Minecraft* community, game development seemed like a great choice – especially since it'd also be an opportunity to tie in his love for his chosen area of study. The one thing he didn't have at that time, however, was a love of lizards.

"It started because I was teaching my friend how to code at uni," Waloschek says of *The Gecko Gods'* humble origins. "She wanted to make a tile-based game with a gecko, so we made this gecko for that very simple tile game. I was working on a gardening game at the time, but then I had this side project that was a *Zelda*-esque, third-person sort of game set around a Moroccan river valley.

I was having a lot of trouble with how the character controlled because there was nowhere to walk. It was all in the mountains! So I pulled in this gecko from this thing I'd done with my friend, and I was like, 'Where am I going to walk – on the walls?'. So that's how it started when I was in the middle of uni."

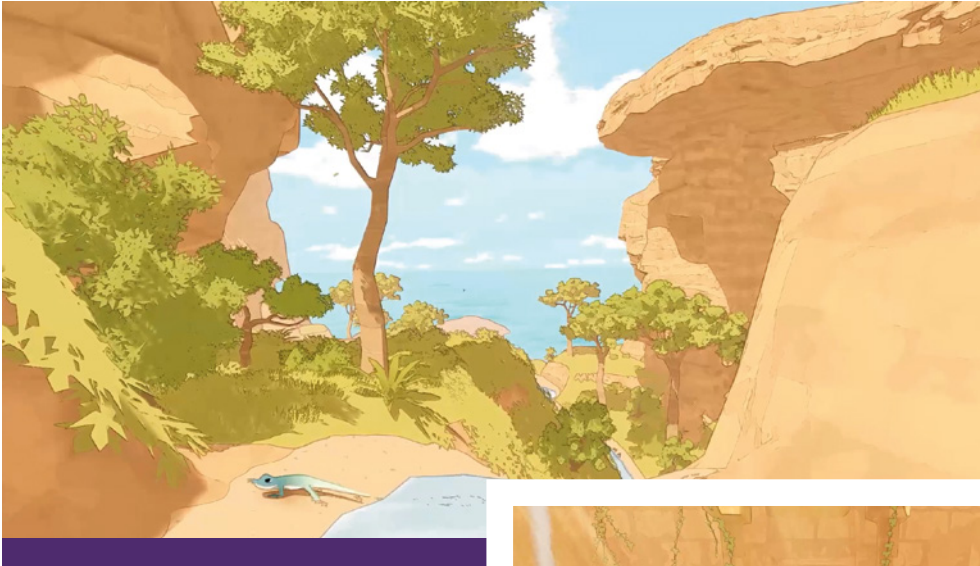
Waloschek is still in the midst of study (this time for his master's degree) over two years on, but since then, he's gained a much clearer focus for how puzzle-solving and exploration in *The Gecko Gods* will work, as well as a deal with Super Rare Games' new Originals publishing division. He somewhat unsurprisingly cites *The Legend of Zelda* as a core influence, yet is intent on infusing that franchise's recognisable hallmarks with a vibe that is noticeably more pared-back and peaceful. After all, the mysterious temple ruins your budding gecko finds itself clambering through might be littered with puzzles and obstacles to overcome, but there's not one enemy in sight.

"A lot of how I design is by thinking about what could be stressful interactions, and considering ways I can reduce that," explains Waloschek on maintaining a relaxed atmosphere and environment. He suggests there are multiple aspects to think about when trying to achieve this, including "the camera, your movement, and the way you interact with things". It's this ethos (coupled with his love for all things ancient) that inspired the solo developer to set his game on a far-off island that once played host to a fictional lost civilisation; turns out it's a perfect biome in



^ Waloschek initially toyed with having a stamina meter like *Breath of the Wild's*, before opting for a less restrictive climbing approach.

> *The Gecko Gods* follows one reptile's journey to save his lost friend the only way he knows how: endless climbing and puzzle-solving.



◀ The ancient island you'll be exploring handily acts as your main hub, stretching out to both optional and mandatory temple dungeons.

which to set a tranquil tone, as players will be regularly accompanied by the sound of fluttering trees, the nearby ocean, and the like. "I hope it's not stressful to play, but it's up to other people to decide," says Waloschek.

So adamant is Waloschek on keeping players calm under pressure when progressing through the game, mandatory obstacles have been made to meet a specific difficulty threshold so as to try and avoid any frustration. Players that do crave a challenge, however, won't have to look far. "If something gets designed and doesn't really fit [because] it's too difficult or it's not relaxed, then that gets moved to be more optional content in the game," he says. *The Gecko Gods* otherwise adheres to the traditional dungeon-by-dungeon structure quite closely, but an element of choice is involved in terms of the order you approach them.

Even still, it's hoped that thrusting players into an overworld primed for light bouts of discovery will help them find their own pace, before treating them to large, puzzle-filled temples that almost act as the main event.

Once you're inside one of them, where you go and how you go about finding a temple's specific solution is entirely up to you. And while being able to scale any wall or scramble up to any surface to give the game a welcome sense of freedom, this unshackled approach to traversal meant Waloschek had to think laterally in terms of level and puzzle design.

"The whole structure of the game ended up being designed around trying to make climbing



as enjoyable as possible." Waloschek does this by imposing very few ground rules on the player. "There's no arbitrary 'You can't walk on this surface', which was quite important to me," he says. "I think once you give the player this complete sense of freedom to walk around, you don't want to randomly take that away." From pushing around boulders into the correctly sized slot to biting down on chains and revealing a doorway, your skillset as a gecko is made

known to you from the off. That way, by changing what's presented around the player, rather than constantly what's asked of them, exploration and

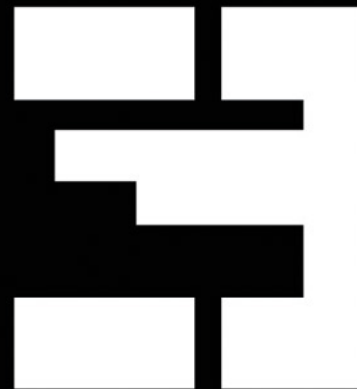
problem-solving always serves as the main thrust rather than outright dexterity. "It's definitely not a precision platformer," chuckles Waloschek.

Despite being set on a painterly, watercolour-like island drenched in the sun, *The Gecko Gods* looks well on-track to accomplish its markedly chill tone and feel. Playing from the perspective of a plucky, cold-blooded protagonist, why would we expect anything else? 🦎

CIVILISATION GONE BY

Narrative takes a backseat compared to exploration in *The Gecko Gods*, but players eager to know more about the ancient society this island once belonged to will find it – they just need to look hard enough. "[Story] doesn't form a big part of your journey through the world," Waloschek says. "It forms a background and a second layer that's there to discover." What subtle environmental clues are there have been engineered using a mixture of other real-life cultures from history: "The biggest inspirations are South American civilisations like the Mayans and the Aztecs."

"I hope it's not stressful to play, but that's up to other people to decide"



Interactive / P.3

Character animator Sooyun Jang turns solo developer with this intense vertical shoot-'em-up

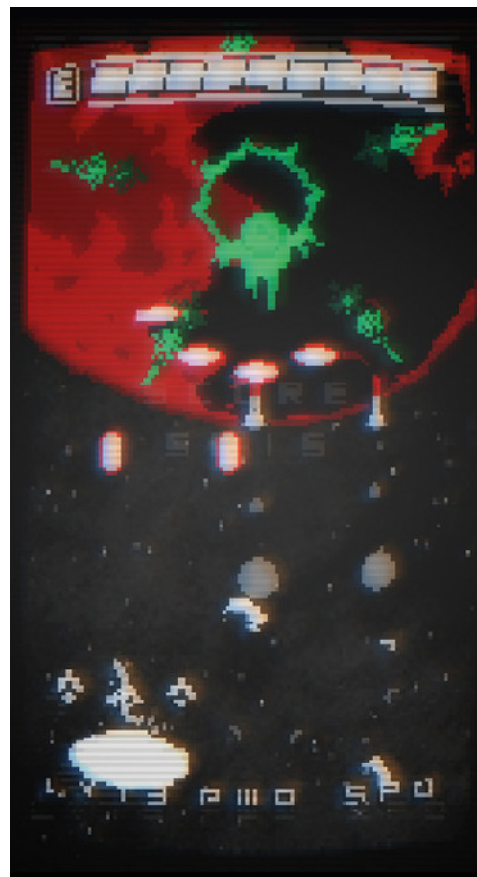
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If you've played any of Sucker Punch Productions' games, you'll almost certainly have spied some of Sooyun Jang's work. As a character animator, Jang worked on *Ghost of Tsushima's* wonderfully fluid combat sequences, for example – so if you ever marvelled at its graceful swordplay, you partly have him to thank.

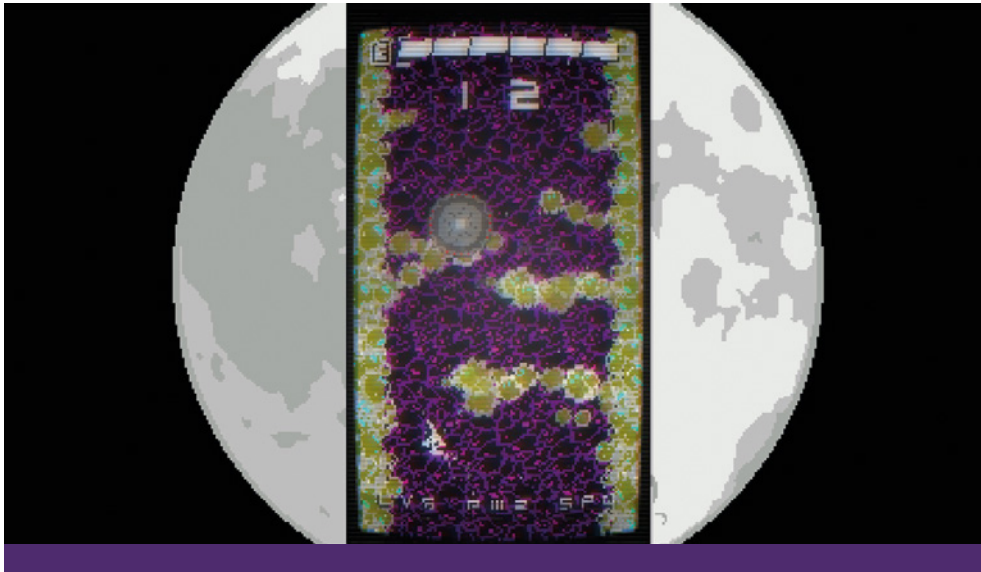
Away from the big budgets and complex character models of the triple-A industry, meanwhile, Jang's been working on a very different beast. *P.3* is a hectic vertical shooter with a unique two-button control mechanic: pressing left and right will fire a regular laser, while pressing both buttons at the same time will fire a more powerful charge shot. It's a streamlined system that ensures you're always on the move – when you aren't blasting waves of enemies, you're navigating your way through winding passageways, avoiding obstacles, and ultimately, fighting huge end-of-level bosses.

P.3 emerged for PC and mobile in 2019, but received a port to the Switch in April this year, with the latter handled by publisher RedDeerGames. "As a hardcore video gamer, I've had a dream of seeing my game in the [eShop]," Jang tells us. "I just had to provide assets for the game – they've done all the porting, paperwork, and releasing."

Before all that, though, Jang faced the tricky task of prototyping and developing *P.3* in his



Aside from other shooters, *P.3* draws on *Downwell* for both its monochrome visuals and its power-up system, Jang says.



◀ A counter at the top of the screen tells you how many more enemies you have to kill before you next level up.

spare time. "I have a day job and a family," Jang tells us. "It was really hard to do work again after the day job was done, and I had to spend some time with family too, so I decided to spend a few hours making my own game every day after my wife went to bed – otherwise I wouldn't have been able to make the game."

Inspired by the arcade games he played as a youth, Jang decided to make his first solo project a shoot-'em-up, and began experimenting with various ideas and mechanics – one saw the player control two ships at the same time; another restricted the player's movement to acceleration and deceleration. Eventually, Jang settled on the two-button controls we see in the finished *P.3*, which was soon joined by a system where you gain XP by shooting down enemies – and as you gain XP, your weapons will grow ever more powerful.

SHOOT THE CORE

P.3's distinctive visuals – all monochrome, splashes of red, and shimmering cathode ray tube effects – were also a creative solution to one of Jang's limitations: he had little experience drawing pixel art. "I knew I didn't have enough skill making sprites in full colour since I was pretty new to drawing them," he says. "So it was decided early in development to go with monochrome and a classic CRT effect." Those splashes of crimson were also a "natural choice", he adds, since they contrast cleanly with the black-and-white sprites and help emphasise things like bullets and enemy attacks.

"Learning programming and game design was a challenge"

When asked about reference points for *P.3*, Jang cites some of the classics you'd expect, such as *R-Type* and *Ikaruga*. But he also name-drops some deeper shoot-'em-up cuts, including *Air Buster* (which influenced *P.3*'s second stage, he says), Konami's *Gradius* spin-off, *Salamander*, while Eighting's 1996 vertical shooter *Terra Diver* (also known as *Soukyugurentai*) provided the basis for some of Jang's boss battles. "Actually, designing the boss fights were way more fun than designing stages," he says. "I wanted the first boss to be simpler than others, so anyone can defeat it... I

wanted to make sure there's a reward after defeating it to give you some kind motivation. I can say my favourite is the second boss, which looks like a centipede

mech. I always loved to see this type of enemy in games when I was young, so I definitely wanted to add one to my game. I like the way it moves."

P.3, then, is one of a growing armada of genre entries made by indie developers. The humble shoot-'em-up may have long since been abandoned by mainstream studios, but designers like Jang are keeping the flame alive with smaller, lovingly crafted titles like this.

"There are no big companies interested in developing or making games in this genre anymore," Jang concurs. "But that's understandable, too – the game industry isn't the same as it used to be, and trends have changed. But thankfully, there are still fans and people waiting for shoot-'em-up genre games. I've seen many fine shoot-'em-ups released by indie developers recently. A VR shoot-'em-up could be fun!" 🎮

TOOLED UP

Since Jang came from the animation side of the games industry, he had little programming experience, and had to learn several new skills as he went along. "Like many other new game developers, learning a programming language and game design was a challenge," he says. "Many times, I was stuck designing the game – many prototypes were thrown out." Thankfully, using GameMaker Studio meant that he could experiment with his ideas without getting bogged down in reams of code. "It's great for beginners," Jang says, "and there's many good resources out there, too. For the sprites, I've used both GraphicsGale and GameMaker Studio's own sprite tool – GraphicsGale is free now. I've also used GoldWave for the sound."



GETTING INTO GAMES

How I became a... Creative Director

Will Doyle from Supermassive Games on his arcade origins, team leadership, and Indiana Jones

What was the game that first made you want to get into games?

I grew up on the coast of Cornwall in Newquay, where there were a lot of arcades. So for me, it was a game called *Black Tiger*, which was a kind of platformer. It pulled me in and turned me into a bit of an arcade rat. Then I really got into pen-and-paper gaming and role-playing, specifically a role-playing game called *Call of Cthulhu*. I was also a fan of the *DOOM* PC game when it first came out.

One day, my mum cut out an article from the paper – an interview with Sandy Petersen, a designer on *DOOM* and creator of *Call of Cthulhu*. He was just talking about his job, and it was amazing for me because it was the

first time I thought about getting into video games. Previously I thought you had to be a programmer or have these technical skills, which I didn't have. When reading this article, I thought: 'Oh no, there are other ways into it; you can be creative'.

How did you break into this industry?

Back then, there wasn't really a clear route into the industry. I always saw this as my dream job, and I always told people this is what I wanted to do, but there wasn't a path into it. So I went to university and did a combined Literature and IT degree. That was the path that got me into London. When I got to the last year of my university course, for various reasons I had to

"I always saw this as my dream job, and I always told people this is what I wanted to do"



► Doyle is one of many creative forces behind horror anthology series *The Dark Pictures*. The latest entry, *The Devil in Me*, will see Jessie Buckley star.



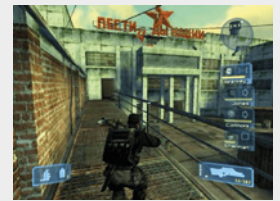
Career highlights



The Dark Pictures Anthology: House of Ashes

2021

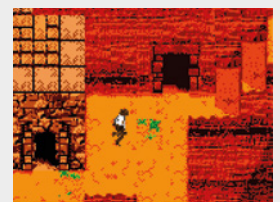
After harnessing the power of smartphone-controlled decision-making with 2017's *Hidden Agenda*, Doyle upped the supernatural tension as game director on *The Dark Pictures Anthology: House of Ashes*.



Conflict: Global Storm

2005

The fourth instalment in Pivotal Games' series of third-person military shooters swept players off to Colombia, Egypt, and elsewhere back during the PS2 era. Doyle served as a senior designer.



Indiana Jones and the Infernal Machine

2001

One of Doyle's first gigs was as sole designer on *Indiana Jones and the Infernal Machine* on Game Boy Color. Unlike its parent version on PC, action plays out from a top-down perspective.

retake one of the modules. So I had to come back for four months extra and stay on my own in this flat in London, and I thought, 'I need a job'. You wouldn't get this at all these days, but I was looking in a job centre and there was a game designer job. My actual path into games was so rare.



What was the first game you worked on professionally, and are you still proud of it?

Well, I had this interview, and I kind of lucked it a little bit because it was for a company [Big Toe] that was making an Agatha Christie text adventure. And in my family, there's always been this thing that we're related to Arthur Conan Doyle, who [created the character] Sherlock Holmes. Nobody knows if it's true, but everyone says it like a family myth. Anyway, [Big Toe] very quickly got bought out by a company called HotGen, and I never finished making [the game]. The first game I ever made from the ground up was *Indiana Jones and the Infernal Machine* on the Game Boy Color. I look back and think it's full of mistakes... I don't know why they let me do it on my own as the only designer on it.

Did you always want to be a creative director specifically and lead a team?

Yes and no. Somewhat selfishly, I always wanted to have more ownership over the design. There are certain aspects of game design where you can get forced into doing things a certain way that you wouldn't necessarily have chosen yourself. So the more creative control I had, the happier I was at work. So I guess in that sense, yes. Creative direction is very different. It has aspects of management that I would never have said I'd be interested in before, but now that I'm there, it's quite fulfilling. You're trying to support people on their journey and make that creative environment as positive as it can be.

What's a mistake in your particular field that you've made, but ultimately learned from?

I suppose one really useful thing that I could go back to my younger self and say is to be more open to other people's ideas. You get so much done when you have a sounding-board; when you have somebody that you can go, 'Oh, I'm thinking about this', and then you see their face fall, and you think, 'Hmmm, maybe that's not good'.

^ Supermassive Games titles being so branching and narrative-driven ensures Doyle and co can always stretch their storytelling muscles.

I spent a lot of time working as the sole designer at the beginning of my career on various products. While I did well, I wish I'd pushed to have other people join me, which I probably could have done. But I was a little bit selfish with it. Now I know that the only way to make something excellent is to have lots and lots of minds put on that problem. It doesn't have to be completely design by committee, even though you might need a strong kind of vision for it. It's still really useful to have lots of people working together on something.

Would you say it's easier than ever to work in games, or more challenging?

I think it's probably easier because there are more [roads] into it. There's more facility and community for you to go out and make things – make quite good quality things with small teams without funding. There are courses that allow you to get into the games industry and recruitment for our company. We're always looking for junior staff, for example. It's never been better to get into the industry. But yes, because of that, it's also easy to get lost in the storm.

What's something people can do now to help their future chances of working in games?

Have an understanding of what you want to do in games, because there are so many different jobs now. Narrative design is a very new thing, for instance, and it came about because games got so big, and the production values got so high, that mistakes in story and characterisation became more and more glaring, because suddenly we've reached cinematic quality. So target what you want to do, then try to come up with that unique 'thing', which means putting in some effort. It's hitting that pain point and going 'I'm just going to push through and get it done'. 🗨





Developer Profile

Battle-ready beats: scoring Warhammer 40,000

Veteran composer and audio auteur Doyle W. Donehoo discusses his work on Warhammer 40,000's sprawling sci-fi universe



Donehoo has been a musician all his life, but cut his teeth working as a software engineer before composing video games full-time.

Consistency is key when building a science fiction universe. None more so than *Warhammer 40K*, though, where it continues to evolve and expand into multiple mediums. Games Workshop's fantasy magnum opus may have started out as a war miniatures game played on tabletop, but it didn't take long for its space military stylings to also invade books, films, and of course, video games; It hasn't really stopped since *40K* was first dreamed up in 1987.

But how do you maintain the property's consistency in all these facets, ensuring that every new series instalment is in keeping with the established tone and (perhaps more importantly) what your fan base has come to expect? Well, when it comes to sound at least, it helps to have an experienced ear you can always rely on.

Doyle W. Donehoo is just one of the composers who's had a hand in creating the soundtracks for *Warhammer 40K* video games over the years, following in the footsteps of Jeremy Soule, Inon Zur, and others to bring new ideas to this human-versus-alien conflict set in the distant future. You only need listen to his work on *Warhammer 40,000: Chaos Gate – Daemonhunters*, the latest *XCOM*-style reboot of the 1998 PC game of the same name, to see how much music can contribute to the drama of a turn-based action title. Unsurprisingly, Donehoo finds that it helps to have an eclectic mix of genre inspirations and influences, something that dates back to his childhood days.

"I listened to music from the time of my very first memories," says Donehoo on the origins of his musical interest, which began in the unlikelyst of places... "Church music, marching band music,



^ Having an extensive home setup came in handy during the pandemic, when much of the *Daemonhunters* score was composed.

musicals and more." It wasn't until later in his teens, however, that the future video game composer discovered blues, hard rock, heavy metal, and progressive music, all of which kicked off his fascination with how music and tech could combine. "I began the study of digital logic and programming languages," he says, "and became a senior software engineer and project manager, and during that time I created my own MIDI data editor and sequencer and recorded a prog rock LP with it. Eventually, as the technology matured enough around 2000, I decided to become a professional composer full-time."

THE DIGITAL FUTURE

The plan wasn't always to specialise in video games necessarily, but where else would there be a need for a unique blend of traditional instrumentation alongside the more experimental techniques Donehoo was interested in? By this point, the world of *Warhammer 40K* had already ventured into the interactive space with *Space Crusade* for the Amiga, MS-DOS, and ZX Spectrum in 1992, providing a faithful translation

of the board game. It was well received, even going so far as to have a dedicated composer in Barry Leitch – not always a guarantee in the video game world at the time.

It was the *40K* game that released just a year later, however, that would capture Donehoo's attention as a fan of music, as well as games played on tabletop, PC, and console.

"I've played war-games all my life, starting with Risk"

There is a very old *Warhammer* video game called *Space Hulk* that introduced me to the *Warhammer* world, but that was way before I really got involved."

DAWN OF WAR

Donehoo's affiliation with *Warhammer 40K* proper began way back during E3 2003. Having already established himself as a full-time composer on games such as *Sniper: Path of Vengeance* and *Black Stone: Magic & Steel*, he travelled to the industry event in the hope of setting his sights on something bigger.

Recalling his love for *Space Hulk* on MS-DOS, Donehoo was delighted to see developer Relic Entertainment exhibiting

"I've played war-games all my life, starting with Risk," he reveals. "I have been playing video



^ Despite being a reboot of the original *Chaos Gate* from 1998, *Daemonhunters* features an all-new soundtrack to match the all-new visuals.

a new spin-off from a certain tabletop sci-fi franchise.

"I was attending the convention and I saw a very cool rolling demo of *Warhammer 40,000: Dawn of War*, and I was blown away," Donehoo explains. Instantly, he could see that this RTS focused on a squadron of military space marines fighting a future war was something he could sink his teeth into.

"[It] was a game that was made for me to score, as it was perfect for what I wanted to do," he says. "I gave Relic my card, my demo, and probably too much of my chatter. The game probably didn't come out for another year, and there were sequels. But I kept sending them emails and demos, and meanwhile scored a few non-*Warhammer* games to sharpen my skills."

The first *Dawn of War*, scored by Jeremy Soule, was a roaring success for ▶



^ *Space Hulk: Deathwing* is the first and only *Warhammer* FPS game Donehoo scored, for which he partnered with fellow composer Jonathan Cachera.

Relic and publisher THQ, and managed to capitalise on the PC real-time strategy boom that was occurring in the early 2000s. Three expansion packs – *Winter Assault*, *Dark Crusade*, and *Soulstorm* – followed, making the prospect of Donehoo getting his foot in the door increasingly less likely. When the prospect of a full sequel arrived, however, it turned out the budding composer's persistence (alongside the passion he showed at that initial E3 meeting) had paid off. "Finally,

they allowed me to audition for *Dawn of War II*," he recalls. "They sent me some videos and artwork, and in return I buried them in music. So, I got the job."

Donehoo was already a massive fan of the original *Dawn of War* by the time he got the gig, playing each one of those expansions and fully engrossing himself in Soule's score. As a result, Relic would have been hard-pressed to find anyone more suitable to step into the role of composer. Released for PC in 2009, *Dawn of War II*, like most sequels, was intended to be bigger and better in every way, and it wasn't lost on Donehoo just how much the score had to reflect that.

SYMPHONIC SCI-FI

Comprised mostly of what Donehoo dubbed "grand orchestral music", the soundtrack for *Dawn of War II* ended up being made using Donehoo's personal instrument collection – not to mention the virtual orchestra living inside his soundboard. In a bid to keep the budget

Films versus games

Alongside his *Warhammer* work, Donehoo's other musical credits include movies, trailers, and TV. The differences between scoring a passive and interactive medium, however, couldn't be more apparent. "Writing to picture is easier than writing for video games," he says. "When you have video, sound effects, and dialogue, it pretty much tells you what to do, for the most part. Many times, with video games, you start with a blank page and some general ideas and go from there. If you're lucky, you get to see some artwork and other material. And usually, you have discussions with the producer, who may have some temp music to help with direction, so you get a good idea of what they want. Then I usually compose some short pieces to see if that's where they want to go."



down, no live recording sessions with a band were used. Despite that, though, Donehoo's score perfectly encapsulated the *Warhammer 40K* world's epic, militaristic feel, boasting a seamless blend of dramatically tense string sections and ominous drums. It was something this universe's unique mix of sci-fi and hard fantasy perfectly allowed for. As an example, Donehoo concocted a technique he dubbed "junkyard percussion" for the race of in-game orcs, which he hypothetically envisioned would grunt along to the rhythm.

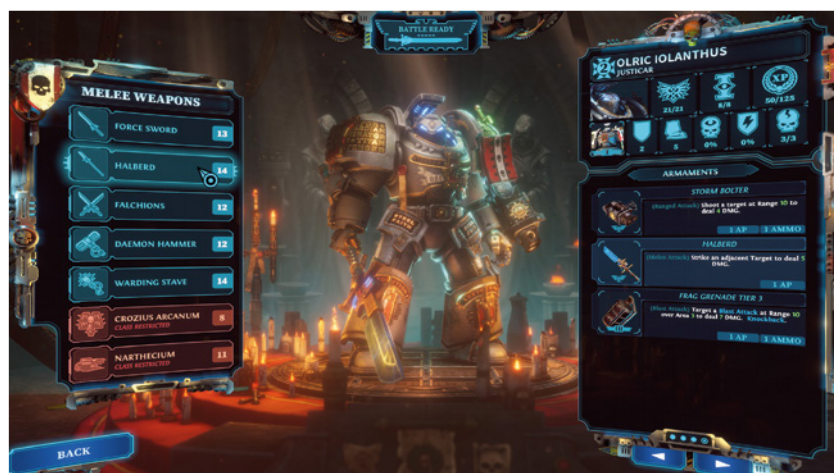
Like the first *Dawn of War*, the sequel received various expansions that Donehoo would also go on to score. This partnership kicked off what has now been a decade-long relationship between the two parties, covering several *Warhammer 40K* games, including first-person shooter spin-off *Space Hulk: Deathwing*, *Battlefleet Gothic: Armada*, and its sequel, all the way up to today with the aforementioned *Warhammer 40,000: Chaos Gate - Daemonhunters*.

What is it about the world of *Warhammer 40K* and this rich universe Games Workshop has created (which shows no signs of slowing down) that

"I set the tone for the *Warhammer* universe with *Dawn of War II*"

keeps Donehoo coming back for more? The answer, it turns out, couldn't be simpler. "Well fortunately, *Warhammer* keeps returning to me," he jests. "I think I set the tone for the *Warhammer* universe with *Dawn of War II*, and as long as people want that, I will keep doing *Warhammer* music, which I am."

The music for *Chaos Gate - Daemonhunters* presented its own unique obstacles, though. Because while it may be heavily influenced by Donehoo's previous *Warhammer* work – and indeed the 1998 original, soundtracked by composer Jim Crew – much like with *Space Hulk: Deathwing*, Donehoo was entering an all-new genre. Unlike the *Dawn of War* series, which sees ▶



▶ From *Grey Knight* space marines to even the orcs themselves, Donehoo has developed a musical vocabulary for each of *Warhammer*'s races.

Interface

Developer Profile / Doyle W. Donehoo



▲ In addition to scoring the *Dawn of War II* base game, Donehoo was more than happy to return for the *Chaos Rising* and *Retribution* PC expansions.

its action play out in real time, more modern PC gamers apparently prefer their battles to be turn-based.

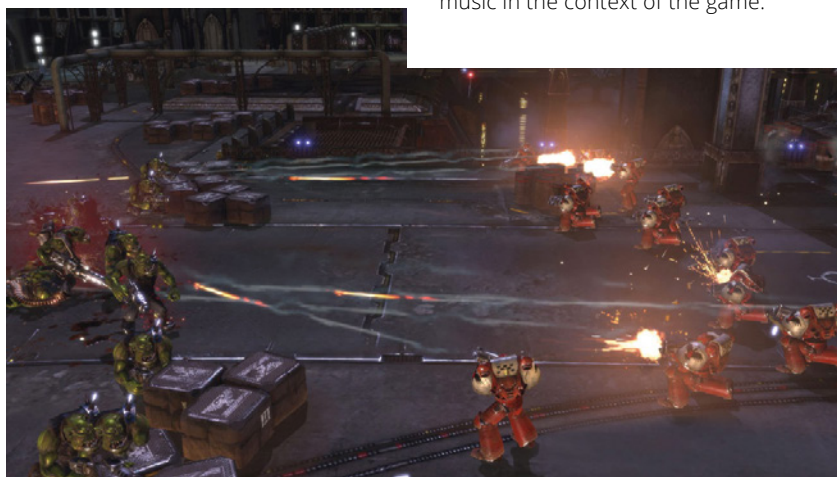
"*Chaos Gate* had its own challenges," the composer says. "Unlike the flow of a real-time strategy game, *Chaos Gate* is turn-based, and the approach had to be adjusted."

This reason for this change of musical pace is something even Donehoo himself struggles to put his finger on. "I can't explain how," he says. "That would be like tap-dancing about paintings. It's just a feeling. You must listen to the music in the context of the game."

OLD TO NEW

Daemonthunters being a reboot, however modernised it may look and feel, certainly gave developer Complex Games a good template to work from. As the studio's second *Warhammer* game and first major PC release in almost seven years, there's definitely a level of risk involved, but the title's recent reviews would indicate it's one that has paid off. Did Donehoo find similar solace in his latest work being based on a pre-established game? "I really didn't know it was a reboot of anything until much later," he reveals. "I liked that it would be similar to *Mutant Year Zero* or *XCOM* because I liked playing those kinds of games. And I liked that the approach was going to be used for a *Warhammer* game." It's no wonder, then, that the new soundtrack for *Daemonthunters* shares little in common with what players heard in the original.

The *40K* universe, from *Dawn of War II* in 2009 up until *Chaos Gate – Daemonthunters* may always stay a constant for Donehoo, but in that time, one thing he's grown to appreciate is getting to work with different creative outfits. Not that he knew it at the time, but handing Relic Entertainment his





business card at 2003's E3 would kick off a domino effect of sorts that has seen him work with multiple studios, all operating under the *Warhammer* banner. As a result, he can offer up just as much musical direction as the developer – if not more. “I think I had a good handle on *Warhammer* music to begin with,” he explains, “but the art and videos that Complex Games gave me [on *Chaos Gate*] were a big help for me understanding the direction they wanted me to go.”

Now, with well over a decade's worth of experience scoring *Warhammer 40K* games under his belt, Donehoo is part of a small collective of composers responsible for crafting the way the universe sounds. And even then, it's hard to picture anyone else having a greater understanding of this – at least within the realm of video games. So natural has Donehoo's approach become, that to him, aspects like the theme, tone, and mood of the music he creates is hard to define. “Words like dark, heroic,

vast, tragic, resolute – they do not do it justice,” he enthuses. “The world is just too big. I try to match the tone for the part I have to play.”

Warhammer 40,000: Chaos Gate - Daemonhunters being so well received recently proves that Donehoo hasn't

lost his touch. And as such, he doesn't plan on going anywhere soon.

That said, there are sides to *40K* he'd

still love to see translated, which he's ready to pour his prowess and passion into. “I would love to write music for *Ciaphas Cain*,” he enthuses, referencing a *Warhammer* novel series centred on the eponymous character.

“I have read all of the books multiple times – and I do mean multiple times. I may be a Sandy Mitchell [the author] groupie. I think I was reading the *Cain* books while composing *Dawn of War II* – I keep reading [them] because it's my happy place.”

If Games Workshop ever wants *Ciaphas Cain* music in any form, they know where to look. “I can bring it!” 🎵

“I try to match the tone for the part I have to play”

One galaxy, any genre

Part of what has helped the *Warhammer 40K* games endure and remain popular for so long is the licence's ability to translate into various genres. In the span of 13 years, as one of the franchise's many go-to composers, Donehoo alone has created soundtracks for real-time strategy games, first-person shooters, and now a turn-based tactical RPG. Such an approach helps give creatives a safety net of instrumentation to work with, while still offering the freedom to experiment. For example, Donehoo cites choral chanting and guitars as “a natural part of *Warhammer*,” but regardless of genre “they just seem to flow together when I'm writing *Warhammer* music. It is just a natural extension of the environment and what I do.”

Subscription services: making maths not fun, but essential



STEVE MCNEIL

Steve likes maths. Or at least he did until he wrote this article. That'll do, pig. That'll do.

▼ Once the exception to how games were played, Microsoft's streaming service has since inspired much competition.

With the proliferation of streaming services, and the constant squeeze on the public's purse strings, it's inevitable that people are having to make choices, especially given the top five providers – Netflix, Apple, Amazon, Disney, and Sky's Now TV – can set subscribers back by a combined total of around £500 a year, or the equivalent of almost two *thousand eggs**.

Of course, there's a similar proliferation in the gaming world as well, with last October's launch of Nintendo's Switch Online Expansion Pack and Sony's imminent rebranded, three-tier PS+. Microsoft continues to lead the way with Game Pass, thanks to its day one inclusion of first-party releases, and its 'Ultimate' variant also wraps in Xbox Live Gold as well as EA Play. EA Play is still available separately, in Standard and Pro versions, and then there's Ubisoft+ as well, and... and... and... *aaaarrggghhhhh...*

As with TV, so with games; there's simply too much good stuff. Until recently, I'd always assumed I'd end up accepting the need to sell a kidney or two and continue subscribing to everything forever, but there's a recent approach more and more people are taking to video subscription services where, because there's no minimum contract term for Netflix et al., you simply subscribe to only one of them at a time, suck them dry for all the new shows you want to watch on their platform, and then move on to the next one.

So, back in games land, my plan is that when the new *Madden NFL* game launches, I might treat myself to EA Play Pro (£14.99/mth) for a month, then change over to Ubisoft+ (£12.99/mth) on PC for their big autumn releases. If the Xbox has a big day one release, I can hop on to Microsoft Game Pass Ultimate (£10.99/mth) for a bit and, if I've somehow rinsed all those services dry, or a recent Sony title lands on its subscription service that I fancy, I can dip into PS+ Extra (£10.99/mth).

Assuming I spread myself fairly evenly, that's likely to cost me around £150 per year, which is a lot, but in the age of £70 disc releases, it seems eminently reasonable, given it would offer access to pretty much all the big releases in their first twelve months. It's certainly a whole lot cheaper than the approximately £500 it would cost to subscribe to all four services all year round.

Of course, there are some omissions, most notably Nintendo, which doesn't even offer a monthly option for the Expansion Pack. But with the £350 I reckon I'll be saving, I'll have money to burn. I mean, I won't. I'll probably get drunk and blow it on a Steam Deck. But still, the point stands... 🍷

** I really feel like that comparison should be more impressive than it is. But it isn't.*



Backend Contents

Reviews, retro games, and lots more besides

- 92. Dorfromantik** PC
- 94. Wildcat Gun Machine** PC, PS4, Switch, XBO
- 95. We Were Here Forever** PC, PS4, PS5, XBO, XB S/X
- 96. Best Month Ever!** PC, PS4, PS5, Switch, XBO, XB S/X
- 97. Kirby and the Forgotten Land** Switch
- 98. Weird West** PC, PS4, XBO
- 99. Nintendo Switch Sports** Switch
- 100. Itch.io roundup** PC



▲ No, it doesn't suck in 3D. Our *Kirby and the Forgotten Kingdom* review is on page 97.

OUR SCORES

- 1-9**
Trash. Unplayable; a broken mess.
- 10-19**
A truly bad game, though not necessarily utterly broken.
- 20-29**
Still awful, but at a push could be fun for two minutes.
- 30-39**
Might have a redeeming feature, but otherwise very poor.
- 40-49**
Adds in more redeeming features, but still not worth your time.
- 50-59**
Average. Decent at best. 'Just about OK'.
- 60-69**
Held back by glitches, bugs, or a lack of originality, but can be good fun.
- 70-79**
A very good game, but one lacking spit and polish or uniqueness.
- 80-89**
Brilliant. Fabulous fun. Everyone should at least try it.
- 90-99**
Cutting edge, original, unique, and/or pushes the medium forward.
- 100**
Never say never, eh?

PLUS

- 101. Stream of Consciousness**
Returnal superfan Emmalition answers our questions
- 102. The HOTLIST**
Our pick of all the top PC games you can play right now
- 104. Backwards compatible**
Saturn handhelds, SNK artbooks, streaming retro, and more
- 108. Now playing**
Quality time with Nobody Saves The World and Andros Dunos 2



▲ Streamer Emmalition chats about her love of gaming on page 101.

Rated
Review



Review

Dorfromantik

Info

GENRE

Strategy, puzzle

FORMAT

PC

DEVELOPER

Toukana Interactive

PUBLISHER

Toukana Interactive

PRICE

£10.99

RELEASE

Out now

SOCIAL

@_Toukana

We'll forget the sun in his jealous sky
as we lay tiles in fields of gold

The electricity bill is enormous. I've become like my father, turning off unused lights and radios playing to no one. As I tut and grumble my way around the house, it strikes me that I had no idea of the stresses and strains of being an adult back in my childhood days, when I would gambol innocently up and down the stairs, deploying toys as trip hazards. I've begun to understand his irritation when I rejected perfectly good food with a screwed-up grimace. Do you know how much food costs these days? *Dorfromantik* understands.

Remarkably, the four German students that make up Toukana Interactive have formulated the perfect antidote to the inherent anxieties of modern life with this relaxing village builder. They're surely too young to know the heart-stopping terror of an unexpectedly large energy bill, yet somehow they've conjured a cure.

If you've ever played the board game *Carcassonne*, *Dorfromantik* will be immediately familiar. Like its cardboard cousin, it tasks you with laying tiles to match up similar features: a forested tile needs to be placed next to a forest, houses should be placed next to houses, and so on. But where the board game uses square tiles, *Dorfromantik* plumps for hexagonal ones, greatly increasing the possibilities. Each matched edge gives you ten points, and perfectly matching every edge of a tile nets you a full 60 points.

It's those perfect placements that provide *Dorfromantik's* dopamine hit. Pop! An impeccably placed tile gives a little jiggle, accompanied by a pleasant sound effect as the word 'Perfect' triumphantly appears. Importantly, a perfectly placed tile also adds another tile to your reserve, so theoretically you could keep playing for hours as long as you're accurate. That's easier said than done, mind: some of the tiles feature a combination of buildings, fields, grass, and trees all on one hexagon, so finding spots where all the edges match up can be tricky. Then there are rail and river tiles, which have to be joined to other rail tracks and rivers, and it's easy to box yourself into a corner if you don't leave room for your railways and waterways to expand.

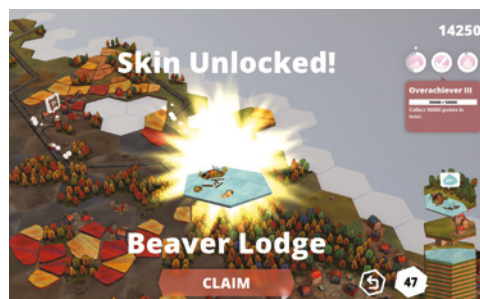
But when you're on a roll – oh man. Minutes can slip by as you ceaselessly scroll over the game world, hunting for the elusive place where your current tile will fit just so. Finding just the right spot elicits a shiver of satisfaction, and

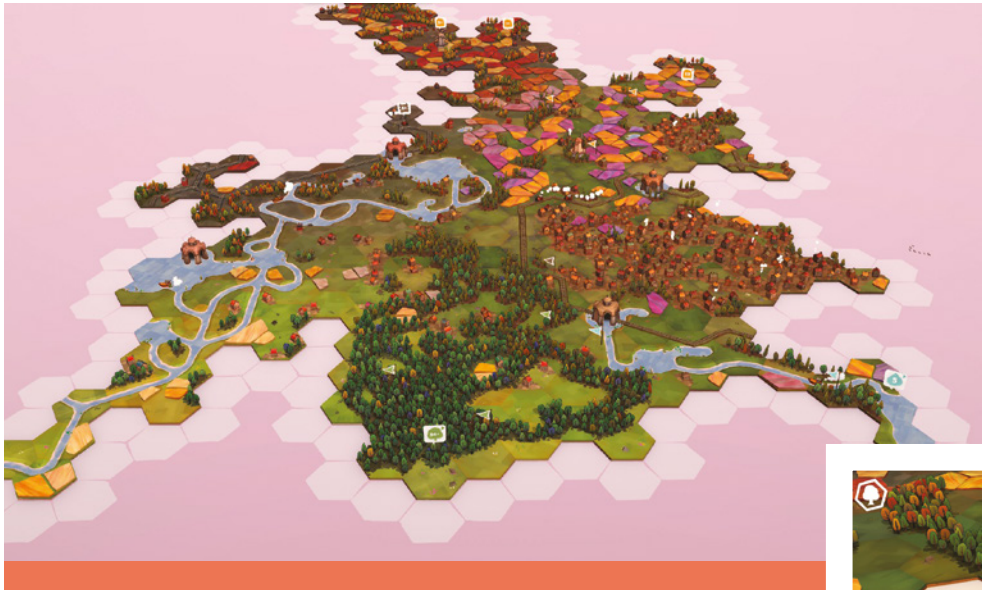
REVIEWED BY

Lewis Packwood

^ Completing quests gives you bonus points and extra tiles. Here I need to lay at least another four railway pieces to complete the quest.

> Unlocking special tiles by completing challenges is a highlight, and there are different variations of each special tile to collect as well.





- ◀ As your idyllic empire creeps out into the expanse, you'll sometimes come across special tiles with quests attached.
- ▼ Laying a perfectly placed tile, where all six edges match their neighbours, gives you the maximum 60 points and adds a tile to your reserve.



then you're onto the next one, and the next. Hours disappear as your mind is lost in agrarian reverie, all thoughts of electricity bills muted, the shopping budget blissfully absent from your brain. Every now and then you'll pause and wonder at the beautiful landscape you've created almost as a by-product of your obsessive tile matching. Smoke rises from chimneys, tiny boats chug up and down rivers, and miniature trains huff their way in and out of stations. It's utterly charming.

It can't last, of course. Eventually the tile supply runs out, and you're presented with your final score. Unlike cut-throat sessions of Carcassonne, there's no multiplayer here, no sneaky sabotaging of someone else's city. It's simply a serene bid to extend your play session for as long as possible, to beat your previous best.

There are ways to refill your tile reserve other than through perfect placements. Every now and then a tile will appear with a quest attached: perhaps you'll be asked to join together 35 or more houses, or exactly 16 fields. At the end of some quests, a flag will be planted in the middle of the feature, and if you completely close off that forest, field, or village, you'll get extra tiles.

Most exciting of all, there are special quest tiles lurking out there in the wilderness surrounding your bucolic wonderland. Find them and complete the quest they hold, and you'll unlock extra challenges, like laying 50 perfect tiles in a game. Complete these challenges, and you'll get

some unique tiles to play with, such as the watermill.

All of this is soundtracked by some soothing, ambient music that I've somehow never tired of, even after listening to it non-stop for hour after hour.

Dorfromantik has been in Early Access for around a year now, and Toukana has been busy adding features to the game ahead of its 1.0 release, like the utterly essential 'undo' button, for when your perfect tile placement is scuppered by a slip of the mouse. There's also a Creative mode, which lets you lay down whatever

pastoral idyll. Quick mode, meanwhile, challenges you to beat your high score using a set number of tiles, and Hard mode ups the difficulty with fewer

quests and more complex tiles. Finally, there's a Monthly mode, where you're given a set starting map every month and have to compete with the community for high scores.

These extra modes are nice to have, but the original game – Classic mode – is where the real action is. And when I say action, I mean the blissful lack of action. The simple pleasure of watching forests and villages slowly expand. The chance to slip away from the world for an hour or two and lose yourself in the gentle rhythm of laying tiles.

Pop! Perfect. Pop! Perfect. 🗨️

“Hours disappear as your mind is lost in an agrarian reverie”

HIGHLIGHT

The supreme satisfaction of laying perfectly placed hexagons is only exceeded by completing the game's various challenges to unlock special tiles, which include windmills, watermills, fountains, and even a beaver lodge. Generally these are merely cosmetic additions, but it's always delightful to see one appear in your reserve pile, and they help to make the landscape even more idyllic.

VERDICT

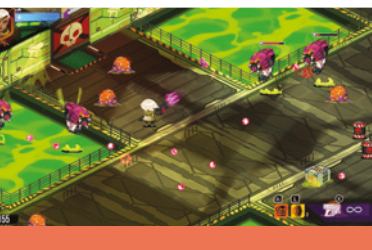
Dorfromantik's sedate strategy is the anxiety antidote we all need right now.

85%

Rated
Review

HIGHLIGHT

There are at least plenty of different guns to play with in *Wildcat Gun Machine*, with new models to find or purchase appearing throughout. Range, fire rate, and power are the variables to consider when picking your loadout, or simply whether you prefer dealing death by laser, flamethrower, or ricocheting buzzsaws.



Review

Wildcat Gun Machine

Its meow is worse than its bite

▲ Bosses are suitably gruesome, but it's often best to shoot them from distance.

Info

GENRE
Twin-stick shooter

FORMAT
Switch (tested) / PC / PS4 / XBO

DEVELOPER
Chunkybox Games

PUBLISHER
Daedelic Entertainment

PRICE
£12.99

RELEASE
Out now

SOCIAL
@ChunkyboxGames

REVIEWED BY
Jon Bailes

VERDICT

An arcade-style shooter with plodding pace and underwhelming audio.

45%

It's a good name, right? Wildcat. Gun. Machine. Words that invoke images of adrenaline-laced shootouts, chunky ordnance, screenfuls of bullets, and pounding industrial music. While *Wildcat Gun Machine* is a twin-stick shooter, however, it rarely hits those highs. Not so much a wildcat, it's more like a well-fed house moggy – capable of occasional bursts of energy, but mostly found dozing on the sofa.

Indeed, despite sharp cartoon visuals, *Wildcat Gun Machine* feels flat from the off. Traipsing around a space station overrun by lumpy aliens, you're teased with a sprawling map, but soon realise it's simply divided into colour-coded pathways to be tackled in a strict order. Venture to the end of one segment, find a key, warp back to the hub, complete the next segment, and repeat until boss. This is a pattern the game sticks to with uninspired devotion.

And although there are many beastly things to slay en route, few are a thrill to fight. As you step into one of the station's cavernous rooms, some materialise around you, shuffling forth like fed-up zombies, while others pop up in far-flung corners, beyond the jurisdiction of a camera that's too zoomed in, from where they listlessly lob projectiles your way. Once you're done with the close encounters, then, you're often left exchanging fire with packs of foes you can't see, with no minimap or radar for guidance.

It doesn't help either that most rooms cough up countless waves of aliens to exterminate.

Natural climax points arrive and then vanish over the horizon as more gooey monsters appear, until you're begging for respite (and should you die at any point, expect to redo the whole thing). This tortured plod is exacerbated by a two-gun loadout system that gives you one infinite ammo pea-shooter and one high-damage heavy weapon that quickly runs out of juice. Effectively, you need to save the big boy for peaks of activity, and so spend calmer moments slowly pew-pewing opponents into submission.

Then again, letting rip with a machine gun or laser cannon isn't especially cathartic anyway, as nothing in *Wildcat Gun Machine* packs real wallop. It's quiet. Too quiet. There's not enough boom or shake, guns whisper, the music is heavy but not pumping, and the aliens have taken a vow of silence. Even the moments when you fill your power meter and unleash your gun machine – ten seconds of charging around in a small mech – lack spectacle. It's like *Nex Machina* on Xanax.

Admittedly, it does get busier after the first two levels, and quite challenging. Once you're dealing with four or five different enemy gangs at a time, you have to prioritise, stay on the move, and make risky dashes for ammo refills. The basic pleasures of shooting and dodging improve too, once you've upgraded your speed and dash capabilities. However, as battles continue to outstay their welcome, it's hard to maintain genuine enthusiasm. Sadly, the name is *Wildcat Gun Machine's* most exciting feature. 🐾



Review

HIGHLIGHT

Your current predicament may be due to King Bartholomew's descent into madness, but it's the monarch's inscrutable Jester that provides the game's most memorable antagonist. Foiling your plans in key moments and dominating the game's eeriest sequence, his presence gives malevolent life to an otherwise still world.

We Were Here Forever

Together forever (but sometimes apart)

A set of constraints can help enhance a game's mood when they're implemented on both a thematic and mechanical level. Case in point: *We Were Here Forever's* maddening, brilliant walkie-talkie.

In the steampunk wasteland of Castle Rock, where our two protagonists are reunited and separated again, each play their part in a joint quest for freedom. The seemingly trivial effort of pushing a button to speak and releasing it to listen becomes an apt reminder of that forced, troublesome distance. And, with a collection of puzzles mostly about conveying quasi-abstract visual clues, a device that only allows for stuttered, frequently overlapping two-way communication becomes its own hurdle to overcome. Even toward the end of our shared journey, my partner and I would still be confounded by its simple operation, often talking to the wall or over each other, taking several seconds to adjust to its simple demands. Which is exactly the point. Because, even though its sequence of escape-room scenarios encompasses a wide variety of head-scratchers, from *Overcooked!*-type production chains to sliding-platform mazes, *We Were Here Forever's* basic principles are rooted in social games like Charades or Dixit.

During its twelve-hour playing time, the core challenge (and valid reason for making this an online-only experience) lies in relating ambiguous visual information, whether by consulting an ancient tome to decipher the

dialect of an irritable kraken, or describing the notes your partner needs to play on a church organ that doubles as a security system. Thus, puzzles that initially seem overwhelming become manageable as you gradually chip away at that linguistic barrier, and glimmers of meaning start peering through.

Its rewards are similar to those traditional party favourites as well – a memorable turn of phrase that finally solves a deadlock or an unexpected personal revelation, like my friend confessing the only way she could tell east from west was by recalling a map of the divided Germany. The intellectual workout is complemented by a dark fantasy aesthetic and subtle environmental storytelling; snippets of Castle Rock's unhappy past emerge in statues and portraits peppering

the background, alluded to in cutscenes, and even unobtrusively embedded into the puzzles themselves – enough to invoke a sense of history in the abandoned

cemeteries and empty cathedrals without bogging down pace with too much detail.

Occasional frustrations arise, in the form of harshly timed challenges, uneven allocation of tasks, and technical issues that manifest both as sporadic bugs and spotty performance, even on hardware that comfortably exceeds recommended requirements. But, despite these minor flaws, *We Were Here Forever's* asymmetrical collaboration and stilted communication engenders a sense of camaraderie that's rare in the medium: the joy of hard-earned progress, from individual confusion to shared revelation. 🗨

“The challenge lies in relating ambiguous visual information”

Info

GENRE

Co-op puzzle-adventure (online-only)

FORMAT

PC (tested) / XBO / PS4 / XB X/S / PS5

DEVELOPER

Total Mayhem Games

PRICE

£14.99

RELEASE

Out now (PC) / Other versions TBC

REVIEWED BY

Alexander Chatziioannou

VERDICT

We Were Here Forever succeeds in evoking the spirit of a shared adventure like few other games.

74%

HIGHLIGHT

Mitch's coming-of-age experience is neatly expressed in a scene where Louise allows him to drive their Cadillac on the open road. Twitchy controls suitably emulate Mitch's nerves as you try not to veer into the desert and cautiously overtake a couple of slow drivers. If only there were more hands-on sequences like this.

Review

Best Month Ever!

Asleep at the wheel

^ All characters are fully voiced, although the quality of delivery varies.

Info

GENRE

Story-driven point-and-click adventure

FORMAT

PC (tested) / Switch / XBO / PS4 / PS5

DEVELOPER

Warsaw Film School

PUBLISHER

Klabater

PRICE

£16.49

RELEASE

Out now

SOCIAL

@best_month_ever

REVIEWED BY

Jon Bailes

VERDICT

A classic American road trip story that only partially does the genre justice.

55%

Road trips are the perfect vehicle for a coming-of-age story, especially one that exposes the hidden underbelly of a society, pushing its fringe elements and miscreants to the surface. *Best Month Ever!* follows the traditions of this cinematic and literary genre, with a narrative-led tour of 1969 USA, taking in some of its saddest and seediest locales.

Behind the wheel is single mother Louise, accompanied by eight-year-old son Mitch. Louise has been diagnosed with a terminal illness and with time running short, she desperately wants to track down estranged relatives who might offer the boy a decent home. The journey sends them careening from scrape to crisis and asks you to make decisions that will affect how Mitch turns out in adult life.

The central characters are a resilient pairing, and *Best Month Ever!* makes the most of its premise when focused on their strained relationship, their bickering and bonding, and the shadow cast over both their lives by absent fathers. It also successfully balances the freedom of the road against the fear of the unknown, introducing a constant lurking danger from the start as Louise attempts to claim her final waitressing pay cheque from her vile boss. He kick-starts a simmering atmosphere of misogyny and racism (Mitch is mixed race) that frequently threatens to bubble over. Moments of trust and community are scant in comparison.

Sadly, however, many subsequent plot developments fall victim to stodgy pacing and

blunt delivery. The impressionist landscape art style suggests that *Best Month Ever!* aims to provide brief snapshots of late-sixties life, but often the sketches feel void of context. Events of the time such as the Vietnam War and student protests are only mentioned in passing, followed by all too brief treatments of sexual abuse, Klan terrorism, and natural disasters. These are floating vignettes, isolated by a dearth of cultural signifiers, not least a soundtrack (surely a crucial part of any road story) that's too tame to be evocative.

Similar can also be said of the interactive elements, which seem designed to keep you busy rather than pull you into the narrative. Your main duty is making dialogue choices that nudge three percentage measured stats up or down – righteousness, confidence, and human relations. Reach journey's end and the final counts lead to one of nine different epilogues. It's a decent-enough hook to make decisions worth pondering, but only on a first playthrough. Rewatching every scene slowly unfold a second or third time to alter a few variables isn't an enticing prospect. Meanwhile, your other main form of involvement is very pedestrian, as you trot between highlighted hotspots, hampered by imprecise point-and-click controls.

Ultimately, it's hard to ignore that games such as *Kentucky Route Zero* and *Road 96* have already reimagined the redemptive road movie with striking narrative design and meaningful interactivity. Next to those, despite making a few promising inroads, *Best Month Ever!* chugs towards its destination. 🗺️



Review

Kirby and the Forgotten Land

HIGHLIGHT

Kirby has taken inspiration from Bayonetta with his own version of Witch Time. Ironically, his dodge manoeuvre requires more inputs than the Umbra witch as you hold one of the triggers to block before moving the stick in the direction you want to dodge. Either way, this move – and the counter you can perform immediately after – is highly recommended during boss fights.

Every all-you-can-eat buffet's nightmare is a dream in 3D

F or a chap with such a big appetite, Kirby's always been something of a lightweight in the platforming world – this is, after all, a character who doesn't need to rely on precise jumps when he can just puff out his cheeks and float in the air. But with 2022 being his 30th anniversary, HAL Laboratory has decided to raise his game, having finally pulled the pink puffball into the third dimension, for a second new mainline outing that's appeared on the Switch before Nintendo's other heavyweight sequels.

But if the post-apocalyptic world Kirby finds himself in, with its abandoned shopping malls and buildings reclaimed by nature, has the air of execs wanting to make an edgier sequel in the mould of *The Last of Us*, rest assured this is still very much classic *Kirby*. From its uplifting music and cutesy enemies you swallow up and knock about in ridiculously overpowered fashion, Kirby's latest adventure remains accessible to young players, aided by a drop-in, drop-out co-op mode that's very younger-sibling-as-player-two in design.

This isn't a technically demanding game (note how far-away enemies have their animation frame rates halved), but it's crammed with imagination. Each level is a joy to play through, and you'll no doubt be compelled to replay them in order to track down all of the missing Waddle Dees. Many of these are pretty tricky to find on your first attempt, though you'll also be given a hint on how to find them each time you complete a level. These aren't just glorified collectathons, either (although you're welcome to spend your coins on a host of gacha machines to collect hundreds of figurines), as repopulating the hub town also

unlocks new features, upgrades, and minigames, from fishing to a boss rush mode.

Those upgrades include Kirby's signature copy abilities, which are now more powerful and add new visual flair: eventually, his fire ability transforms him into a dragon. The real standout is the Mouthful Mode; when Kirby tries to consume larger items – a car or a traffic cone, say – his whole body stretches over it, unlocking an inspired mechanic or minigame. It's akin to *Super Mario Odyssey*, even if the largely linear level design and fixed perspectives may have you thinking more of *Super Mario 3D World*. While I'm not suggesting *Forgotten Land* is on the same level, it's still fascinating how Kirby's guises deliver both laughs and mechanics, whereas many of Cappy's captures were little more than a quick disposable gag.

In a year where the sequel to *Breath of the Wild* has been delayed and there's still no sign of another new Mario game, it would be tempting to dismiss another Kirby game as a bit of filler. But after 30 years, it's fair to say that the pink fella has earned his seat at the big table. 🍷



▲ It'd be a shame to spoil the Mouthful Modes, so just as one example, here's Kirby after swallowing a lightbulb to help navigate in the dark.

Info

GENRE
3D action platformer

FORMAT
Switch

DEVELOPER
HAL Laboratory

PUBLISHER
Nintendo

PRICE
£49.99

RELEASE
Out now

SOCIAL
@NintendoUK,
@HAL_Laboratory

REVIEWED BY
Alan Wen

VERDICT

A lovable and joyous 3D outing that deserves to suck in more new players.

84%

Rated
Review

stash

stash

TREASURE HUNT

Find and dig up treasure from secret stash

BLOOD MOON TEMPLE

HIGHLIGHT

Weird West director Raphaël Colantonio and vocalist Ava Gore, collectively known as Weird Wolves, have concocted the perfect musical accompaniment for the game's pulpy, eerie vibes. The soundtrack is all the more impressive for its eclectic range, from gloomy Americana to dark ambient.

Review

Weird West

The quick and the undead

W

hat do we look for in an open world? The freedom to roam unshackled by the demands of linear narrative? A similar sense of scale to the one

early European settlers presumably felt when first setting eyes upon the vastness of the North American expanse? Those wondrous moments when you find something unexpected at an unmarked corner of the map? *Weird West* provides all of those, that is until humdrum mission design and lacklustre combat mechanics cloud its sheen like a sheriff's badge coated by desert dust.

The drastic perspective shifts of its episodic structure and the quality of the prose that fleshes out its unwilling protagonists' back stories – as well as the overarching narrative that links them in a single, apocalyptic destiny – help retain interest for a while. Taking the role of five different characters, including a bounty-hunter, a werewolf, and a cultist, you can pursue their individual agendas through a series of vintage genre locations (the local despot's hacienda; the weather-beaten mountain quarry; the ghost town) while unravelling the mystery that unites them. In a premise strongly reminiscent of legendary 1989 RPG *Curse of the Azure Bonds*, each of your charges embarks on their adventure after discovering a series of glowing marks on their necks, and coming to an unsettling realisation: their thoughts and actions are now controlled by someone else.

For a couple of chapters it remains a fascinating enigma, elevated by WolfEye's atmospheric transformation of the American

West into a haunted wasteland where a hag encountered in the middle of a bog will spout cryptic clues about your previous lives, and shipments of human captives are carted across the plains to be consumed by a cannibalistic sect.

For all of its memorable sights and personalities however, combat remains the primary mode of engagement with *Weird West's* world, and its flaws are, accordingly, woven into the fabric of the overall experience. Occupying an uneasy midpoint between *Desperados III's* meticulously choreographed violence and the button-spamming carnage of *Diablo*, a satisfying heft and variety of tactical approaches paint a positive first impression. Solo infiltration via stealth, forming a posse of hired guns for an all-out assault, and utilising the environment to your advantage are all valid ways of tackling its numerous skirmish scenarios.

But, as soon as you acquire some decent upgrades for your arsenal and invest a couple of skill points in the right perks, there's no scenario the game throws at you that can't be overcome by a shotgun blast in the face. The overwhelming efficacy of your basic offensive options means that the quartet of individual skills that differentiate each character will languish unused, while the otherwise uninspiring loot offers little incentive to become embroiled with the identikit side quests, mostly boiling down to three or four basic templates. An open world's success is arguably measured by how well it encourages you to stray off the beaten path. Despite an intriguing start, *Weird West* eventually only ever makes you gallop through to its conclusion. 🗡️

Given the sheer amount of shenanigans taking place in his territory, it's safe to assume that Mayor Weeks is not to be trusted.

Info

GENRE

Action RPG

FORMAT

PC (tested) / XBO / PS4

DEVELOPER

WolfEye Studios

PUBLISHER

Devolver Digital

PRICE

£30.99

RELEASE

Out now

REVIEWED BY

Alexander
Chatziioannou

VERDICT

Crude combat mechanics and repetitive quests drain the life off *Weird West's* arresting premise and evocative setting.

55%



Review

HIGHLIGHT

The new-look avatars may not be as customisable as the importable Miis, though more cosmetics do become available as you play online, and they fit right in with Spocco Square. As a facility packed with wonderful details such as trendy stores and a red bus that shows up every 15 minutes, it's a shame it's not its own explorable hub.

Nintendo Switch Sports

Motion controls return – on smashing form

It's honestly a surprise that it's taken five years into the hardware's life before Nintendo finally decided to bring back its game-changing killer app from the Wii era. Naysayers may believe we're over motion controls, but once a Joy-Con is in your hand and you're swinging it like it's a racquet, the simple joy of virtual sports comes back to the living room.

Just like it was the perfectly intuitive proof of concept for *Wii Sports* over 15 years ago, Tennis remains a classic, as does Bowling, the latter's mechanics making one minor change in that you no longer have to take your finger off the trigger to release the bowling ball. Sword fighting also returns from sequel *Wii Sports Resort*, albeit renamed as *Chambara* (a Japanese term, often relating to samurai films, except here the loser gets knocked off into a pool of water rather than drowning in their own blood). The three other sports however are brand new, and just as compelling in their own ways.

Badminton is another racquet sport, but its long rallies make for more tense matches. Volleyball, meanwhile, follows a pattern where you bump, set, and spike the ball, which sounds overly simplistic but is made by the teamwork it relies on (in contrast to Tennis, which is always played as doubles, but a solo player controls both). The four-a-side Football takes obvious inspiration from *Rocket League*, although it feels the most traditional of the bunch since movement relies on normal controls, and kicks

are simulated with your hands, meaning you may as well just play this while sitting down (you can technically do that for the other sports too, but they feel much more fun when you're really immersing yourself in it).

What really elevates *Nintendo Switch Sports* beyond its predecessors is taking the experience online for potentially stiff but ultimately friendly competition, with the possibility of unlocking a ranked mode you can freely opt out of any time. There's a very Nintendo approach to the way you might think of other live-service games, such as the way Bowling transforms into a kind

of 16-player battle royale (including your first match so obviously against bots) but where you'll still get a decent number of points even if you get knocked out in the first round. Points at the end of

each sport, with bonuses for achievements like playing into deuces or getting a long rally, go towards giving you the opportunity to unlock a random cosmetic, but unlike loot boxes, you can definitely unlock everything in that time-limited collection, and there's not a single microtransaction in sight. The one downside is the offline experience's bare-bones nature, but it's still a winner whenever you want to indulge in casual party games.

It may not be as revelatory as the original *Wii Sports*, but you can imagine this becoming a hot holiday console bundle that gets everyone back into the swing of things. Just make sure for your TV's sake that you're using the wrist straps. 🎮

“The simple joy of virtual sports comes back to the living room”

Info

GENRE

Sports sim

FORMAT

Switch

DEVELOPER

Nintendo EPD

PUBLISHER

Nintendo

PRICE

£30.99 [eShop],
£39.99 (physical with
leg strap accessory)

RELEASE

Out now

SOCIAL

@NintendoUK

REVIEWED BY

Alan Wen

VERDICT

Nintendo Switch Sports is a blast, whether as a party game or a refreshing online pick-me-up.

82%

Why not try...

Itch.io roundup

Picking out some of the platform's standout titles | REVIEWED BY Nic Reuben

What in Carnation?!

Schnumn / Free in browser / wfmag.cc/carnation

An incredibly sweet, funny, and well-written short visual novel, centred around students with autism who meet at a university's botany club. A warm, empathetic depiction of social awkwardness and overwhelming social situations, brought to life through a sort of narrative meta humour that finds the fun in constant self-analysis. The prose is full of lovely, jubilant details, making playing feel like the closest thing to leaving your computer and touching grass without actually having to deal with the world outside. It also reminded me to water my plants, which they're very thankful for.



Sorry, We're Open

Oates / Name your own / wfmag.cc/sorry-open

Part surreal management game, part uncannily mundane horror JRPG, this darkly comic headfudge does for supermarket management what *Yuppie Psycho* did for office work. Do battle with a runaway trolley and verminous cardboard boxes, using pointedly ineffectual middle management to buff your party. Hire employees at the start of each shift, and leverage their detrimental interpersonal skills in combat. Featuring the world's best, and to my knowledge first, Metroidvania-ish key system based on different types of cleaning products. Lead your store to profitability, or just hide forever in a giant fort made of cardboard boxes.



Cat Herder

Switchback Studio / Name your own / wfmag.cc/cat-herder

Do not underestimate this humble cat-herding simulator, for behind its feel-good façade lie game design choices so despicably perfect and nefariously engineered to trigger waves of joy that its creator must be watched carefully, lest they ever harness their powers for evil. It's in the purring sounds, the upbeat background music, even in the way the cats move. It's especially in the animation for picking the cats up, and the way you squeeze their tiny cat bellies before plopping them down in the designated herding area. Balm for the soul, truly.

The Jump

HAUO / Free in browser / wfmag.cc/the-jump

Ganon. SHODAN. Sephiroth. As memorable villains, all pale in comparison to *The Jump's* taunting fish. Another coffee break-sized browser game, this time utterly in contrast to the very concept of relaxation. The goal is simple: cross a broken bridge while being taunted by a fish with human arms, sitting in a deckchair. Do not listen to the fish: giving up is not an option. 🙄

In honour of the small rat that ran inside my house a week ago and may or may not still be hiding behind my sofa, the bonus game this month is *Rat* (wfmag.cc/rattus).

▶ STREAM OF CONSCIOUSNESS

This month we get loopy with *Returnal* obsessive, **Emmalition**

What's your all-time favourite game?

I have to say *Returnal*. It was a game that I picked up on an absolute whim because I wanted a PS5 exclusive to play. I wasn't sure what it would be like, and I'd never heard the term 'roguelike' before; I only knew that it was sci-fi and scary, two of my favourite things. I'd heard it was a really tough and punishing game, and it just felt completely unique. I got addicted to the feeling of trying and trying again, to feeling myself improve, and having my skills as a gamer pushed to their limits for the first time.

Can you remember the game that first got you into gaming? Do you have a favourite memory playing it?

I was lucky to be raised by two gamer parents, so it was a very natural form of media and entertainment for me to consume growing up. The standout game from my childhood is *Kurushi* – my mum's favourite game from way back. It was a puzzle game made for PSone in which you controlled a character and ran around a platform made of cubes, clearing certain cubes as you approached them. It probably sounds pretty basic now, but it was one of the first puzzle games I'd ever seen, and I found it absolutely fascinating. Plus it was awesome to see my mum enjoying it so much.

Have you ever felt the need to take a break from games?

No. I have a pretty healthy balance with everything in my life, and gaming doesn't impact on my relationships or life enough for me to need to take a break. I have a nice variety of games to play, from open-world stuff to things to just jump into with friends. I'm fortunate that my friends and partner are mostly all into games, so it's quite a social thing for me.



If you'd asked me this question 15 years ago though, my parents would probably say I needed regular enforced breaks from *The Sims 2*. I would play that for so long that I forgot to eat or drink. Not good.

What appeals to you most about playing games to a mass audience?

The way it forces me to finish games. I have to admit, I used to be someone who would pick up a game and if I didn't click with it quickly, I'd never finish it. I can tell you that if I didn't start *Returnal* or *Demon's Souls* on YouTube, I would've categorically given up after two hours of gameplay.

Then there's the community engagement, which is something that brings me so much joy! Of course you get the odd fool leaving mean comments, but there are so many insightful, funny, kind people in my audience that show up every week to leave comments and share stories of their own gameplay experiences. The fact some people sit there and watch me for sometimes three whole hours is absolutely amazing. 🤝

Emma regularly publishes her Let's Plays on YouTube at [wfmag.cc/Emmalition](https://www.wfmag.cc/Emmalition)

“I needed regular enforced breaks from *The Sims 2*. I would play for so long that I forgot to eat or drink. Not good”

The Wireframe **HOTLIST**

The best PC games, according to Wireframe, catering for whatever your mood might be

The games for... **BIG ADVENTURES**

- Elden Ring** / Bandai Namco / **95%** (Issue 61)
- Assassin's Creed Odyssey** / Ubisoft / **93%** (Issue 1)
- Yakuza: Like a Dragon** / Ryu Ga Gotoku Studio / **90%** (Issue 45)
- Amnesia: Rebirth** / Frictional Games / **87%** (Issue 46)
- Death's Door** / Acid Nerve / **87%** (Issue 55)
- The Last Campfire** / Hello Games / **86%** (Issue 47)
- Resident Evil 2** / Capcom / **86%** (Issue 7)
- Journey to the Savage Planet** / Typhoon Studios / **84%** (Issue 33)
- The Outer Worlds** / Obsidian Entertainment / **84%** (Issue 28)
- Eastward** / Pixpil / **84%** (Issue 57)



The games for... **REPEATED PLAY**

- Hades** / Supergiant Games / **94%** (Issue 44)
- They Are Billions** / Numantian Games / **88%** (Issue 20)
- Sekiro: Shadows Die Twice** / FromSoftware / **87%** (Issue 11)
- Streets of Rage 4** / DotEmu/Lizardcube/Guard Crush / **86%** (Issue 40)
- Trials of Fire** / Whatboy Games / **84%** (Issue 50)
- Katamari Damacy REROLL** / Monkeycraft / **84%** (Issue 4)
- Spelunky 2** / Mossmouth / **83%** (Issue 44)
- Hitman 2** / IO Interactive / **82%** (Issue 3)
- Alba: A Wildlife Adventure** / ustwo Games / **82%** (Issue 46)
- Slay the Spire** / Mega Crit Games / **81%** (Issue 45)



The games for... **SOLID STORY TIMES**

- Disco Elysium** / ZA/UM / **94%** (Issue 28)
- Life is Strange: True Colors** / Deck Nine / **89%** (Issue 57)
- Mutazione** / Die Gute Fabrik / **86%** (Issue 26)
- Whispers of a Machine** / Clifftop Games/Faravid Interactive / **85%** (Issue 14)
- The Forgotten City** / Modern Storyteller / **85%** (Issue 55)
- Mythic Ocean** / Paralune / **84%** (Issue 36)
- Sunless Skies** / Failbetter Games / **83%** (Issue 7)
- Arise: A Simple Story** / Piccolo Studio / **82%** (Issue 31)
- Assemble with Care** / ustwo Games / **81%** (Issue 27)
- The Walking Dead: The Final Season** / Telltale Games/Skybound Games / **81%** (Issue 11)

The games for... **FIRING UP BRAIN CELLS**

- Telling Lies** / Sam Barlow / **92%** (Issue 24)
- Kentucky Route Zero** / Cardboard Computer / **90%** (Issue 33)
- Slipways** / Beetlewing / **90%** (Issue 53)
- Total War: WARHAMMER III** / Creative Assembly/Feral Interactive / **87%** (Issue 60)
- Heaven's Vault** / inkle / **89%** (Issue 12)
- The Pedestrian** / Skookum Arts / **84%** (Issue 35)
- Dorfromantik** / Toukana Interactive / **85%** (Issue 63)
- The Legend of Bum-Bo** / Edmund McMillen / **83%** (Issue 31)
- A Monster's Expedition** / Draknek & Friends / **82%** (Issue 47)
- Total War: THREE KINGDOMS** / Creative Assembly/Feral Interactive / **82%** (Issue 16)



The games for... **HIGH-INTENSITY PLAY**

Tetris Effect / *Monstars Inc./Resonair* / **90%** (Issue 4)

Sayonara Wild Hearts / *Simogo* / **89%** (Issue 25)

Chivalry 2 / *Torn Banner Studios* / **88%** (Issue 54)

Hot Wheels Unleashed / *Milestone* / **86%** (Issue 56)

Star Wars: Squadrons / *EA* / **86%** (Issue 45)

OlliOlli World / *Roll7* / **84%** (Issue 60)

Devil May Cry 5 / *Capcom* / **84%** (Issue 10)

Black Bird / *Onion Games* / **84%** (Issue 3)

BPM: Bullets Per Minute / *Awe Interactive* / **83%** (Issue 45)

Resident Evil Village / *Capcom* / **82%** (Issue 52)



The games for... **CURING THE INDIE ITCH**

If Found... / *DREAMFEEL* / **92%** (Issue 44)

Can Androids Pray
/ *Natalie Clayton/Priscilla Snow/Xavier Nelson Jr.* / **90%** (Issue 21)

Tales From Off-Peak City Vol. 1 / *Cosmo D* / **89%** (Issue 39)

Baba Is You / *Hempuli Oy* / **88%** (Issue 10)

TOEM / *Something We Made* / **87%** (Issue 57)

Afterparty / *Night School Studio* / **86%** (Issue 33)

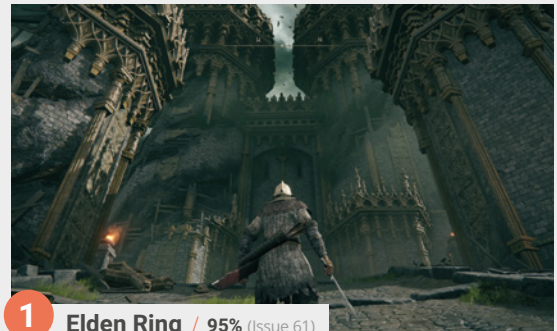
Witcheye / *Moon Kid* / **86%** (Issue 30)

Hypnospace Outlaw
/ *Tendershoot/Michael Lasch/ThatWhichIs Media* / **86%** (Issue 11)

Haunted PS1 Demo Disc / *The Haunted* / **85%** (Issue 39)

Chicory: A Colorful Tale / *Greg Lobanov* / **83%** (Issue 54)

PC Top 10



1 Elden Ring / **95%** (Issue 61)

A game of massive scale, packed with intelligence and mystery. A towering achievement.

2 Disco Elysium / **94%** (Issue 28)

Smarter and deeper than anything else; truly an RPG in a class completely of its own.

3 Hades / **94%** (Issue 44)

Proving 'roguelike' isn't a dirty word, learning-and-dying is a joy from start to finish.

4 Assassin's Creed Odyssey
/ **93%** (Issue 1)

The point where Ubisoft realised over-the-top adventures were the right direction.

5 Telling Lies / **92%** (Issue 24)

This FMV mystery asks more of the player than most, with rewards to match.

6 If Found / **92%** (Issue 44)

A compelling and beautifully illustrated narrative, as moving as it is memorable.

7 Yakuza: Like a Dragon / **90%** (Issue 45)

A bold, brash, and joyous rebirth for the long-running gangster series.

8 Tetris Effect / **90%** (Issue 4)

The question is 'how do you better *Tetris*?' The answer is: like this. This is how.

9 Kentucky Route Zero / **90%** (Issue 33)

Abstract style meets concrete commitments in this fantastic magical realist adventure.

10 Can Androids Pray / **90%** (Issue 21)

A healthy dose of existential anxiety in a minimalist, bite-sized package.

Backwards compatible

WRITTEN BY RYAN LAMBIE

Big Book of Fighters

As the medium's matured, books about video games have grown ever chunkier and more in-depth. Forget the flimsy guides and jaundiced tips publications of the past: 21st century books about games treat their subject matter with a rigour and seriousness that's starting to approach film and TV writing.

Case in point: Bitmap Books' inch-thick tome, *The King Of Fighters: The Ultimate History*. At first, I was a bit sceptical about how much material there was to dig up about a relatively niche franchise – sure, we've seen numerous games in SNK's three-on-three fighting series since its inception in 1994, but does it really warrant such in-depth treatment? As it turns out, the answer's a resounding yes.

The first section of the book deals with the history bit: how SNK's decision to headhunt Takashi Nishiyama from Capcom shortly after the release of the original *Street Fighter* would have a huge



impact on the company's fortunes and video game history as a whole; and how SNK went on to evolve its fighters away from the ones its arch rivals at Capcom were making with each successive release.

Along the way, there's some fascinating anecdotal detail: how prospective SNK employees had to complete an extensive set of tests before they were hired (including a half-hour section devoted to examining their drawing skills). We learn just how young and wayward the team of designers behind *The King of Fighters '94* actually were (only just in their twenties, they'd spend their downtime drinking and running from bars without paying). And we discover the fascinating note that the game's development cycle was so compressed, they barely had time to properly balance the game's complex AI. That the game's computer-controlled fighters were neither too easy nor too difficult to beat was largely thanks to the breadth of strategies offered by its three-

on-three premise (or, as artist Mitsuo Kodama puts it, "Because the characters come in teams of three, any one character is only a third of the team, so even if you have a really weak guy, if you have a really strong guy as well, it would kind of balance out the battles.")

Away from the history and anecdotes, there are original design documents from *The King of Fighters* series, handily translated into English, while the latter two-thirds of the book are dedicated to sprite design, character art, and Q&As with some of the series' key development staff.

So there we have it: a hefty, handsomely produced slab of history for a hard-hitting series that has endured for almost 30 years. The book's so weighty, in fact, that I'm sure lifting it a few times will eventually make me as fit and muscular as Geese Howard. Won't it?

The King Of Fighters: The Ultimate History is available now from Bitmap Books:

wfmag.cc/kof-tuh.



Little Big Saturn

In an alternative universe, the Saturn was a massive success and Sega continued making handheld consoles well into the 32-bit era. Had that happened, the resulting handheld might have looked like the sizeable bit of hardware you can see here. It takes an original Saturn motherboard, marries it to an Optical Drive Emulator, an LCD screen, and the guts of a six-button controller to create a large, fittingly nineties-looking portable system. Actually squeezing the Saturn motherboard into its 3D-printed shell takes an enormous amount of effort, though: the board has to be physically sawn into three parts, and then the data lines individually reconnected with wires.



We can't speak to the practicality or longevity of a device like this, but we can certainly admire the time and ingenuity that's gone into it. You can follow the whole startlingly convoluted build process at wfmag.cc/saturn-gear.



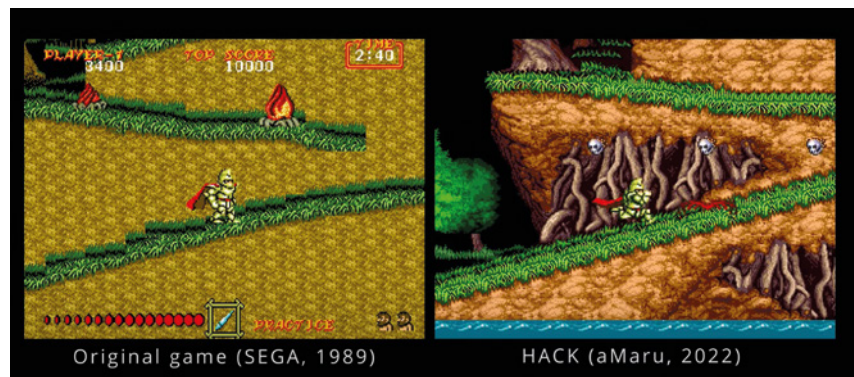
Metroid 64?

In an alternate universe, Nintendo was more enthusiastic about making *Metroid* games, and developed one for the N64. Had that happened, it might have looked something like Luto Akino's work-in-progress, logically titled *Metroid 64*. It takes the form of a third-person, 3D platformer that looks surprisingly solid given its fan-made origins. The footage shared on Twitter shows a low-poly Samus leaping, shooting, and rolling around a gloomy alien cavern, and it all looks thoroughly encouraging so far. Akino reportedly plans to release the game online eventually – assuming Nintendo doesn't rain down its cease-and-desist arrows first. Take a look for yourself at wfmag.cc/metroid-64.

Ghoul Runnings

It was one of the absolute best early releases for the Sega Mega Drive, but *Ghouls 'n Ghosts* was significant for another reason: its scenes of a knight traversing a storm-swept, hilly landscape inspired its programmer, Yuji Naka, to experiment further with a character running on curvy surfaces. Naka's experiments would eventually lead to *Sonic the Hedgehog* and its even more curvaceous early levels.

Pivotal though the MD adaptation of *Ghouls 'n Ghosts* was, it was somewhat hamstrung by its lack of cartridge space. When porting the game over from the arcade, Naka discovered he had just 4Mb to play with (the equivalent of 500kB); Sega later relented and upped the ROM to 5Mb, but this lack of space still impacted the graphics. When compared to the arcade, the Mega Drive's backgrounds used more repeating tiles and fewer colours, while details like clouds were greatly simplified to save space.



An ingenious ROM hacker named aMaru, however, has gone back and revised *Ghouls 'n Ghosts*' graphics to make the home port look more like the arcade version. In other words, imagine if limited memory wasn't an issue for Yuji Naka; what might *Ghouls 'n Ghosts* have looked like? Absolutely gorgeous, is the answer. Years ago, Mega Drive games were often criticised for looking

drab compared to those on the SNES; this proves that a limited colour palette wasn't always the issue – it was limited cartridge space.

As of March 2022, aMaru had only finished reworking level one, but we're hoping they'll be able to complete – and share – this new, improved ROM fairly soon. Check out the comparison video at wfmag.cc/gng-arcade.

Backwards compatible

WRITTEN BY AARON POTTER

Head in the clouds

One aspect of retro gaming I've admittedly always been quite ignorant of is the social element. True, I'm not short on childhood memories of trying to see *Golden Axe* through to the end credits with a co-op buddy (which never happened, by the way). But in this modern age, I've wrongly considered the act of revisiting classic games to be more of a solo exercise. Is this any surprise, seeing as no one in my immediate friendship group wants to dig out their old Game Boy Color to authentically trade Machokes with me in *Pokémon Blue* using a link cable? It's an oddly specific scenario, I know.

Jam.gg, formerly known as Piepacker, is a cloud-based online game streaming service that aims to change the false-mindedness of players like me. The platform's core ambition is to make

retro titles not only open and accessible for all – that's a given – but to treat such experiences as something to be shared and enjoyed collaboratively with others, too. Much like how you'd fire up a Zoom chat to reconnect with pals whenever you're apart, Jam.gg lets you do the same – except now, catching up also means playing multiplayer games using cloud access via a web browser.

I wouldn't blame anyone for still being hesitant about cloud-based gaming. After all, Google's attempt at capitalising on the concept with Stadia quickly went down like a ball of flames, due to a lack of support and a poor pricing model; not to mention that everyone's internet connection strength can still vary wildly. That said, Jam.gg aims to make playing classic games online with friends as

frictionless as possible. And it does this in various ways...

For one, there's already a small but not insignificant collection of retro titles to play. Highlights for me include the original 1994 *Windjammers* for the Neo Geo, oddball karting game *Street Racer*, and the first two *Earthworm Jim* games. All of which looked great and ran smoother than expected when I tried them, with some of the lowest latency I've ever seen from a cloud-based platform. That last element is obviously crucial when wanting to play any of the competitive sports, racing, or fighting games Jam.gg currently has available. Even without the service's community features, this is a great way to try out several retro curios free of charge.

Perhaps more importantly than a good game collection, however, Jam.gg makes welcoming friends as simple as creating a room and then sending out a link. From here, you can select who'll take ownership of what role (players 1 to 4 or just observers) and even modify yourself Snapchat-style with fun avatar customisations that layer over your webcam.

Saying that, the platform's creators still appear to understand the comfort and importance of anonymity; despite its emphasis on socialising, Jam.gg replaces your image with a simple filled-in outline by default. Small additions like this show that a lot of thought has already gone into the service throughout its previous eleven-month beta period, when it was still known as Piepacker.

So far, Jam.gg has made a point of making retro and retro-style games its



A short life well lived

Crowdfunded books are always a roll of the dice, just as much for the reader as they are for the writer. If ever there's an all-too-niche topic or subject you aren't sure would be broadly popular, however, it's a great route to go down. And let's face it: it doesn't get more niche than the PlayStation Vita. I say this as Wireframe's resident Vita-liker (shhh, don't tell Ryan), so Sandeep Rai's new hardback book, *Vita Means Life*, pushes plenty of my buttons.

Brimming with features and retrospectives covering the ill-fated handheld's early days, oddest games, and ultimate demise, the book serves as a good, condensed summary of that brief moment in time when PlayStation still cared about portable gaming. So brief that period was, it's pretty much covered in a little over 400 pages. Sleep now, precious Vita.



bread and butter, but already it's hoping to maintain the boosted momentum it's received since going public by adding new classic titles and even recent indie games.

Party hits like *Overcooked!* and *Moving Out* are already set to appear soon, as the platform hopes to bolster its selection of games by making deals with new licensors. This is in addition to a small set of original releases that are being made in-house, such as the wildly stressful yet addictive *Arsène Lupin: Gentleman Bomber*, which runs rampant with the conventional *Bomberman* formula using a pixelated aesthetic and several friendship-destroying modes.

The one drawback to this prospect at present, though, is that there's currently no schedule in place for when new games will appear. Because of this, once you've rung the entire roster dry, there's no real reason to return unless you and friends find a particular title you just can't get enough of. Players could be waiting

weeks or months for stuff to be added as it stands.

Luckily, there's a remedy for this: you can upload your own ROMs for SNES, Mega Drive, Nintendo 64, or any other console generation it supports. Simply drag in and drop a game you already have the file for, and it's possible to play their multiplayer components with others. *Street Fighter II* online tournament, anyone?

Just like any service still in its infancy, Jam.gg hasn't ironed out all the kinks, but I'd be lying if I said that I wasn't already impressed by the prospect.

Making retro gaming 'free' and accessible is one thing, sure, yet to also celebrate just how fun these classic eras can be to enjoy with friends? That's something to be commended, and why I'll be settling any family disputes with a one-on-one *Windjammers* session from here on in. I guess the cloud can be handy, after all.



Blast from the past

This month, Ryan satisfies his itchy trigger finger with the absolutely corking shoot-'em-up, *Andro Dunos 2*

There are certain sorts of restaurants I've read about – the posh ones I can't afford – where they'll keep bringing out surprise dishes in between courses. You've finished your starter of wild mushrooms, and all of a sudden a waiter will shove a tiny plate of deliciousness under your nose. You didn't ask for it, you weren't expecting it, but crikey does it taste good. I've managed to get a vague insight into how this feels with a couple of shoot-'em-ups that have unexpectedly emerged this year. One was *Sol Cresta*, PlatinumGames' surprise sequel to defunct developer Nichibutsu's shooters of the eighties and nineties. It was a surprise for two reasons: one, it was a wonder why anyone would revive a series that hardly

anyone outside Japan remembers in the first place; and two, it was originally announced on 1 April 2020, leading most to assume it was a joke and not an actual, in-development project.

Sol Cresta really was real, though, and it's an absolute treat: as I wrote in last month's review, it's a modern take on the kind of shooter I didn't think I'd see again – one that puts aside the psychedelic patterns of the bullet hell genre, and returns to an older style that's more about anticipating waves of enemies and getting to grips with the weapons system. That weapons system is one of the most convoluted I've ever seen in a shooter, with so many permutations and options that it's unlikely most players would ever make use of them all. Still, it's typical of the febrile, maximalist approach director Hideki Kamiya takes to his games, and makes *Sol Cresta* one of the most absorbing new shooters to have emerged in years.

The next tiny plate of shoot-'em-up goodness that landed on my table recently (yes, I am going to keep up this analogy) is *Andro Dunos 2*. As I'm sure all true gamers know, the original *Andro Dunos* came out in 1992 for Neo Geo arcade and home hardware, and was a side-scrolling shooter released smack-bang in the middle of the craze for one-on-one brawlers like *Street Fighter II* and *Mortal Kombat*. This probably explains why *Andro Dunos* is a pretty obscure shooter, even among many fans of the genre.





For reasons I hope I can uncover fairly soon, French publisher JoshProd managed to acquire the rights to *Andro Dunos* and eventually hired Japanese developer Picorinne Soft to make a sequel. And the resulting game is, if you're into the genre, an absolute gem: a side-scrolling blaster that revives everything I used to love about a bygone era of games pioneered by the likes of *Gradius* and *R-Type*.

You guide your plump little craft into battle against an armada of alien craft, most of them larger than you, and some absolutely gigantic and clad in seemingly impenetrable armour. Fortunately, your ship has a multi-directional weapons system which you can switch between with the tap of a button. If you've played Toaplan's *Hellfire*, you'll probably have an idea of what I'm on about: some weapons are perfect for specific areas, such as level three's asteroid field, where the rear shot comes in handy for the enemies that attack from the left of the screen. Others, such as the green Rolling shot, offer a narrow but concentrated laser that's handy during some boss battles. Weapons can be upgraded, too, both by collecting power-ups during levels and also spending collectable tokens at the end of each level. Add to this a more enemy-shredding charge shot, and suddenly, your dinky ship no longer seems quite so helpless.

Aside from being a superbly crafted shooter with precise controls, *Andro Dunos* is impressively

“A modern take on the kind of shooter I didn't think I'd see again”

presented for an indie title: indeed, it thoroughly upstages *Sol Cresta* in the looks department.

Where PlatinumGames saw fit to piece its shooter together from what looked like a hodge-podge of pre-rendered 3D graphics with a frankly ugly CRT effect layered over the top, *Andro Dunos* goes for a clean, unabashedly retro pixel art look. In the

wrong hands, this might have been a risk, but *Andro Dunos 2*'s sprite work is arguably up there with some of the better examples from the late eighties and early nineties. It's

not quite *R-Type* or *Metal Slug* levels of brilliance, but it's clean, vibrant, and packed with variety.

Andro Dunos 2 isn't a slacker in the sound department, either. *Sol Cresta* had the legendary Yuzo Koshiro in its corner, and he did some great work there; but *Andro Dunos 2*, sticking with its international pedigree, gets in the eminent British composer Allister Brimble, who comes up with some sterling, upbeat tracks.

Here, then, is the latest in a string of pleasantly unexpected shoot-'em-ups that have appeared in recent years. *Andro Dunos 2* may not have PlatinumGames' pedigree behind it, but it nevertheless has everything anyone could want from a retro shooter. Oh, and one final piece of advice: physical copies for the Nintendo Switch are currently quite cheap, and there's even a boxed version for the Nintendo 3DS, if you can track it down. They're the kinds of oddities that become horrendously expensive in short order, so get them while you can... ^W

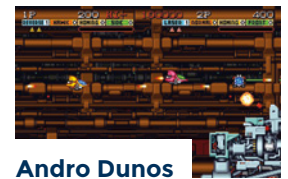
Wireframe Recommends



CG Aleste 3

PS4, SWITCH

M2 revived this obscure series – a handheld spin-off that originated on the Game Gear – with a 2020 sequel. It's a typically accomplished effort from the studio, though its presence on the Japan-only *Aleste Collection* makes it hard to get hold of in the west.



Andro Dunos

DREAMCAST

If you don't own a Neo Geo and want to play the first *Andro Dunos*, there's some good news: word is that the original game is getting a belated port to Dreamcast. It's a curious but welcome choice of venue, and due out later in 2022, courtesy of the sequel's publisher, PixelHeart.



Blackbird

PC, SWITCH, VARIOUS

Yoshiro Kimura's shooter has all the eccentric presentation you'd expect from the developer of *Little King's Story* and *Dandy Dungeon*, but beneath the cutesy graphics and unexpectedly macabre humour, there's a truly banging shooter waiting for you.

Now playing
Anyone can be a hero



Anyone can be a hero

Is there a good kind of identity crisis? Aaron finds out in Drinkbox Studios' *Nobody Saves the World*

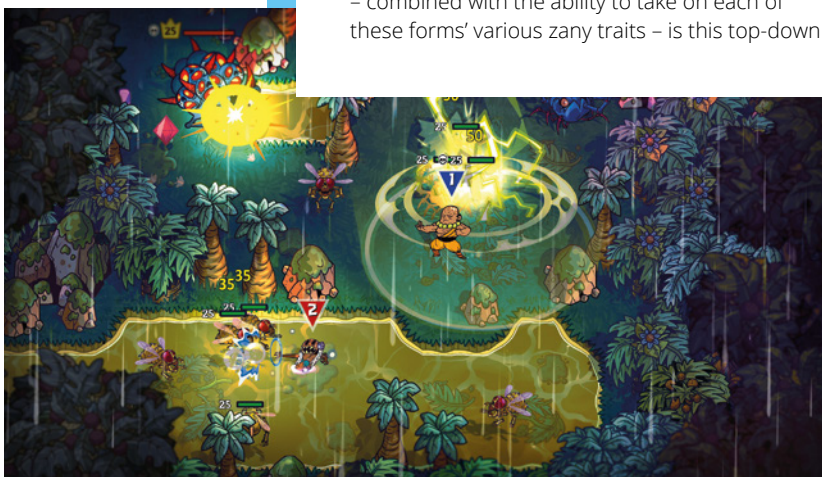
From a young age we're led to believe that we can be anything we want when we grow up. It just requires a good deal of time, effort, and commitment. For *Nobody*, however, the pale-skinned, unassuming protagonist at the centre of Drinkbox's latest indie hit, all you have to do is pick up a magic wand and... Poof! Suddenly you're a bodybuilder. Or is it a zombie, or potentially a mermaid? Sometimes it can be tough to keep track. That said, this constant element of surprise – combined with the ability to take on each of these forms' various zany traits – is this top-down

adventure's chief appeal. Suddenly, being a hero doesn't seem so far out of reach.

It all kicks off when an ancient calamity reawakens, jeopardising the safety of your home and the surrounding territories. Under normal circumstances, this would mean travelling to different locations to solve dungeons, gaining new skills along the way, and aiding local NPCs by completing odd jobs. *Nobody Saves the World* has you do all that, but here, the way you go about doing so is entirely up to you – thanks to the ability to change forms instantly. Sure, you might start off as a rat skulking around the sewers, but very quickly the transformations become ever more useful and outlandish.

Take the magician, for example. Forget the trope of a bearded wizard who shoots magic spells; instead, you take the form of your average street magician. It's yet more evidence that Drinkbox Studios, in whatever genre it ends up tackling, isn't the kind of developer to do what's expected. Rather, the aforementioned form's signature attack is based around a literal deck of cards, with damage dealt being greater should you pull out an ace.

This is in addition to the ability to pull an animal out of your hat who will then attack by your side, alongside a confetti bomb that's great





for covering a wide base of enemies. Most action RPGs would prioritise classes like the Rogue or Ranger, but here it's never the case.

Nobody Saves the World even understands that you might not want to be tied to a single transformation. In fact, it encourages you to experiment, going so far as to let you mix and match abilities from other classes until you've levelled up enough to create your ideal skill tree. Does it make sense to see your Necromancer kick back in a reverse motion the same as a horse would? Probably not, but it's a great way to, say, clear out a room fast and build up the amount of stun damage necessary to reach A rank with whatever class you're using. Because, in an ingenious bit of progression design, it pays to always swap in and out of forms regularly due to each touting a character-specific questline relevant for levelling up and unlocking new ones.

You'd think that layering so many unconventional systems and mechanics on top of one another would make you lose sight of, well, saving the world. In actual fact, there being so much to dive into and experiment with has the exact opposite effect: during my 12- to 15-hour journey, I couldn't wait to find new dungeons situated off the beaten path, because it meant a chance to try out several different tactics using whatever unique class combination I could dream up.

If there's one criticism I could level against *Nobody Saves the World's* quirkier approach to

progression, it's that you can never become too attached to a class for too long. There's always another one on the roster waiting for you to unlock. Of course, the one downside to this is that I was often forced to play as forms I didn't particularly jive with. The ghost's aura ability, for example, in which you must rub up against enemies to deal damage to them over time, favours a less frantic playstyle. Meanwhile, the exact opposite is true for the zombie, which loses health over time due to decay and so encourages you to chomp on as many creatures as possible to stay alive. However, with there being 17 forms to play as in total, it still says a lot that most offer up fun gameplay twists that mostly keeps the action exciting.

I already knew Drinkbox Studios could do no wrong following its work on both *Guacamelee!* titles. There, the developer was able to reinvent the way I thought about the traditional Metroidvania format by staying true to its mechanics while being unafraid to infuse it with new ideas, life, and colour. That's why it comes as no surprise to learn that the team has done exactly the same again – this time within the realm of top-down action RPGs with *Nobody Saves the World*.

Just as *Guacamelee's* Juan focused on an unexpected hero taking on a super-powered guise to fight evil, here you do much the same as just a simple nobody. Or at least well over a dozen different nobodies with just as many possibilities. 🐼

“All of a sudden, being a hero doesn't seem so far out of reach”

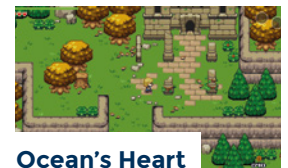
Wireframe Recommends



FixFox

PC

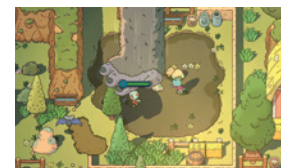
Anthropomorphic adventures don't get any more wholesome than this intergalactic fix-'em-up where conventional tools are replaced with fruit and kitchenware. Anything to make your fellow space inhabitants happy.



Ocean's Heart

PC, SWITCH

Yet another pixelated *Zelda*-like? Almost. *Ocean's Heart* trims back much of the genre's typical fat and infuses it with a pirate theme and cutesy GBA aesthetic. Ooh-arr!



The Swords of Ditto: Mormo's Curse

PC, SWITCH, XBO, PS4

Come for the colourful art style, stay for the unpredictable adventure. Onebitbeyond's top-down RPG was always great, yet it was made even better with the *Mormo's Curse* expansion.



Tearaway

How one portable papercraft adventure took touch sensitivity to an all-new level

MEDIA MOLECULE / 2013 / PS VITA, PLAYSTATION 4

Your fingers are powerful enough tools on any handheld console, but none more so than Sony's ill-fated PSP successor. With its dual analogue sticks, gyroscopic motion controls, and appropriately "clackety" shoulder buttons, the Vita represented a significant technical step up from what Sony had tried before. It was a clear attempt to create the Rolls Royce of portable gaming devices. That said, while having multiple input methods seemed like a great way to offer players more ways to impact the in-game worlds they'd explore, it could be argued that packing in almost too many bells and whistles ultimately contributed to the PS Vita's downfall, too. Developers simply didn't know how to incorporate everything naturally – especially the Vita's rear touchpad functionality. That is, until *Tearaway* arrived well over a year after launch.

Up until this point, the act of stroking or tapping the back of PlayStation's second-generation handheld was seen as nothing more than a gimmick; an unnecessary addition that never elevated what it meant to play blockbuster games on the go. *Wipeout 2048* saw you use it to up the acceleration of your anti-grav vehicle, while the console's flagship launch title, *Uncharted: Golden Abyss*, merely offered it as a more convenient way to have Drake climb ropes or chains.

Such integrations of the rear touchpad were perfectly fine in practice, sure, yet all failed to fully capitalise on the tech's

unique gameplay possibilities. In most Vita games, almost any function given to the touchpad could just as easily be handled by a simple button press elsewhere.

Leave it to the ingenious creatives over at Media Molecule, then, to use this quirky feature's strengths near-perfectly. By creating a world entirely made out of paper, *Tearaway* saw you play a more active part in the story. Using the back touchpad to aid Iota or Atoi on their journey to deliver a message felt genuinely engrossing, thanks to the ability

of having your fingers burst up through the handcrafted world from underneath. It meant you were no longer viewing the world just as a passing observer, as in most Vita titles, but instead influencing puzzles, enemy encounters, and collectable hunts

directly. The best part? This cool finger-pushing mechanic meant that *Tearaway* couldn't be experienced this way on any other device. It felt like the Vita had finally arrived.

It helps that the bulk of *Tearaway* plays like an interactive storybook anyway. As well as being a clear homage to the days when 3D platforming adventures once ruled, you're always swiping the front touchscreen to open up new passageways, drumming on the rear touchpad in a specific beat to alter surroundings, and tracing your own papercraft shapes and designs to see them implemented in-world. Rarely does a game let you interact with its goings-on as tangibly as this. Using your finger to spin a dial needed to let your messenger cross a bridge, or prop a platform up so they

“A classic case of a game being designed around the tools available”



can reach a high point is the icing on top of this finely layered cake, and it's consistently engaging.

If *Tearaway* falters slightly, it's in its over-reliance on combat. At several points during the five-or-so hour journey, ball-like scraps will appear from nowhere to bombard Iota or Atoi, preventing them from delivering their important message. Unlike most other cutesy platformers, though, you're not limited to basic punches, kicks, and dodge rolls. Rather, the best way to deal with them is to tear through the floor beneath enemies using a finger or two, tripping them up or sending the scraps skyward, where they flatten against the Vita screen. *Tearaway* probably could have worked fine without adding baddies to fight, but their inclusion served as another showcase for the rear touchpad – and conclusively proved that the finger is mightier than the sword.

That *Tearaway* wasn't a Vita launch title back in 2012 is a cardinal sin. It's a classic case of a game being designed around the tools available, instead of the other way around, as most developers up until that point had been doing. By releasing it so late, day-one purchasers were robbed of one of the Vita's finest touchy-feely experiences.

Ultimately, as it stands, watching your fingers burst through the game world is a killer feature that remains exclusive to *Tearaway* on Vita – the very epitome of hardware and software working together harmoniously to offer an interactive experience rarely found elsewhere.

The game's a celebration of the handheld console's novelties and peculiarities that always should have been there. By expertly weaving the rear touchpad's untapped potential into the experience, players were literally able to go hands-on with an already handcrafted adventure. 🐾

Good on paper

PlayStation Vita selling so poorly eventually meant that Media Molecule ported an expanded, slightly altered version of its papercraft hit to PS4 in the form of *Tearaway Unfolded*. The console's DualShock 4 doesn't come equipped with a back touchpad like the Vita however, which forced the studio into several creative workarounds using the controller's other advantages. Don't worry, you still manipulate the world in a god-like fashion, only this time by shining down a beam using the DualShock's light bar, and aiding your messenger in battle by sucking up scrap enemies into your gamepad before satisfyingly shooting them back out again. Despite the stark change in control setup, Media Molecule still found ways to provide a uniquely tactile experience in *Unfolded*. Your fingertips were still useful, even if they couldn't be seen.



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