Wireframe

LIFTING THE LID ON VIDEO GAMES

KERBAL SPACE PROGRAM
KSP
2011 · 2021
10-YEAR ANNIVERSARY

ELEMENTARY
Behind the scenes on Sherlock Holmes Chapter One

DREAMS
Media Molecule's creative launchpad

Issue 52 **£6**
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KERBAL
SPACE PROGRAM

THE SEQUEL, THE LEGACY, AND **TEN YEARS** OF EXPLODING ROCKETS

Kerbal Space Program changes lives

Kerbal Space Program is a gateway drug to aerospace. In my ten years of streaming it, teaching it, and using it as a teaching aid, I've lost count of the number of people who've told me the game was a key reason they ended up building rockets for real. I wouldn't be surprised if, in the next few decades, we begin to see astronauts who got their first experiences in rocket science through playing Kerbal Space Program. And as long as that's not their only experience, I'm sure they'll do fine.

The amazing thing is that Kerbal Space Program, or KSP, didn't set out to be the perfect educational game – it began as a sim that had some rocket-related mechanics. You were trying to get as high as possible, balancing thrust to weight ratios, and being careful not to overheat your engines. By version 0.7.3, the first public release, there was a handful of parts, a planet, and enough physics such that you could get payloads into orbit if you knew what you were doing.

Most players didn't, however. I had degrees in physics and astronomy, and several decades of experience as a space nerd, so I knew what it took. But equally, these early versions were so basic: there were no symmetry tools to help you keep your rocket balanced; the atmosphere was so thick, it was hard to pick up speed, and the structure of your rocket felt like it was held together by rubber bands. When I made it into orbit, though, it felt like a real achievement. Then I deorbited, deployed my parachute, and gently touched down on the dark side of the planet, only to explode because of a bug in the game.

One of the smartest things it did was introduce the Kerbals – your crew Bill, Bob, and Jebediah Kerman – who would react during the flight, sometimes

SCOTT MANLEY

This space-obsessed Scotsman who moved to California runs a popular YouTube channel covering science and video games, frequently at the same time. Also has a minor planet named after him.

#52

with concern, panic, or a huge grin. They made you care a bit more and, sometimes, laugh a bit more. New versions brought new features, including an orbiting Moon (or Mun), so of course I had to try landing there. And again, the early game lacked many of the quality-of-life features we rely on – there was no navigation, no low-thrust landing engines, no landing gear, and no ability to save the game.

It took half an hour of manual flying to put my crew into a powered descent towards the Munar surface, and without the safety net of a saved game to fall back on, any mistake would ruin a lot of work. I think I failed a couple of times. Usually I'd get close and then use too much thrust, sending me back up again, a consequence of overpowered engines and crude controls. During Apollo 11's landing, Neil Armstrong's heart rate was 150 beats per minute, and I'm pretty sure my heart was doing similar things when I finally landed on the Mun for the first time. Not many games have had that effect on me.

I was fortunate that, when KSP first appeared, I had a small YouTube audience and was a gamer who also had a background in astronomy, so I knew orbital mechanics and could explain a lot of the orbital manoeuvring which became essential to the game. As KSP expanded, I was able to draw parallels between the simulated space technologies and their real counterparts. That was really a catalyst to grow my audience, and over the years, I transitioned away from primarily covering games to covering real rocket science.

KSP continues to be used in my videos. When I need some visuals, I don't start drawing things in Blender – I create a working version in KSP. Pretty pictures are nice, but being able to fly and crash your creations is infinitely better. ⓦ

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WELCOME

There was a time when tabloid newspapers used to quite enjoy depicting video games as a mindless, even damaging pursuit. But as anyone who actually plays games will tell you, they can actively encourage creativity – which is something we're celebrating in this very issue. Whether it's games that nurture a latent interest in astrophysics, like *Kerbal Space Program* and its upcoming sequel, or platforms like Media Molecule's Dreams, that give us the tools to make games of our own, we're exploring the variety of ways video games can help players realise their creative potential. Over on page 80, meanwhile, you'll find yet more creativity: it's the results of Wireframe and FUZE's first-ever retro coding competition. We've been absolutely overwhelmed by the number and quality of the entries we've received; from platformers to shooters to original works that defy easy categorisation, you'll find a wealth of amazing, homegrown games on our long list of runners-up and winners. Video games have come a long way since the days of type-in listings and 8-bit computers (see page 70 for more on that topic); today, we can develop entire projects on our consoles thanks to things like Dreams and FUZE. In other words, there are more ways to get into game development today than ever before – and that, surely, can only be a good thing.

Enjoy the new issue!

Ryan Lambie
Editor

THE WORLD'S LEAST FAMOUS
DETECTIVE

Frogwares takes the master of deduction back to his punk kid origins in Sherlock Holmes Chapter One

I t's genuinely gratifying to see Frogwares, the Polish developer behind eight previous mainline *Sherlock Holmes* games, making a bit of a move on things. Rather than going the route it has been treading for almost 20 years now, presenting a tale – or a remix of a tale – of the Sherlock we're all very familiar with, a man set in his ways, his personality formed, with nothing new to learn, *Sherlock Holmes Chapter One* presents us with a younger model. It's young Sherlock Holmes, but not the 1985 film.

This 21-year-old Holmes is still the deduction machine of past Frogwares titles, gathering clues through observation and interaction before bringing them into his mind palace – that's what the in-game mechanic is called – and linking pertinent points to discover the truth. Or mess up and accuse the wrong person, of course. But this Holmes is also brasher, up for a scrap as much as he is up for noticing the blemishes on an old aristocrat's face or the scratches on a medium's wrists.

It's hard to say this is *bold* new territory, per se, but it does present Frogwares with something new and exciting: the chance to go off-piste with the world's most famous detective who isn't Poirot. And beyond just presenting us with a less grey-around-the-temples main character, it also gives the developer the perfect chance to branch out with how it's all presented: Sherlock's going open-world. Sort of. A bit.

We're not talking Grand Theft Elementary here, but *Sherlock Holmes Chapter One* does broaden the scope of players' investigations, taking in crime scenes and surrounding areas, as well as the chance to explore the local area in your quest for all the clues. From a bit of time with the game, it's unclear exactly *how* open it will get as things progress, but there's huge potential here for investigations to become wide-ranging both in topic and in location.

And just as much, there's huge potential for the younger Holmes to develop as things progress – something ➡

the notoriously stoic detective of his later years doesn't really bother with. We're promised a more arrogant, more volatile version of the character, and while that'll surely rub some purists up the wrong way, it's a solid experiment to run with – to see what can be done with his story; what developments we can encounter along the way that turn him into the man we know he becomes. That, or it'll just mean lots of gratuitous gun-fights, who knows?

Frogwares' *Sherlock Holmes* games have gradually increased in complexity and visual quality over the past 20 years, and *Sherlock Holmes Chapter One* looks like another incremental step forward. It'll be fun to see how they treat this younger version of the man who'll soon live at 221B Baker Street.

^ **The world has opened up significantly since Frogwares' last *Holmes* release in 2016.**

Hoping for at least one answer including the word 'elementary', we had a chat with Wael Amr, CEO of Frogwares, to lift the veil on the grand mystery surrounding *Sherlock Holmes Chapter One*.

Where did the idea for *Sherlock Holmes Chapter One* come from?
Shortly after *The Sinking City*'s production wrapped up, we began wondering about our next game. As a studio, we wanted to revisit our old 'friend' Sherlock. However, we didn't know in what way. So we decided to talk among ourselves in the studio, and see what people suggested as possible themes for our next *Sherlock* game. After a few weeks of brainstorms, presentations, etc, we had a large list of possible new adventures. But hearing the idea of presenting a story about Holmes before he became the world-famous detective, well, that got us really excited. It made us stop and think.

What sorts of things weren't pursued? Were any elements from these other ideas brought in to *Chapter 1*?
We had many different ideas being thrown around. Sherlock in the sixties, Sherlock in the future, Sherlock in colonial Australia too! They were good ideas, with the Australia one coming pretty close to being 'the one'.

Did we use any of the elements? Well, the 'Australian' idea of Sherlock being outside of London, we liked that a lot. With our adventures, we've been in London many times before. And it seems recently that London has been a bit of a popular location for games. So why not try something different and be somewhere else? That idea of Sherlock going and being in a new place, that carried over to *Chapter One*, with him visiting our Mediterranean island, Cordona.

What was the specific motivation to go back to the early days of the detective?
The fact that it's never been discussed in the books made us wonder what type of person Sherlock could've been before he decided to be a detective. As we talked about this idea, we started to feel excited about it. And anywhere there's a spark, that's the place from which wonderful things can happen and tend to come out from. So we decided to follow that spark and see where it would lead us. Two years later, here we are, the spark still shining.

Where did that spark come from in deciding to use Sherlock's early days?
You can feel that spark in the room, when you talk about an idea and everyone seems to be on that same page. Perhaps a young
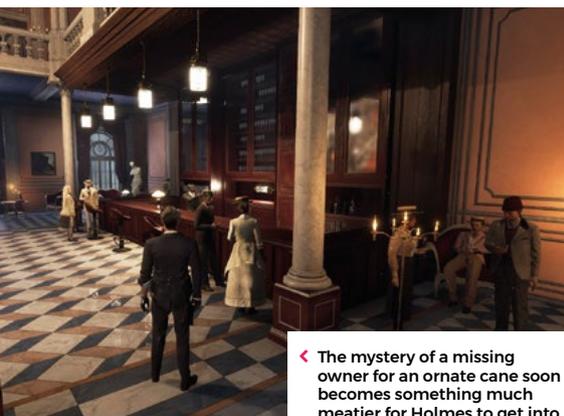
❮ The mystery of a missing owner for an ornate cane soon becomes something much meatier for Holmes to get into.

rebellious Sherlock resonated with us somehow on a deeper level? I'm not too sure. We've all gone through phases of trying to 'find oneself'. As individuals, as a group of people, perhaps even us as a studio too. Maybe we're at some point in our collective lives that we feel drawn to this story? But the spark, *that* comes from inside. You can see it in the nods of people, and in the energy rising inside the room. It's a very ethereal figure, like an idea or a far-gone concept. But when it's there, it's there. You feel it and it is exciting!

What does this shift in timeline allow you to do that you couldn't previously?
It allows us to experiment a little bit with the character of Holmes and lets us think about what led him to discover his talents. We all know that Holmes is a talented detective – as an audience, we don't question this whatsoever. But what led him to becoming that person? Was he always in search of ultimate truth? Was he always this antisocial genius? Or perhaps he was a bit of a rebellious, cocky, and arrogant young man who was still, in fact, trying to figure himself out. By setting the game in this timeline, we can play around with those questions a bit more and provide hypothetical answers.

Since Sherlock is still discovering who he is, and what truth means to him, we can have a bit more freedom in terms of what decisions he might make. This can also impact gameplay itself, which once again opens up our creative juice taps, too.

You're coming up with a part of a classic literary character that's never been seen before – how much pressure is there to do Sherlock justice?
There is a bit of pressure, we won't lie. We do want to give this character justice, and

we also want fans of Sherlock to feel that we did well by him too. Every time you go outside of canon, which we certainly are with *Chapter One*, you fight with people's own imaginations of what their favourite character might've been, done, looked liked, behaved, etc. We hope people will like our version of a young Sherlock Holmes and that it might align with theirs. And if it's not, they'll still appreciate our take on their hero.

Is it all on you, or does the Sherlock estate get involved at all?
We are the ones making all of the design decisions with our Sherlock Holmes. However, we have to say that it is great to work with the Doyle Estate and the fact they

Sherlock title, *The Devil's Daughter*, Holmes is a paternal figure and we see what type of parent he could've been. So each iteration of the character is slightly different. However, there are quirks and personality traits of Holmes that we cannot abandon. He's the greatest antisocial detective the world has ever seen, and there are reasons why we love this character so much. If we were to leave them out, we'd lose the essence of the character itself, and that's the last thing that we want to do.

Speaking of Frogwares' past *Sherlock* output: is there a specific series high point for you? A title by which all other Sherlock games are measured?

"I feel we achieved something great with *The Sinking City*"

trust us with our creative decisions means a lot to our studio.

You've been custodians of the video game version of Sherlock Holmes for a long time now – how has your approach to the character changed?
Each 'version' of Holmes is us taking a different take on the character in some way. For example, now in *Chapter One*, we are working on young Holmes. In our previous

That's a hard question to answer as we always try to make our next game the highlight of our studio. There have been some games that we feel we broke a ceiling with. *Crimes & Punishments* is definitely a title of ours that has received a lot of critical praise from both the press and players. It's still one of our highest-rated games ever. I also feel we achieved something great with *The Sinking City*, where we as a studio were able to create a true open-world game. ➡


⌃ Figuring out the whys and hows of any mystery is key, and Holmes is already an expert at supposition.

LICENCE-FREE

Frogwares has, for the most part, worked on Sherlock Holmes titles, but that hasn't been the studio's sole focus. Periodically in its history, we've seen titles release that were either riffs on the Sherlock formula, though lacking the characters and setting, as in 2019's *The Sinking City*. We'll avoid discussion about the Nacon controversy on that one for now (the internet has all the info you need). Or Frogwares' non-Sherlock releases were… completely unexpected, like 2013 release *Magrunner: Dark Pulse*. A first-person puzzle game with bright visuals and 'Magtech'-based puzzle-solving (a glove powering magnetic surfaces, essentially), *Magrunner* was a million miles from any of the team's *Sherlock* outings. Variety, spice, life, and all that.

^ Fair to say this hotel is not affiliated with the Ibis chain.
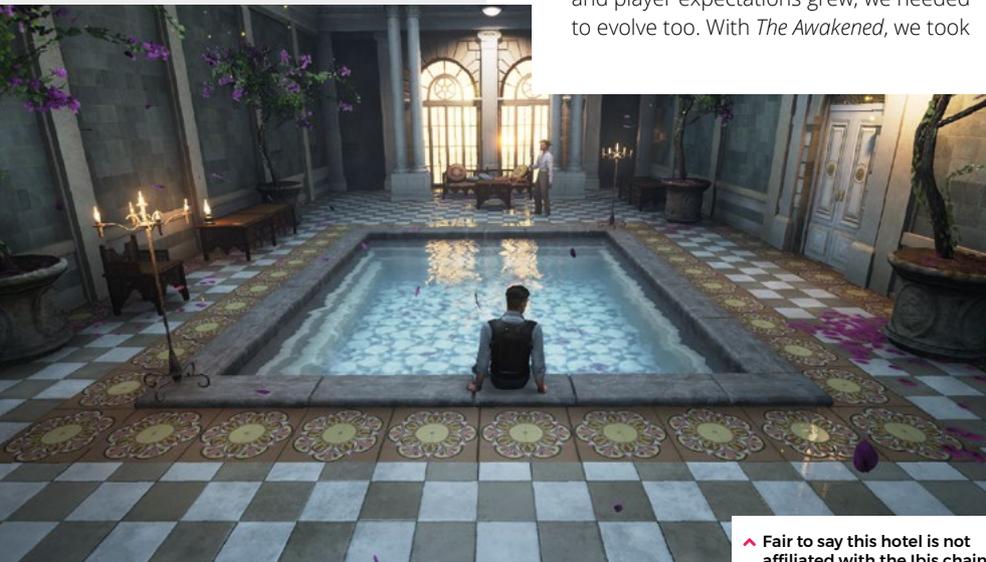
That was a bit special to us as it made us feel that we can explore gaming beyond level-based designs. And *The Testament of Sherlock Holmes* showed us that making a grand, bigger-budget Sherlock adventure can also be a mainstream success.

How have you grown/changed/modified as developers over the years?

Every project we work on teaches us something new. Either about ourselves, about gaming, tech, production, business, design, and so on. We always aim to be better than the previous game we've made, yet we try not to stray too far from the boundaries of our forte, so to speak. We make investigation games. That's our niche, our 'thing', what Frogwares is known for. Investigation and mysteries, that's the common thread in our games. Over the years, we tried to evolve what an investigation and mystery game is and could be. Sometimes our experiments work, such as the Mind Palace mechanic we introduced in *Sherlock Holmes versus Jack the Ripper*, while some not so much, such as certain QTEs. It's all part of growth and getting better at your craft.

Looking back since our first Sherlock Holmes game from all those millions of years ago, we've grown a lot. At first, we were making classic point-and-click types of games. But then, as technology evolved, and player expectations grew, we needed to evolve too. With *The Awakened*, we took

^ Investigating items yields clues which can then be followed up on with suspects, or simply linked to other clues you know or later discover.

gameplay to an entirely real-time rendered 3D environment. We also introduced a third-person camera to our productions. People's tastes matured as well, so we made our games more mature, both in themes and showing a little bit more of the gore on screens. We adapted together with the industry and players. Each game is a different lesson for us. Each one holds a special place in our studio's journey. Each is a stepping stone to the next game.

What's your favourite feature in *Chapter One*?

The disguise mechanic. It's something new that we've implemented and it's another tool, another way to engage that real-life feeling of intuition in players. It also helps us to play around with the idea of how people might treat you depending on how you look. Perhaps a police officer won't give you any info if you look like a lower-class street punk, but dress up in an aristocratic get-up and who knows what information might flow from the officer. It's fun coming up with new gameplay mechanics. It's the part of the creative process that gives you the most joy. It'll be interesting to see how players will react to it once they play it for themselves.

I'm also proud that we created an ethnically shared world and that we could play our part in having Black or Turkish actors playing characters in the game.

How many are working on the game?

There are over 90 of us working on this game. For a production of this scale, we need a certain amount of people to pull this off. However, we are a nimble bunch, and I'm amazed by some of the tools that our people come up with to make our work easier and more efficient. We base our working relationship on mutual trust

and respect. As with any relationships, communication is key.

Since we moved to Agile development in 2016, it allowed us to have a no-crunch policy, and we haven't worked a weekend for the last five years. While the team is rather modestly sized for an open-world game, our organisation allows us to develop with less stress and tensions than before, which is important for overall mental health and avoiding burnout.

How has the pandemic impacted development, if at all? What has it changed?
It impacted us and changed the way we work forever.

I'm sure everyone has a similar story, but working from home during a pandemic has its challenges. We were in full lockdown, meaning that we couldn't leave our apartments except for food and a little bit of exercise. This non-stop sitting at home did impact people, both physically and emotionally. Not being able to see the people you work with, not being able to bounce off ideas in person, that was a challenge too. However, we always had an agile process approach, and that fits well with remote work. Now we have to think about what to do next once 'normal' comes back. Do we need to come back to commute time again and forced presence at a designated physical location? There's a lot that we have to explore, which includes work-life balance, work organisation, social work life, and more. However, the pandemic has definitely changed how we work. And that isn't necessarily a bad thing…

What have you learned from your experiences making *Chapter One*?
Well, I guess we will find out a lot of our lessons once the game is out; we sit down, take a breather, and think about what has happened over the past two and a bit years. Best lessons are learned after the event, and there's still a bit of time ahead of us before the release. However, we have picked up a lot of valuable lessons, both from a production point as well as from

the business side of making games. Every day you become wiser, and your anecdotes bank gets filled up with new material. But we would love for you to ask us this question again a few months after *Sherlock Holmes Chapter One* is released. We'll have quite a lot of anecdotes ready for you, I'm sure!

What are your hopes for the game once it releases?
There are a few hopes that we have deep inside for *Chapter One*. First, and the most important one, we hope that players will really like it. I know that it's a bit of a cookie-cutter response, but for a game developer, it does mean a lot when players react well with the game they've made. It gives you a feeling of self-satisfaction and a job well-done. Of a purpose fulfilled. We also hope that *Sherlock Holmes Chapter One* will receive critical acclaim, with awards being

thrown at us left, right, and centre! I joke a little bit here, but we do hope that our game will strike a chord with critics, too. And from a practical business side, we hope that the game will be financially successful, and allow our studio to develop the next project, and the next, and so on.

Personally, I hope that the people that are working on this project can be proud of that fact. I hope that they can have their heads held high, feel that they've made

"Each game holds a special place in our studio's journey"

some wonderful memories during this time, and when the credits roll and they see their name, they will have a smile on their face. I hope for that just as much as all the other reasons above.

Are you confident in your take on the young detective?
I can honestly say that we are doing our very best. That's all that we can do. If at the end of the day we can say to ourselves that we did absolutely everything we could in the best possible way, then that's all you can do.

Whatever happens next is outside of your control. And if people resonate with your work, then it's a blast to feel. ⓦ

Sherlock Holmes Chapter One **releases late August for PC, PS5, XB S/X, PS4, and XBO.**

OlliOlli World

While Tony renovates his warehouse, Roll7's flow-focused trick-runner is heading out on a grand road trip

Info

GENRE
Pure grind

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

DEVELOPER
Roll7

PUBLISHER
Private Division

**RELEASE**
Winter 2021

SOCIAL
@OlliOlligame

"The story of *OlliOlli World* takes place on the fantastical island of Radlandia – the ultimate skate utopia. Legend has it that Radlandia was created by the immortal skate gods. These celestial skateriarchs carved the mountains, grinded the deserts, and kickflipped the beaches forming Radlandia's mighty districts." It's not what you'd expect from one of the developers at Roll7, at least not when talking about the third entry to its award-winning skateboarding series. But then *OlliOlli World* isn't quite the same as the staid skaters of Roll7's console and handheld past.

The core remains: *OlliOlli World* puts you in control of your skater protagonist as they push, ollie, and grind their way through a series of ever-more challenging courses, tricking along the way and trying to push that score meter ever-higher. It's mostly handled via one button to push and the left stick to pull off tricks, and is based heavily on timing and nailing the flow. While not *instantly* gratifying, it is something you pick up quickly enough and thoroughly enjoy soon after that. That's all the same.

This time around, however, you're on a strange island made up of numerous distinctive biomes, attempting to impress in each enough that you're taken to Gnarvana in order to pass challenges set by the skate gods, with the ultimate goal of possibly becoming the new Skate Wizard of Radlandia. Again: it's not *quite* the same as the original two games.

This explosion of colour and character has helped things hugely, though – it's not like *OlliOlli* or its sequel looked bad; it's more that they were just functional. Cool, sure, but ultimately functional. *OlliOlli World* splashes joy all over the screen; it's bright and cartoonish with stylish, sometimes almost-flick-bookish animation. Each region is full of fellow skaters, be they from your team/group of friends or otherwise, as well as the locals – ghost trees, giant frogs, walking ice creams, and more. You're travelling by too quickly and concentrating too closely on upcoming obstacles to really pay close
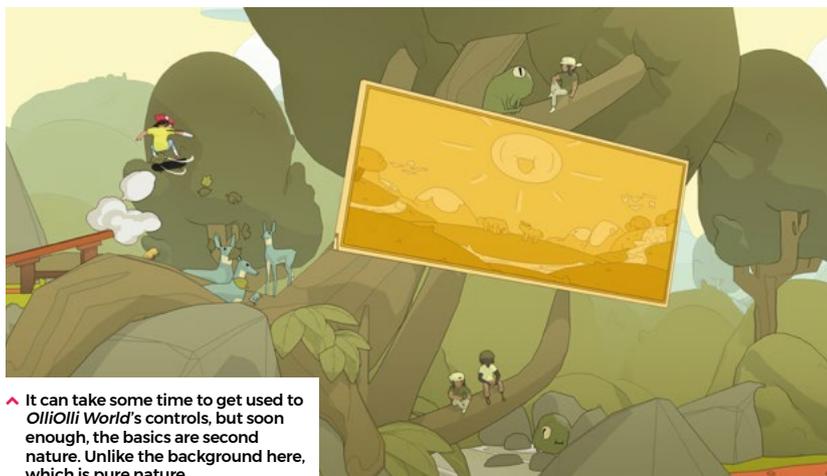
▲ It can take some time to get used to *OlliOlli World*'s controls, but soon enough, the basics are second nature. Unlike the background here, which is pure nature.

> **Chiffon**
> Totally true, I'll be there like a magical checkpoint along the way... if you need me.
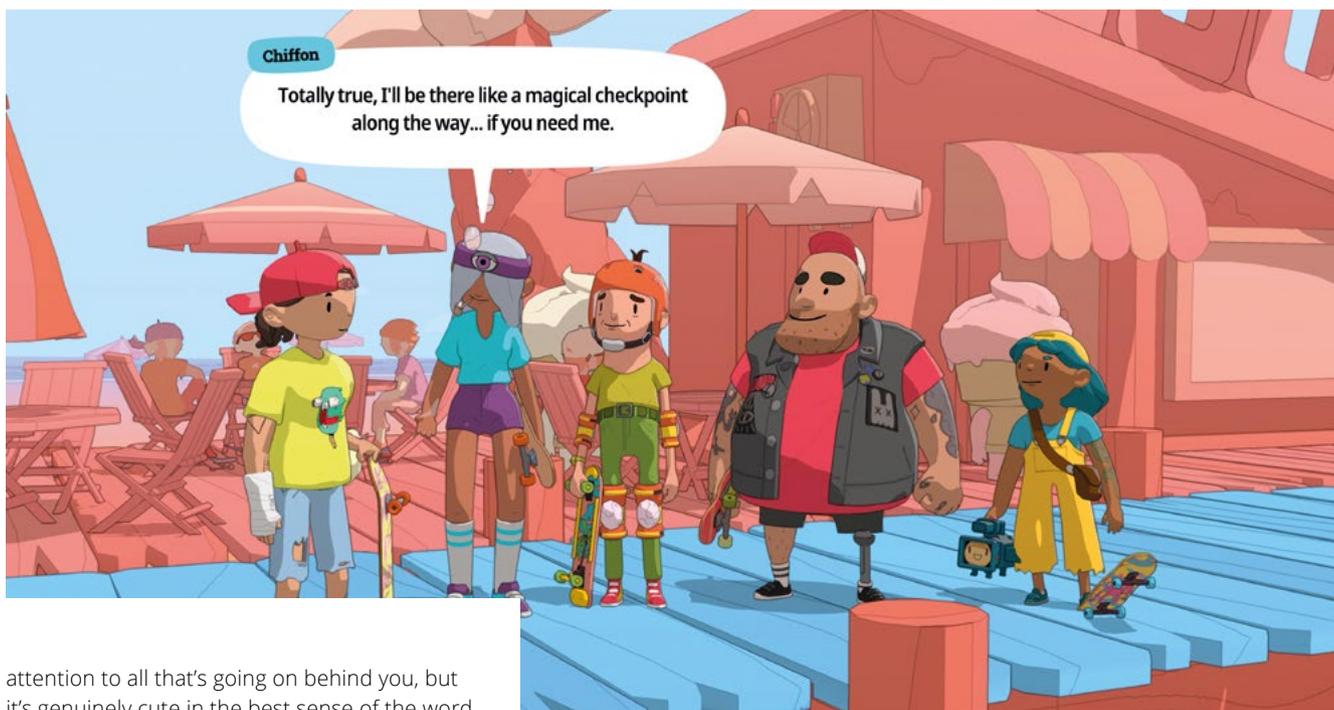
attention to all that's going on behind you, but it's genuinely cute in the best sense of the word, and evokes a strong *Joe Danger* vibe. That's another plus, in case you're wondering.

Skating is still key though, and as stated, that core design remains. Playing through an early demo version of the game, two things quickly became clear: one, Roll7 has honed this system to something approaching perfection; and two, *some of us* might have forgotten how to play the ruddy thing after not picking the series up since the first game's spectacular PS Vita debut back in 2014. But the single-stick simplicity works in *OlliOlli World*'s favour and, soon enough, you're worrying more about pumping out high-scoring combos and using as many different grinds as possible in a run, rather than about remembering how to ollie. It really does harness the 'flow state' Roll7 likes to talk about so much – your brain almost switches off and it becomes about the cleanness and purity of the run, only snapping back to reality when a mistimed flick of the stick lands you in a candy-pink bush off the track and you have to (instantly) go back to the last checkpoint. It's captivating, that's for certain.

And back to the world itself – this bright and beautiful backdrop isn't just that: it's a new world and a new way of doing things. You're on a road trip with your crew of friends (and chief supporters), making your way from one location to the next and tricking by attempting to beat high scores. But you're also able to take on quests from non-player characters, and there's

"The third entry is about making the experience bigger, brighter, bolder"

a bit of story behind these extra people (and shifty frogs) you encounter along the way. Again, it's not something that's changing the core of the experience, but it is fleshing out this new form of presentation into something more than a mere visual shift. It feels like there's a lot more that's gone into *OlliOlli World* than just a 'Let's make it more colourful to lure people in' – the entire game is focused on this new presentation and embraces it wholeheartedly. There's even a huge emphasis on support and positivity from characters; a far cry from the lone hero fighting against all the odds narratives seen in... well, games that aren't about skating in worlds full of sentient ice creams.

It was only an early version of the game played for these pages, but already *OlliOlli World* is looking very strong. It's fair to say it's not a sequel many expected, nor is it a direction you might have expected from Roll7, but it looks to be coming from the right place. This third entry is about making the experience bigger, brighter, and bolder – but at the same time, it's about making it more welcoming and accommodating for those who might otherwise have avoided the series. It's not the place to call a game's fortunes so early on, but it's going to take a bail of spectacular proportions for *OlliOlli World* to actually go off the rails at this point. ⓦ

PLAYING THE OLDIES

It's still well worth getting into the original *OlliOlli* or the second game *OlliOlli2: Welcome to Olliwood* – and you don't have to be rocking a PS Vita to get in on the action. The first game is available on all current consoles (via backwards compatibility, of course), including Switch, and also PC and Android. The sequel is on the same formats minus Switch. Whichever one you get, you're guaranteed a captivating, skill-focused, and minimalist take on skateboarding. They're ace, and highly recommended.

Rickville
Besieged

Talk to Titus

King's Bounty II

Bypassing a Legend to follow up a legend

King's Bounty II isn't the sequel to the King's Bounty titles you may have heard of – the series of tactical grid-based fantasy RPGs starting with King's Bounty: The Legend in 2008 and making its way through numerous expansions and spin-offs. Instead, this new entry bypasses The Legend and heads straight to 1990: King's Bounty, the tactical RPG made by Jon Van Caneghem and New World Computing. 1C's latest entry is the direct sequel to that three-decade-old original, as well as being the first time the developer/publisher itself is handling the duties of making the game.

What you're met with is a curious mix: the hexagonal combat grids for your turn-based battles will be familiar to King's Bounty veterans, and there are regular bursts of colourful magic lighting up the field or fantastical units – human and otherwise, alive or undead – springing up

to clash. But it's all mixed in with a far more muted, regular presentation when compared to The Legend spin-offs – it would be easy to get King's Bounty II mixed up with something like Kingdom Come, say, so long as you ignore the reanimated skeleton warriors raining down arrows on soldiers. It's similar to what fans of 1C's version of the series know, while also being different enough to raise eyebrows.

The decision to change things up was down in most part because of the need to design King's Bounty II with a console market in mind: "When we were sitting and thinking about how to make a King's Bounty sequel, firstly we decided it couldn't just be PC, it had to be console too," says Nikolay Baryshnikov, 1C's boss. "Once we had consoles involved, that [changed] some of the approach to game design."

This is 1C's first go at making a relatively big game, so there have been significant changes behind the scenes of the Russian studio. "It's not an indie game anymore," Baryshnikov says. "We have a fairly big studio – almost 150 people working on the game – and I believe gamers now have specific expectations when it comes to RPGs like Kingdom Come or The Witcher or Mass Effect, so we couldn't propose another budget-looking game. That was the huge change."

Other changes were introduced in order to mix up old and new – elements like line-of-sight factoring into battles, say. And already 1C is looking to the future of the series, with plans

> **Your tactics in combat will change depending on many factors – your units, your ideals, your enemies, and so on.**
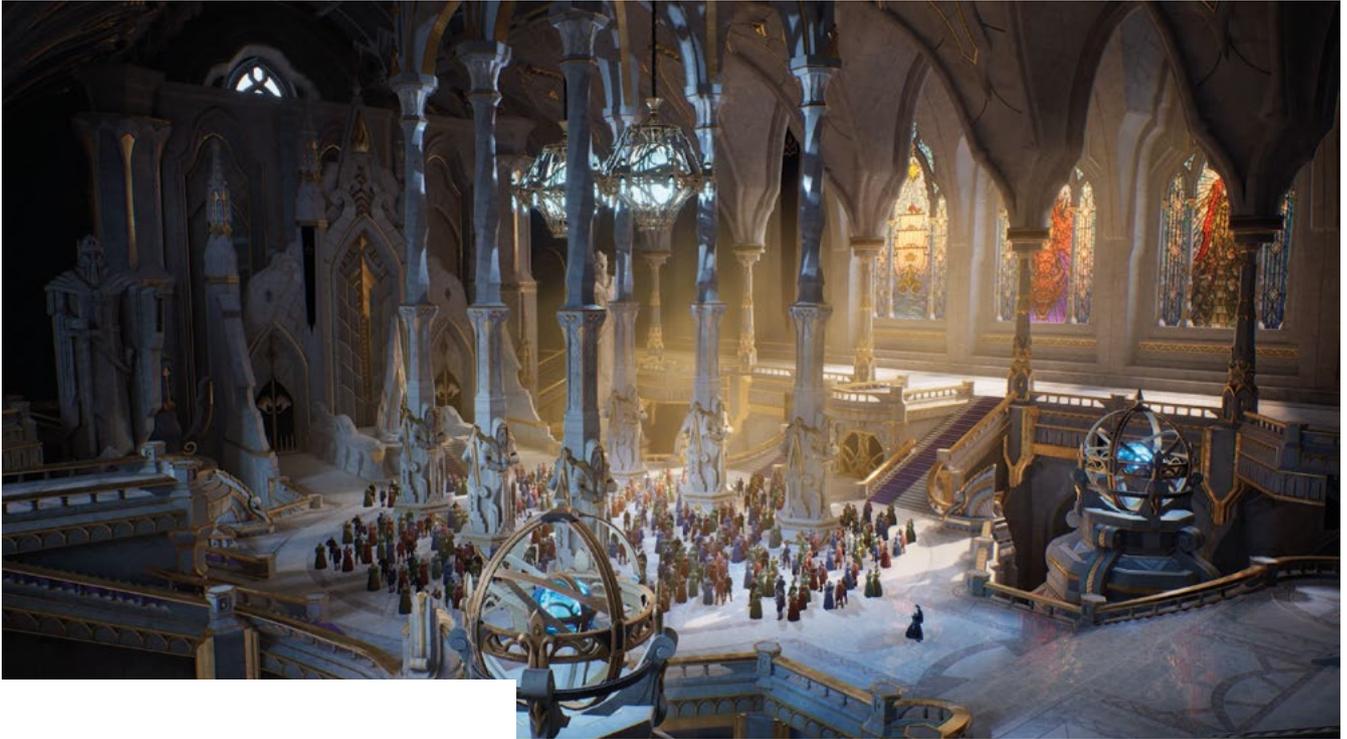
in motion for post-launch DLC that adds battle mechanics and changes significant elements in and around the game. "It should prompt people to play the game again," Baryshnikov says. "I hope we're working on the game for the next ten years, expanding on and supporting the game, adding locations, monsters, armies, items, battle mechanics, and so on."

But we certainly shouldn't bypass what's in the game from day one – players choose one of three characters, each essentially representing a class, and the story for each will take you on a different route through the world. "It greatly adds to replayability because playing with different characters is a lot of fun," Baryshnikov says. "Plus having the same character but playing with different ideals is almost like having multiple sub-classes." Ideals are character traits the player decides on as they progress, taking the place of a binary good/bad morality system. Focusing on certain ideals leads to different perks as well as more (or less) effectiveness with different types of unit – a boost if your ideals go well together, a debuff if not.

It doesn't blow you away at first glance – it's nowhere near as colourful and fantastical as *The Legend*, and that *is* going to be something of a disappointment to fans coming from earlier *King's Bounty* games. But the game beneath still ticks a lot of boxes, and a wide-ranging RPG (though, again, not open world) is a distinct

> **"I hope we're working on the game for the next ten years"**

step up in what you're actually getting up to in *King's Bounty II*. Best of all though, this is the first console release since the original game appeared on Mega Drive – though that also meant more work for 1C. "The Switch specifically added a lot of additional technical complexity," Baryshnikov says, "because we had to push all the boundaries to get such a big game experience on a weaker hardware platform. Plus, again, working on multiple platforms at the same time, having release dates at the same time, that was a challenge."

Then there's the challenge we've all faced: the Covid-19 pandemic. A lot of work went into decentralising development; at the time of writing, the team hasn't been in the office since 16 March 2020. "When you have five programmers grabbing a smoke and discussing a feature, that's one thing," Baryshnikov says. "When you have 50 people in Discord or Slack discussing specific elements, that's a different story. Organising all the equipment, the dev kits, the VPNs... one of the reasons we had to delay the game's release was because of the Covid-related impact."

The delays are behind 1C now, though, and it's nearly at the finish line. *King's Bounty II* may be a different take from what some might have expected, but by taking a more traditional route, the studio may well be onto something. ⓦ

X-COM TO XCOM

Fans of *King's Bounty: The Legend* won't necessarily recognise *King's Bounty II* in its style and mechanics, but Baryshnikov puts it into relatable gamer terms: "If you play a game like *X-COM* in 1994 and then *XCOM* from 2012, the difference would be like this," he says. "It's a complete rethinking, a revolution without destroying the core gameplay aspect, which is the tactical battles. For me, *XCOM* is a huge inspiration in terms of how you can evolve a franchise. I played the original *X-COM* back in the nineties for thousands of hours, then I played the new generation *XCOM* for hundreds of hours – it's different, but it perfectly matches current-day gaming standards."

Status
222/222

Jack Move

Designer and programmer Edd Parris talks us through
his cyberpunk ode to classic JRPGs

The games industry's a fast-moving place at times, but paradoxically, working in it can require a huge amount of patience. Just ask Edd Parris, sole developer at So Romantic: his JRPG-inspired cyberpunk, *Jack Move*, began life almost a decade ago. It was 2012 when he started working on its battle system as a hobby project; it would be several years before Parris got to work on the game full-time, found a publisher, and *Jack Move* really got going as a commercial title.

When *Jack Move* got started, Parris was still working at Mediatonic, the *Murder by Numbers* and *Fall Guys* studio that recently got snapped up by Epic. "I was a server engineer on mobile games, so while I was helping to make games, I was working on the parts you don't see, like saving your game, leaderboards, and in-app purchases," Parris tells us. "I wanted to learn how to do all the cool fancy stuff, so I started working on a small prototype of a turn-based battle system. At the time, there weren't that many turn-based Japanese-style RPGs – my favourite type – so I thought that would be a fun place to begin."

Parris quickly settled on a cyberpunk theme for his RPG, though the plot – about a plucky computer whiz whose father's kidnapped by a shadowy corporation – didn't start to coalesce until a year into development, when Parris was enjoying a spot of lunch with narrative designer and critic, Cara Ellison. "She suggested a sassy girl hacker like Angelina Jolie's character Kate in the film *Hackers*," Parris says. "This would be much more interesting than the usual gruff dude type like in *Deus Ex*, etc. Her character has changed a lot since then, but Noa is still that sassy hacker at her core."

The cyberpunk setting means that Parris has been able to have all kinds of fun with the aforementioned battle system. In place of magic, Noa's equipped with a 'cyberspace deck' of software, which has different abilities she can switch between on the fly. Battles are turn-based yet timed, giving them a snappy, urgent feel, which is underlined by the titular Jack Move:

Noa
Another day, another dull data heist... This is it? Where do you even find these jobs?
OK

⌃ You're only ever fighting as a party of one, but the surprisingly deep battle system means you can constantly switch combat roles during bouts.

❯ Writer Amalie Kae ensures that hacker protagonist Noa has plenty of sassy dialogue.

▲ *Jack Move* **may look 2D, but its environments are really designed like this.**

a bar that fills each time you deliver or receive a blow. Once it's full, you can activate your Jack Move, essentially a special attack, by completing a rhythm-action minigame. The battle system is, Parris says, his "love letter" to the *Final Fantasy Series*. "*VII* was the first JRPG I played, and I fell in love with that turn-based 'Active Time Battle' system, so I really wanted to make my own little love letter to that," says Parris. "*Final Fantasy X* is another one in the series that I really love – in fact, it probably has my favourite battle system of them all. I really love the rock-paper-scissors/chess-like nature of it, which forces you to try and pick your opponents apart systematically."

In terms of visuals, *Jack Move* looks less like a PSone-era *Final Fantasy* game and more akin to something on the Game Boy Advance. This is no coincidence, since GBA classic *Golden Sun* was another influence on *Jack Move*. But while the game looks like a traditional 2D game in stills, with some sumptuous art and animation courtesy of Joe Williamson, the environments are actually 3D. "We use Unity for the game engine," Parris explains. "I've written a ton of custom tools for it, including a '3D' tile mapper. The overworld is 3D in order to take advantage of the proper lighting models, but to keep those pixels crisp and square, we use a forced perspective trick using an orthographic camera. We stretch the world out in the Y and Z axes, everything then gets pulled back into shape by the angle of the orthographic

> ## "I started working on a prototype of a turn-based battle system"

camera which sits above the world. Unity also gives us a ton of cool stuff like post-processing effects which we like to slap on everything to give it that really modern look."

Playing through an early build, and it's striking how cleanly *Jack Move* marries old and new; its pixel art and palette (see box) may recall the GBA era, but its lighting and shadow effects wouldn't have been possible on old handheld tech. Similarly, its exploration and battles feel apiece with the traditions of a classic JRPG, but with witty, modern writing from Amalie Kae, and similarly current quality-of-life options, like the ability to turn random encounters off if you just want to explore without the grind. Nor will *Jack Move* be one of those vast RPGs that outstays its welcome, Parris says. "We're aiming for a campaign that's about 8-10 hours long, not a 40-hour epic like you might expect from a JRPG. This is mainly scope, but also because I'm getting old and I don't have the time outside of work and family to play these long games anymore. I'd much rather experience a whole bunch of really solid 8-10-hour games than one 40-hour slog."

Jack Move's been in the making for around nine years now, but the effort's beginning to pay off – with its systems all in place, the remaining work largely comprises locations, cutscenes, and NPC sprites. Based on what we've played so far, *Jack Move* promises to be a thoroughly charming take on a much-loved genre. ⓦ

CHARACTER-BUILDING

Jack Move's world and characters mix the gritty and the light-hearted, giving the game a feel that's part *Blade Runner*, part Saturday morning cartoon. The process of creating the game's assorted, cybernetically enhanced lowlifes and other quirky denizens is a collaborative process, Parris tells us, as he writes loose character descriptions and then passes those on to artist Joe Williamson for his interpretation. "My original ideas are usually blown out the water by what the animators suggest and come up with. For example, one of the bosses we have is the evil Dr Qadir. His main attack element is 'wetware', which is all sorts of goop and gas-type attacks. I originally planned him to be driving some kind of tank that would shoot you with goop, but Joe came up with the idea that he'd be bouncing on a space hopper that he'd inject with goop which, after one huge bounce, would get sprayed all over you! Way more interesting than a boring old tank."

That was the month that was
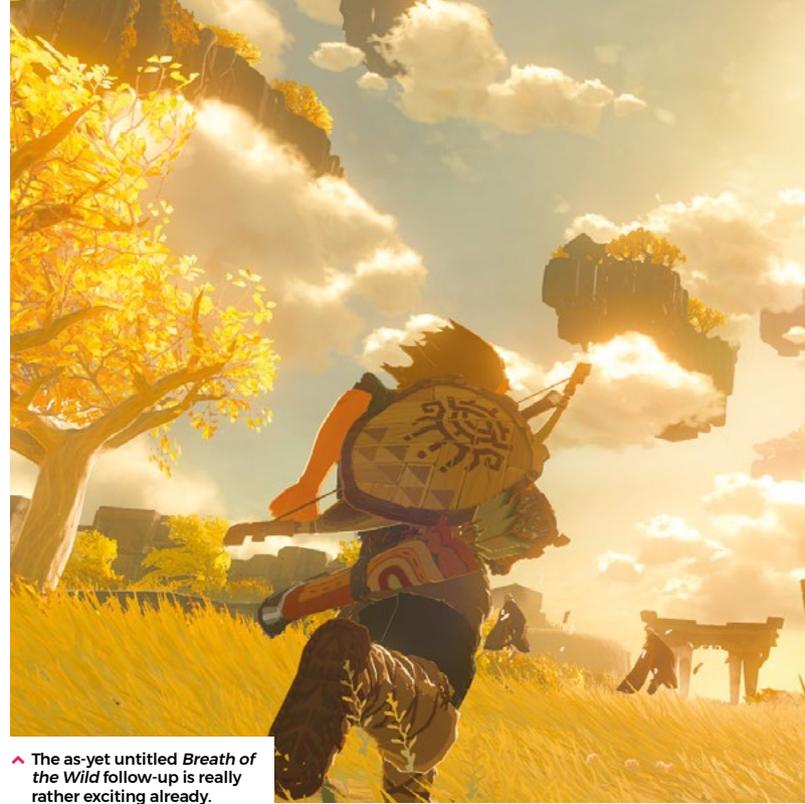
^ The as-yet untitled *Breath of the Wild* follow-up is really rather exciting already.

01. **From E3 to thee**

The Electronic Entertainment Expo returned following its Covid-related hiatus of last year, but the 2021 form proved a much-diluted version compared to recent years. No crowds, no packed auditoriums of *professional journalists* screaming with delight at a bit of DLC being announced, no Keanu. But this pared-back style of show lent itself nicely to the publishers' preferred approach to things, that being: showing off a bunch of games and not having to deal with middling crowd reactions or needing to answer any tough questions along the way. Bliss!

And so, we traipsed through the announcements to round up some of the more interesting snippets that arrived from the likes of Xbox, Nintendo, and others. There's plenty to pique interest

^ *Elden Ring* looks suitably dark and fantastical.

out there, and plenty we're sure to be covering in more detail in future, but this is a good start.

BETHESDBOX

Microsoft – that being Xbox and Bethesda specifically – essentially had the floor to itself at E3, with Sony opting out of this year's event and Nintendo operating its usual hands-off Direct approach. That said, it's not like this presentation underdelivered, with plenty of (expected) Game Pass announcements – *DOOM Eternal* and more coming to the subscription service – add-ons and updates, like the addition of Captain Jack Sparrow to *Sea of Thieves*, and a nice confirmation of *Microsoft Flight Simulator* landing (and taking off) on consoles at the end of this month, 27 July. But the bigger announcements were... well, it felt a bit more like 'proper' E3 at these points, truth be told.

Bethesda's *Starfield* was shown off in more detail, with a confirmed release date of 11 November 2022, and chat of it being '*Skyrim* in space'. *Forza Horizon 5* showed off its trip to Mexico and got us all hot under the collar, because it does look phenomenal. *The Outer Worlds 2*

was confirmed as being in the works at Obsidian, so there is some good in the world still. And Arkane Austin showed off its next title, *Redfall*, which is an open-world shooter where players can go it alone or team up against a bunch of marauding vampires. On its own, it might not sound mind-blowing, but this is Arkane we're talking about, so have a look and realise why we're a bit keen on it: **wfmag.cc/FedRall**.

NINTY

The 'getting it out of the way' announcement of *Tekken*'s Kazuya coming to *Super Smash Bros. Ultimate* was well-received, and there were some other things shown off by the Big N – a new *WarioWare*, DLC for *Mario Golf: Super Rush*, confirmation of ports for titles like *Worms Rumble* and *Guardians of the Galaxy* to Switch. But really only three things mattered here: *Metroid Dread*, the resurfacing of the once-dead *Fusion* sequel, will be the first new 2D *Metroid* game in almost 20 years, developed by MercurySteam. *Advance Wars 1+2: Re-Boot Camp* sees the classic turn-based strategy game done up for the modern era. And, of course, *The Legend of Zelda: Breath of*

Cyberpunk 2077 returns to PlayStation Store; PS4 Pro/PS5 recommended

Insomnia festival organiser acquired by Supernova Capital

▲ Arkane's *Redfall*: apparently fun with or without friends. Choice!

the Wild's follow-up – whatever it's going to be called – got a chunk of new footage for us all to salivate over. Link now flies and glides more than ever before, he's had a new haircut, and there's some sort of cybernetic arm on display, making this the *Zelda/Terminator* crossover we never knew we wanted. We've been poring over this one because it's nigh-on guaranteed to be a doozy – have a look yourself here: **wfmag.cc/Zeldargh**.

YOUBEE

The company might still be dealing with the fallout of numerous allegations against members of staff, but that didn't stop Ubisoft from putting on a brave face in spite of it all. Bless them, the real heroes of the story. DLC for *Assassin's Creed* and some other nonsense for *Far Cry 6*? Check. Cool. Sorted. More shown off for *Rainbow Six Extraction*? Of course, but that's not going to be interesting until two years after it releases, if the last *Rainbow Six* is anything to go by. More interesting though was *Mario + Rabbids Sparks of Hope*, the unexpected sequel to one of the Switch's unexpectedly great games, which was unexpected. And, of course, Ubi also showed off its work so far on the James Cameron tie-in, *Avatar: Frontiers of Pandora*, which featured much pre-rendered-looking stuff and a setting in which the humans are the baddies. So, much like at Ubisoft HQ then, *zing*. Trailer, here: **wfmag.cc/PandoraFrontiers**.

PRE-3

Just before the convention (minus much convening) got going, the Summer Games Fest showed off a few ignorable things like yet another trailer for long-delayed gamer-bait movie *Free Guy*, and a trailer for the director's cut of future-Hermes simulator, *Death Stranding*. Two standouts did emerge though: first up, Frontier is making *Jurassic World: Evolution 2* and, importantly, Jeff Goldblum is involved once, uh, um, once more. Secondly, *Elden Ring* was finally shown off in non-leaked trailer form, and the combo project between FromSoftware and George R.R. Martin is looking both exactly as you might expect it to, but definitely pretty darn swish all the same. Check it out: **wfmag.cc/Elden**.

OTHERS

Capcom has started work on DLC for *Resident Evil Village*, while on the hardware front, the Intellivision Amico showed off a trailer that made the console oddball look… alright, actually. Still not sold on it, but we'll see there. Warner confirmed *Back 4 Blood*'s open beta would be running from 5 August, anyone not involved there will surely be *left for dead*, ho ho, hee hee. Square Enix showed off some honestly rather underwhelming footage from its upcoming *Marvel's Guardians of the Galaxy*. Gearbox, meanwhile, announced a *Borderlands* spin-off in the shape of *Tiny Tina's Wonderlands*. It doesn't sound too far away from vanilla *Borderlands*, to be honest, but have a trailer anyway: **wfmag.cc/Tina**.

PRIZEFIGHT

Last, and least, the official E3 awards were announced – voted on by people from publications the world over (though not Wireframe, sadly), the trophies went to the most anticipated games from each of the show's presentations. Overall winner was *Forza Horizon 5*, meaning nobody stared hard enough at *Starfield*, MS and Bethesda bagged the award for best presentation, which was a given, while the likes of *The Great Ace Attorney Chronicles* from Capcom, *Guardians of the Galaxy* from Square Enix, and *Halo Infinite* from Xbox won the individual presentation awards, among others. It will, safe to say, be more enlightening to actually find out about these games over the coming months and years, but for now, E3 did… *a job*.


▲ Non-*Borderlands* game *Tiny Tina* does sound a lot like *Borderlands*, but with more *D&D* in it.

BlizzCon 2021 has been cancelled

Stranger of Paradise: Final Fantasy Origin demo launches corrupted, needs a patch
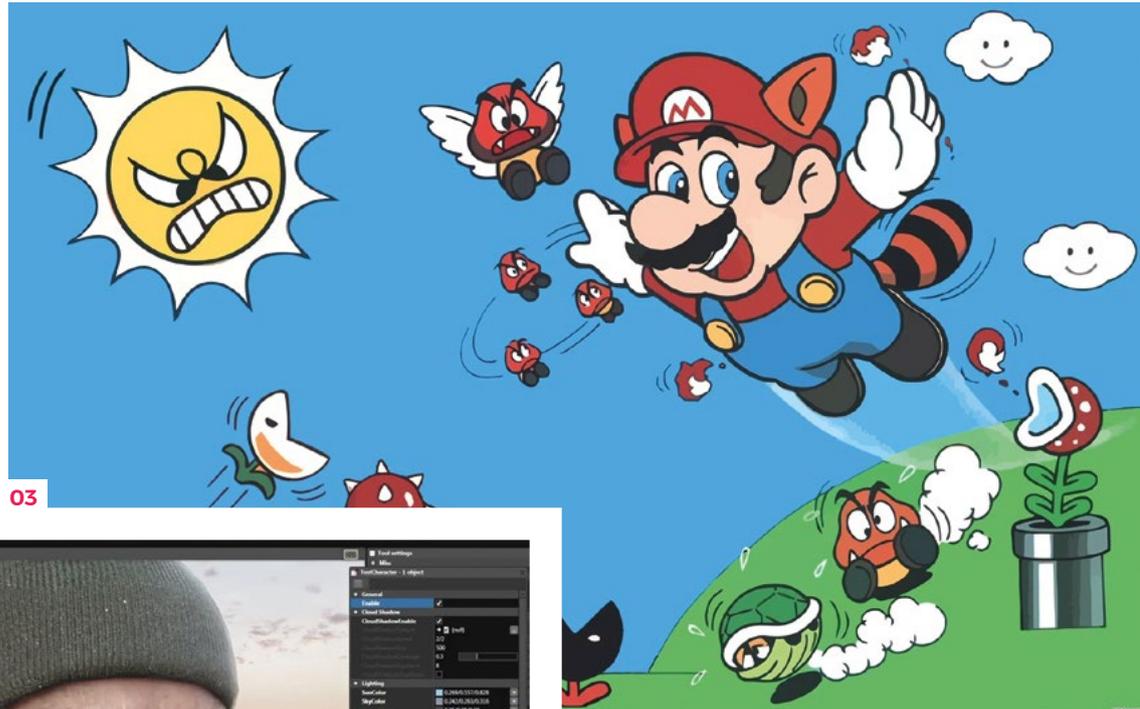
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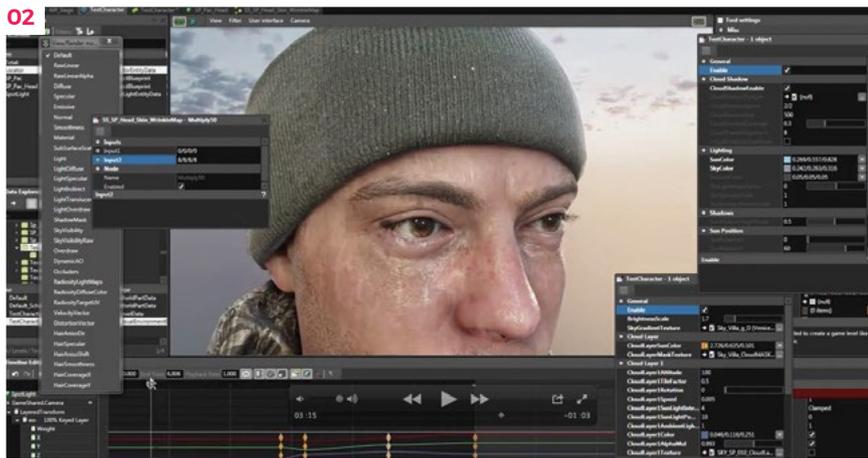
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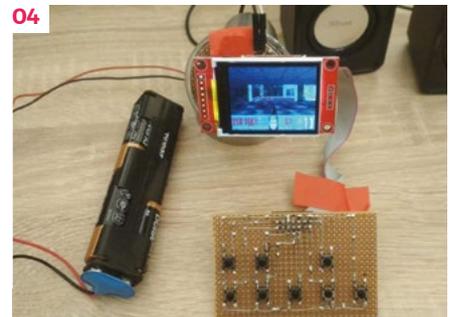
04

02. It's in the hack

EA needs a new firewall, as it was subject of a massive hack early on in June. The breach saw 780GB of data nicked from its digital vaults, including source code for the Frostbite engine, the company's main go-to tech for its games. Dev tools for the *FIFA* series were also nabbed, which could lead to compromised scenarios later down the line should it be combed through by those with the know-how. According to EA, no player or user data was taken in the hack; this has been purely digi-theft of tools and source code. If you do see someone selling a game engine called Frostbote or similar down the pub, let us know.

03. Nintendon't

The takeaway here is: just don't. If you're going to try and take on Nintendo when you've been involved in legally questionable behaviour: don't. The lesson came hard and fast to one Matthew Storman, once-proprietor of dodgy ROM downloads site, RomUniverse. Nintendo had ordered the site closed at the end of 2020, but Storman had decided to fight Nintendo in court over the order, claiming he had done no wrong as he himself had uploaded no ROMs to the site. The court disagreed, and now Storman owes Nintendo £1.5 million ($2.15m). Whoopsie!

04. DOOM updates

Can't go long without them: this month in *DOOM* ports, the classic game has been ported both to a lamp and a GIF. It feels moot explaining any more than that, to be honest, but let's have a pop. First up, the GIF: this delightful experiment offers a crowdsourced *DOOM* played out in GIF form, with players able to input controls, which are added to a queue and carried out later on (see here for more details: **wfmag.cc/Doomgif**).

DOOM on a lamp, meanwhile, is an IKEA TRÅDFRI ZigBee lamp. Running *DOOM*. This stuff is always incredible.

New BioWare manager wants to 'rebuild studio's reputation'

**Dark Horse, the comics company, has opened a games division**

06

05

07

07. Flicking nets

The Netflix of games could finally be upon us, in the form of Netflix. But with games. The DVD rental/streaming/movie and TV show-making empire has reportedly held early talks with game industry execs about a potential move into the video game industry. As reported on The Information and Reuters, Netflix hasn't even decided on how it's going to do things just yet – it's *that* early – but it could be streaming games, an Apple Arcade-like service, or straight-up game downloads via a Netflix storefront – or something entirely different. Or nothing at all. Honestly, there's the hope it will be *something*, as more competition – and choice – is always a good thing. And we need something else to fill the Stadia-shaped hole in our lives.

05. Politicking

Following a quote in which he said *Far Cry 6* would avoid political statements about Cuba, the game's narrative director Navid Khavari swiftly released a clarification in which he basically said 'Actually, wait, no, yeah, it will be well-political'. OK, those aren't his exact words, they were more like: "Our story is political. A story about a modern revolution must be. There are hard, relevant discussions in *Far Cry 6* about the conditions that lead to the rise of fascism in a nation, the costs of imperialism, forced labour, the need for free-and-fair elections, LGBTQ+ rights, and more within the context of Yara, a fictional island in the Caribbean." That's a much better quote, to be honest.

06. Time to Split

Deep Silver confirmed, following years of speculation (and blind hope), that a new *TimeSplitters* game is in development and – best of all – a good chunk of the original development team is on board from Free Radical Design, in the form of new studio... Free Radical Design. Steve Ellis and David Doak are heading up the new team, both of whom worked on the original *TimeSplitters* series. There's going to be a weight of expectation on this one for sure, but it's going to be great to go back to the simpler, arcadier style of FPS the series was so celebrated for. Just please don't turn it into a dour military shooter, cheersta.

Bloomberg reports PSVR 2 coming end of 2022

CCP launches EVE Academy, helping players find career paths in *EVE Online*

Post Apocalypse

Delayed release dates, Avengers, and bad movie adaptations of video games – it's this month's letters...

Issue #51

Blind dates

How entertaining to see the games industry go through the motions in the latest of its annual E3 expos. I've been watching the announcements trickle in, and increasingly I can't help but laugh when a developer announces a release date for a big new game. Appreciating that they're a bit damned if they do, damned if they don't, does anybody actually believe these dates anymore?

I swear that on a board somewhere in the offices of said developers (or more like Google Sheets these days), there's a calendar that puts in the space where the inevitable delay to a new game is announced. Of the games supposedly confirmed to be with us in 2021, how many of the big titles would you actually put a tenner on arriving on time? Outside of *FIFA 22*, I'd not bet on any of them.
D Carter
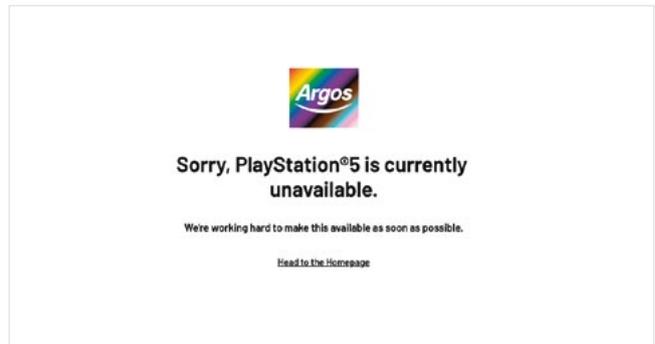
Ryan writes:
Well, as Shigeru Miyamoto once said, "A delayed game is eventually good, but a rushed game is forever bad," so I can see why these things get delayed a lot. Besides, release dates are a nice, aspirational thing for developers to aim for, aren't they? A bit like dreaming of owning a helicopter, or scoring a goal in a cup final, or actually being able to buy a PlayStation 5 in a UK shop.

A game of base Boll

A thought crossed my head the other day, and I could only think of your good selves to send it to: whatever happened to Uwe Boll? That awful filmmaker who made terrible movies of otherwise really rather good video games? Has he got the rights to *The Last of Us* next or something?
David Dobbs

Ryan writes:
The last time I recall seeing Boll in the wild, he was challenging random people to amateur boxing matches – or was that Logan Paul? A quick search of his name, though, reveals that he's still been making low-budget films in recent years without me noticing. It's possible Boll's run of game adaptations ended when he tried to get the rights to make a *Warcraft* movie from Blizzard, who quite understandably turned him down flat. They'd clearly seen Boll's shockingly bad earlier adaptation efforts, like *Far Cry* and *BloodRayne*. If you haven't seen any of those, all I can say is: yikes.

Avengers: Enemy Unknown

I do accept that this is me responding to a rumour and the rumour in question may not come to fruition. However, I'm in a bad mood. I, like many others, have been eagerly awaiting news of *XCOM 3*. I've thoroughly enjoyed the series right the way back to the 1990s, and the modern-day reworkings have been the best value games I've bought in a long time.

Yet according to the rumours that have now popped up, the new *XCOM* game is going to be an *Avengers* crossover. Why? Why? Why? Hopefully it's not true, but if it is, why is it compulsory to tinge so much of modern-day pop culture with Marvel stuff? I like the *Avengers*, I like superheroes, but I also like saving the world from alien invaders one turn at a time. Perhaps this is all the wrong way around: perhaps the more interesting crossover would be if the *XCOM* crew turned up in an *Avengers* film. Maybe they could slap that on the side of a bloody lunchbox.

Yours oldily,
Neil Arthur

Ryan writes:
We can't vouch for the validity of these rumours either because, at the time of going to press, *XCOM 3* still hasn't been officially unveiled. As a counterpoint to your opinion, though, I'd argue that an *XCOM* game with a 1960s espionage theme, and with the likenesses of Patrick MacNee and Diana Rigg if they're affordable, would make for an enjoyable new direction for the series. Wait, what do you mean, "No, not that *Avengers*?"

Shortcuts

With our Game Boy Advance modding guide (see page 50) in mind, we asked Twitter: have you ever modified a console? If so, what did you do to it? If not, what console would you modify, and what would you do to it? Here's what you said...

I had to replace a part in a Mega-CD which easily broke (some specific diode) with a better diode, so it's now INVINCIBLE. For proper modding, I have a spare Wii, which could be a prime candidate. **@RobThez**

I put stickers all over my GameCube, as well as patterns in black marker so that my mother couldn't sell it like she threatened to when I was a bad bean. That counts, right? **@Daley_Kong**

It's not something I usually do but I couldn't resist installing a Terraonion MODE in the Dreamcast. Now I can play Atomiswave arcade games, like *Dolphin Blue* (which never got a console port), at home! **@jellyscare**

I wanna do that thing where you cram a 2TB drive in the back of a PS2 and have every single PS2 game ever on it. Ahem, legally, of course. **@PyronoidD**

I would turn the top of the Xbox Series X into a grill so I can cook bacon while I game. **@JimmyRowe1994**

Nice try, officer. **@GoTeamRobot**

The burning question

We continued our Game Boy Advance-inspired theme in this month's reader poll. We asked: which of the following systems is the greatest handheld console ever? Barcode Battler, you were robbed.
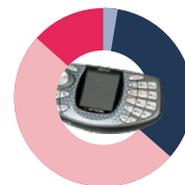
Gizmondo - 17%
Barcode Battler - 31%
Nokia N-Gage - 50%
Tiger Game.com - 2%

Incoming

Goodbye Volcano High ⬆

The coming of age drama, from *Fast Times at Ridgemont High* to more recent fare like *Booksmart*, is a pillar of American indie cinema. *Goodbye Volcano High* brings the genre into the interactive realm – except the twist here is that all the teenagers happen to be dinosaurs. The scaly protagonists are on the cusp of graduation, and bracing themselves for the next stage of their lives – expect lots of romance, friends becoming enemies, enemies becoming friends, and possibly a big asteroid wiping everything out at the end. We may have made that last bit up.

30XX ⬇

Yes, there's a mile-wide streak of *Mega Man* running through Batterystaple Games' action-platformer – it has the zippier pace of the *Mega Man X* spin-offs, specifically – but it's all done with such style and evident affection for Capcom's series that it's still won us over. *30XX* is in Early Access now, so it's one to try out if you love action-platformers.

ANNO: Mutationem ⬆

Yes, it's more cyberpunk, so look away now if you've seen enough benighted streets and flying cars to last you a lifetime. For those who are left, *ANNO: Mutationem* looks like a terrific action-adventure with a glorious anime style that mixes 3D environments with 2D pixel art. You take control of Ann, a futuristic mercenary who pits her combat skills against a world of villains, giant mechs, and what appear to be zombie lizards. No, we've no idea what's actually going on in *ANNO: Mutationem*, but we're quite looking forward to finding out.

Metroid Dread ⬆

One of Nintendo's surprise E3 announcements, this is the first 2D *Metroid* sequel we've had in ages. It's co-developed by MercurySteam, the studio behind 2017's *Samus Returns*. There appears to have been some lessons learned from that game, though, with some refinement to the combat mechanics, while the introduction of stealth, where you have to avoid deadly E.M.M.I. robots, explains the '*Dread*' bit of the title. How it'll compare to all the recent, ace indie games in the genre – *Axiom Verge*, anyone? – remains to be seen, however.

Dustborn

Norwegian developer Red Thread Games previously brought us *Draugen*, a 1920s-set mystery made with stunning attention to period detail. That same level of artistry is on full display in *Dustborn* – a single-player adventure that throws us a decade into the future. It's a road-trip tale, following a group of assorted misfits as they travel across a future America swept by climate change and the spectre of automation – even your dilapidated bus is driven by a cheerful-looking robot. The whole game has the aesthetic of a graphic novel, complete with speech bubbles and onomatopoeic sound effects splashed across the screen. Quite how the developer has managed to come up with such a rich-looking sci-fi world on an indie budget is anyone's guess, but we're excited to learn more about Red Thread's story of love, friendship, and robots as and when we can.


Love Shore

Yes, cyberpunk has become an almost worryingly dominant theme in recent video games, but *Love Shore* at least switches up what happens under the gaudy neon lights. Set in a future world with a major fertility problem, *Love Shore* introduces cyborgs Sam and Farah – a duo with mechanical bodies and human minds. As the adventure unfolds, you'll follow both characters as they navigate their way through parallel lives filled with criminals, biotech corporations, murder, and romance. There are warnings for saucy language and maybe a bit of nudity here and there, so expect a more racy experience than, say, *Beneath a Steel Sky* on the Amiga.
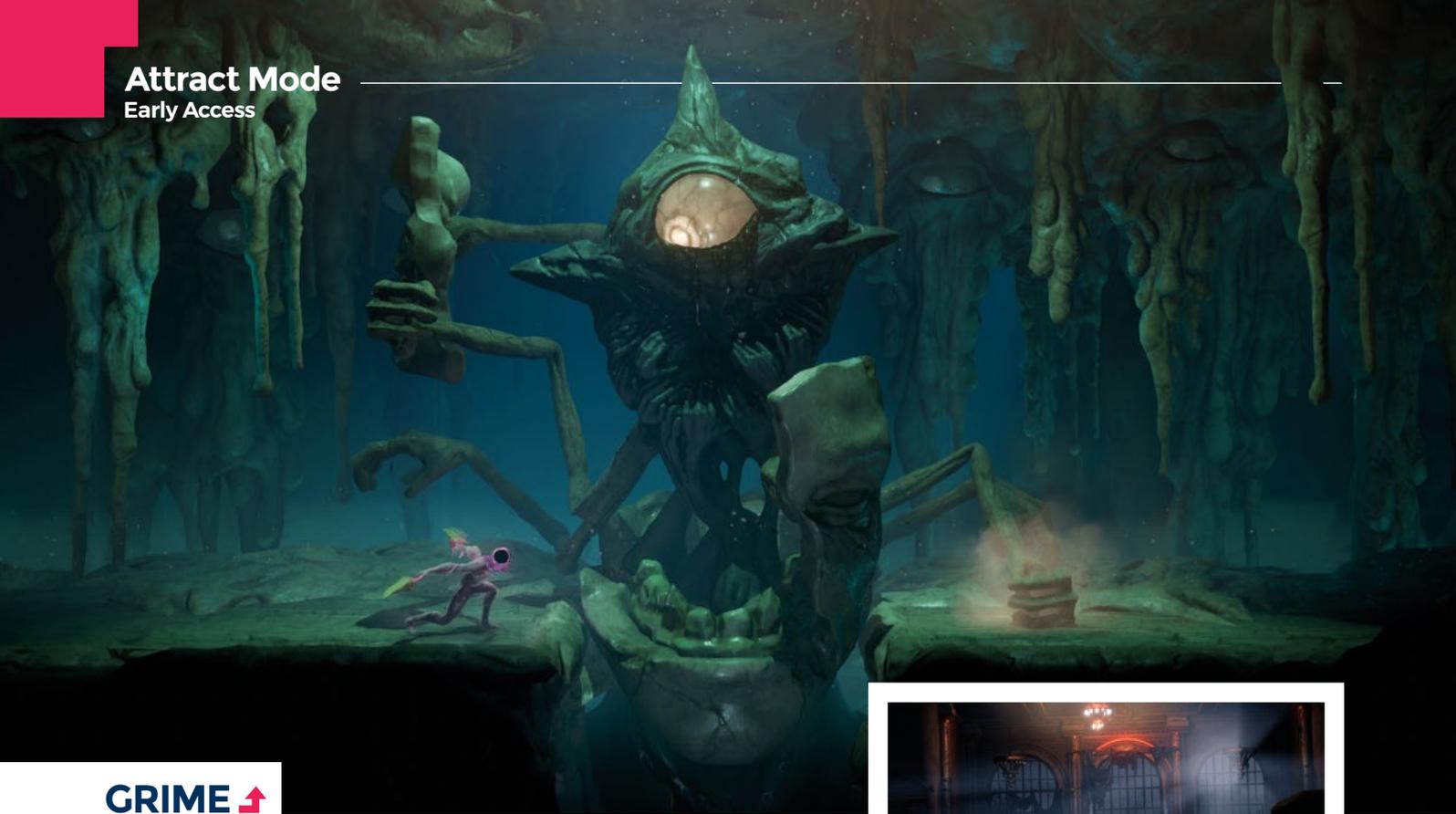
GRIME

Carrion let us live out our dark fantasies of being a shape-shifting hell beast straight out of *The Thing*, and *GRIME* looks as though it'll scratch a similarly nihilistic itch. You play a protean being – possessed with a 'black hole' for a head – capable of absorbing and adopting the traits of your enemies. You can then use those abilities to traverse environmental hazards or beat up yet more unfortunate foe. There are reportedly RPG elements, but from what we've seen so far, the emphasis is firmly on smashing, jumping, and dashing your way through some very dark and surreal environments. Although it's a side-scrolling platformer, *GRIME* takes a 2.5D approach, boasting some pretty cool 3D models and assets – much of the game takes place in nightmarish caves full of spindly humanoid figures and one-eyed, screen-filling terrors. If developer Clover Bite can deliver on the gruesome visuals and intriguing premise, then this could prove to be one of the more creative action-platformers we'll see this year.
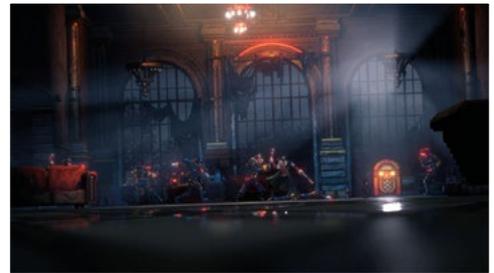

Replaced

A stunning mix of 2D and 3D art, *Replaced* was one of the most striking indie games announced at E3. Set in an alternate version of the 1980s, it's a cinematic platformer that channels the spirit of *Flashback*, while coming up with a style and pace all its own: its use of voxels to create a 2.5D world with actual depth is a sight to behold – and, interestingly, an evolution of a similar approach taken in 1997's *Blade Runner* game.

Caretaker
Hmmm… Can you see the fireflies?

Kabaret

This visual novel hails from Malaysia, and it's steeped in the region's folklore and art style. Having been turned into a monster, you journey into a mystical realm full of mythical creatures. Your goal is to break the curse that stole your humanity, which you'll achieve by meeting and talking to the strange figures you encounter along the way. Developer Persona Theory tells us there'll also be time for 'traditional games' and even a bit of tea-leaf reading. This is another upcoming title with a demo available – you can give it a try at **wfmag.cc/kabaret**.
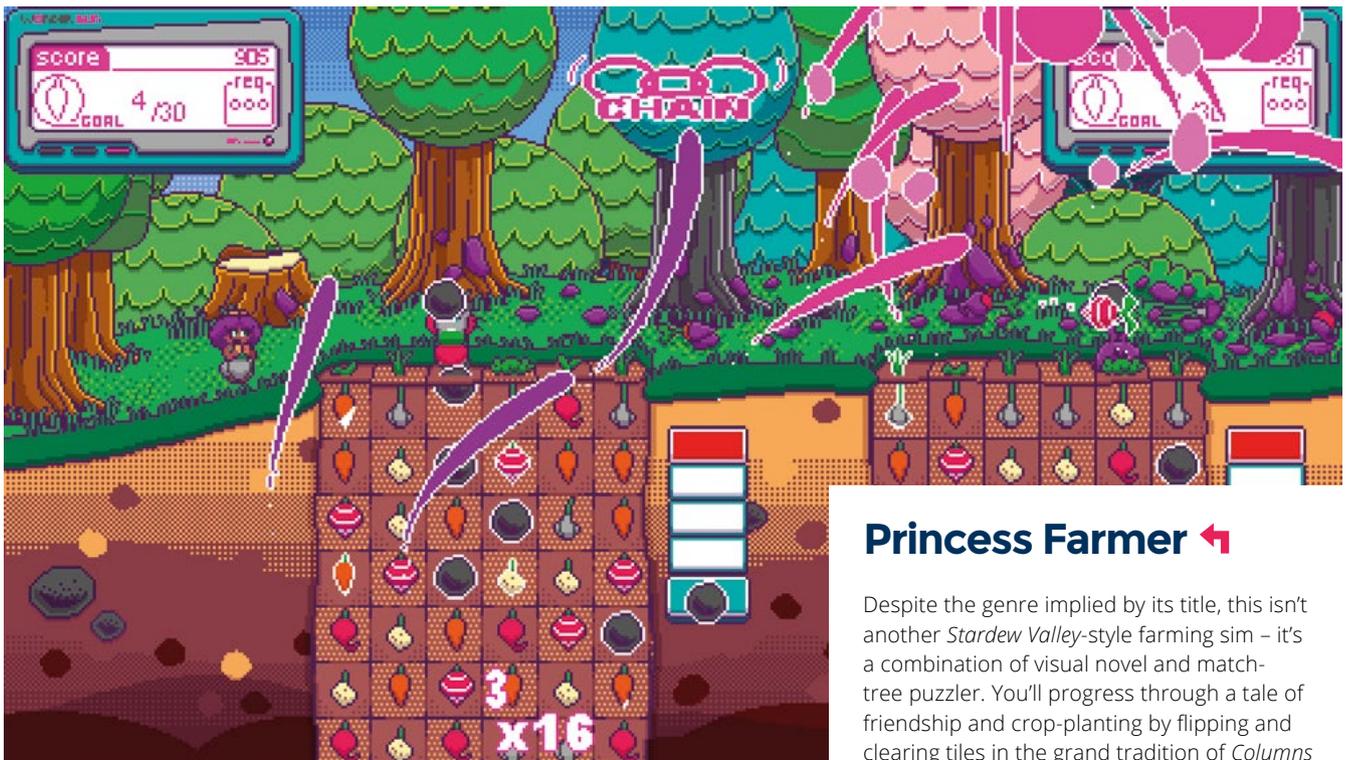
Princess Farmer ⤴

Despite the genre implied by its title, this isn't another *Stardew Valley*-style farming sim – it's a combination of visual novel and match-tree puzzler. You'll progress through a tale of friendship and crop-planting by flipping and clearing tiles in the grand tradition of *Columns* or *Bejeweled*. It all looks breezy, colourful, and thoroughly charming.

Chasing Static ⤵

While games like *Resident Evil Village* pursue ever-greater levels of visual fidelity, there's still a lot to be said for horror games that go down the lo-fi route. In fact, horror's one of those genres where blocky graphics and limited colour palettes can still work in its favour, since it can add to the otherworldly, nightmarish atmosphere. All of which brings us to *Chasing Static*, a first-person horror with the low-poly aesthetic of a PSone title. You play a luckless chap lost in Welsh woodland; there's a storm raging, and a waitress is screaming in the distance. Your only weapon? Some sound equipment and possibly a cigarette lighter. Yikes.

Kinder World ⤴

We're big fans of games that actively encourage us to unwind and generally de-stress, and Lumi Interactive's upcoming *Kinder World* aims to do just that. It's a mobile game that asks you to do little more than water and nurture a set of pot plants. The developers behind the game even spoke to researchers and therapists to find out how to make their game more effective at relieving stress. The game's long since soared past its minimum Kickstarter goal, so expect *Kinder World* to be available for your iOS or Android device later in 2021.

FLY ME TO THE MUN

Ten years after its first successful launch, we speak with Squad about the past and Intercept Games about the future of **Kerbal Space Program**

WRITTEN BY
IAN DRANSFIELD

A successful launch seems like a basic thing, but it's a real challenge for first-time players.

Y ou would absolutely be forgiven for doing a double-take – for thinking what you were reading was the result of some hasty Wikipedia trawling – but it's true: *Kerbal Space Program* is ten years old. Felipe Falanghe's creation was released publicly on 24 June 2011 with Version 0.7.3: one small step for a physics-based rocket-building simulator (with a hell of a lot of character); one giant leap in the amount of time millions of people would go on to spend in front of their computers and consoles trying, trying, *trying* to make a rocket that didn't explode horribly. All the more impressive when you consider that Squad, the Mexico-based design team behind the game, wasn't even in the business of video games when Falanghe pitched the idea.

It's impossible to pin it down succinctly, the allure of a game that back in 2011 – it's fair to say – would never have been predicted to sell millions of copies, to be sold to a major publisher (or their indie publishing label, at least) or to receive a big budget/big hype sequel under the banner of said publisher. You see, while *Kerbal Space Program* might lure a wide range of people in with its cutesy titular Kerbals on the cover, Squad's game has always been a hardcore simulation at its heart. What you can *do* has expanded massively

> **"There's a level of difficulty that makes the achievements feel better"**

over the years, but its core concept still revolves around what it was back on day one: you need to build a rocket, and in doing so, you can do as you please with the tools and equipment provided, as long as it obeys the rigid laws of physics. It's not exactly *Minecraft* levels of broad appeal.

Never underestimate the appeal of space travel, though: *Kerbal*'s initial prototype release saw an instant response from players keen to get their rockets as high into the sky as they could without enduring a fiery failure, and an instant response from many of the same players keen to get involved in the project however they could. From around its fourth hire, Squad was bringing in talent from outside its native Mexico, quickly setting its stall out as a collaborative, remote-based development studio welcoming anyone from around the world who had the talent to contribute.

"One of the reasons Squad is a worldwide team," explains Nestor Gomez, head of production at Squad, "is because since the very beginning, there were people really excited about the project and they wanted to join the team to take it further, from all over the world. So since the [start], it's been a worldwide team."

Naturally, not everybody was looking for work at Squad – there was a game to be managed ➡

ESA DOES IT

The European Space Agency collaborated with the original *Kerbal Space Program* back in 2020, but it goes beyond a mere commercial partnership: "Anecdotally, we know that *Kerbal Space Program* has been an incentive for people to pursue technical careers in the space sector," explains Emmet Fletcher, head of the ESA branding and partnerships office. "Some of these are now engineers and scientists at the European Space Agency. Some among them are now working on the next generation of ESA's missions, which will provide tangible benefits to us humans on Earth, as well as setting the stage for our next phase of space exploration."
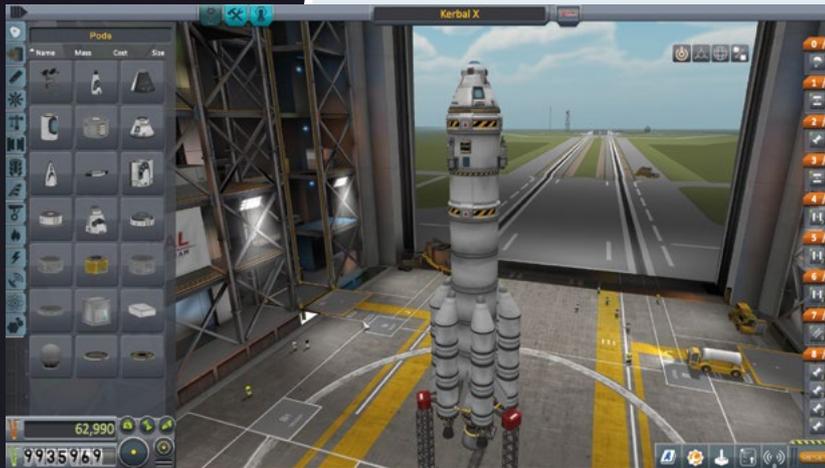
Many players have lost countless hours just trying to construct a rocket, never mind flying (or crashing) it.

here, and the successes of *Kerbal Space Program* only became more pronounced as it saw more development. Newer versions led to more impressive features, which led to more enthusiastic word of mouth, which led to more players – by the game's v1.0 release in 2015, the game had real hype behind it. It was unexpected at Squad, and threw the decidedly indie team somewhat off its game: "The game started really small, just trying to build a prototype," Gomez says. "It was released and got a great reaction from the public. From there [we were] just running and running – trying to catch up, juggling with everything, and trying to make it work. Managing the success. Then that curve slowly started to flatten, and we were able to try and think about what we were doing – we could plan more."

PREPARED FOR LAUNCH

Said plans saw the game move from its initial state – a 2D plane, set rocket designs, nothing outside of a flat plane to 'discover' – to what we

have today: an entire solar system to explore, rockets that can be designed however the player sees fit (not saying they're guaranteed to work, though), the chance to voyage and discover things outside of the planet Kerbin's atmosphere. But the core remains: "If you think of the main loop, it's still the same," says David Tregoning, co-lead engineer at Squad. "You build a rocket, you try it, you fail – that's intentional in a way, you fail in a fun way in a lot of cases – then you go back and you try again, and you keep going. That key loop has been the same since Felipe implemented it originally."

Intense challenge and achievement is a cornerstone of *Kerbal Space Program*. A dearth of in-game tutorials led *KSP* to being a sort of *Demon's Souls*-alike online, with most conversation about it being 'How do I do x?', and most responses pointing to a couple of incredible, fan-made resources. The game was hard by design, but it mixed in an actual thrill in its failure rather than a frustration – something to take you back to the drawing board and try again.

"I think there's a level of difficulty there that makes the achievements feel that much better," Tregoning says. "You can't just get there, you can't just follow the bouncing ball – you need to do some research, you need to do some work. That said, I'm sure there are people who get turned away and it's a real hard balance." Gomez agrees, and posits there might have been a benefit in, well, actually telling players how to do things inside the game proper: "If we were given a second chance to do it all over again, we'd try to do at least some stuff earlier, to make some

WIREFRAME, WE HAVE A PROBLEM

Landing on the Mun. A big challenge for any *Kerbal Space Program* player starting out. "That's the first tough task for players," Gomez says. "We have some players who just like to stay on Kerbin – we assume they're just flying around or constructing contraptions and stuff like that, but yeah… there's quite a few who've made it to the Mun."

Wireframe had never landed on the Mun before, so the challenge was accepted – 'the first tough task' was go.

1. Early test rockets were… awful, really. Often coming apart at the seams and exploding on take-off, it pushed Wireframe Mission Control to use a premade rocket to save time/sanity.

2. A successful launch, after a few retries, sees the good ship Wireframe-O touch the sky on its way to a lunar landing. Full steam (well, liquid fuel and oxidant) ahead!

things a bit easier for some players," he says. "But at the same time, a part of the fun is the challenge. It's a tough balance."

USEFUL IDIOTS

One definite factor keeping players' attention was those Kerbals – they went from wide-eyed, useful idiots effectively acting as cannon (or rocket) fodder through to trusted, valued members of a spacefaring crew in the space of one game. "They really are a key thing," says Jamie Leighton, co-lead engineer at Squad. "The player gets sucked in and gets attached to them – but not in a way that they get upset [when] they get blown up. It's almost a fun thing, like they get blown up with smiles on their faces... or terrified looks. But I think that's one of the key parts of *KSP* that make it stand out from just a flight sim game or similar."

By the time you're successfully landing on the Mun, you've got a team of Kerbals you value, and, almost invariably, that first mission has no plan in place to extract your pioneer. So it is that first self-made mission to a new celestial body produces its next, follow-up mission: getting your people back.

A faceless batch of spaceships with little to no personality wouldn't have that impact on players; nobody would care much about saving an inanimate object from an eternity of loneliness on another planet.

The characterisation of our little green heroes has always been important to the game's appeal – producing an emergent narrative and pushing players on to achieve more than they otherwise would. It's telling that everybody was full of glowing praise for the brave little beings.

Fittingly, the devs also had nothing but praise for a cornerstone of the original game: the modding community. Dedicated modders have made components and features of their own which have later become official parts of the game – Tregoning and Leighton came to Squad from a modding background. "It's a very common route for some of our staff," Tregoning says, "Most of the people who work on *KSP* have played *KSP*. Most of them are space enthusiasts, or space nerds depending on how much time you spend in that world." And it's that side of the community where we see a new weight of expectation: keeping the original *Kerbal* alive as the original developers move on to the next project.

"There's a tinge of sadness," Leighton says about polishing up *KSP*'s final major update, "But at the same time, we're all excited about moving on to do further work on the franchise. I'm sure people will be playing and modding it for years to come, for sure." ➡

⌄ As development progressed, further abilities and gadgets were added to make planetary landings have more of a goal beyond just getting there.
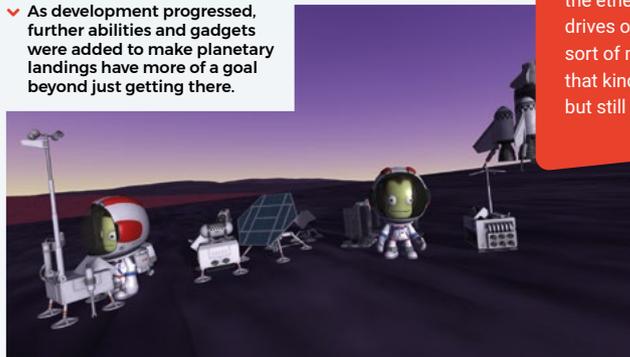
SET PHASERS TO 'OFF'

Kerbal Space Program 2 introduces interstellar travel, and so, as a result, needs to introduce technology capable of getting our wee Kerbals all the way to other solar systems. But you won't be seeing any faster-than-light transport here: "There's an ethos inherited from the original game which is 'credibility at all costs'," explains Nate Simpson. "We care about the plausibility of our technologies and our physics, and it's important for us that every new part in the game at the very least tells a credible story that leads to an opportunity for learning. If you look up any of the new engines in our game on Wikipedia, there will be something interesting there. It will not be pulled from the ether; there are no warp drives or EmDrives, or any sort of magic technology of that kind." Which is fair enough, but still a tiny bit sad.

3. In orbit, it's a case of pointing yourself in the right direction at the right time, engaging thrust enough to intersect with the Mun's orbit, and adding a dash of hope on top.

4. It was around this point the grand mission of Wireframe-O became less certain – no fuel, not even any engines, and no way of controlling any approach or descent to anywhere.

5. It doesn't take an expert to know that your stellar map shouldn't look like this if you're trying to land on the Mun. Mission: failed. And another Kerbin lost in space.

WE ARE THE MOD(DER)S

Speaking with Snark, '*KSP* forums moderator, modder, and pioneer', the passion of the modding community around *Kerbal* is clear. We asked a few questions, and here are the highlights – very much edited for space constraints:

What's the lure of working on *Kerbal* mods?
"[*Kerbal Space Program*] does a phenomenally good job of exposing practically everything in public interfaces that modders can get at, and I discovered that I could make it do some pretty sophisticated things with surprisingly little effort."

What does modding bring to the game?
"It's a game that encourages modding to such a degree that there are thousands of mods available. This is because the game is especially easy to mod, and also because there's a vibrant, active, and appealing *KSP* forum community that helps to maintain interest and let people exchange ideas."

What's your favourite mod?
"I'd say probably my personal favourite is Navball Docking Alignment Indicator. Simple, minimalistic, zero clutter, performs a useful (I would consider essential) task with a minimum of fuss – one of the tiny number of mods that I think really ought to be stock. It's not just useful; it's elegant."

And your hopes for *KSP2*'s modding environment?
"The fact that it's so easy to mod is why *KSP* has a very rich mod ecosystem, and is a major part of how it's kept its charm over so many years. I want *KSP2* to be set up for success, so that its mod ecosystem can be at least as rich, given time."

ENDING INDIE

Kerbal Space Program was sold to Take-Two Interactive in 2017, resulting in a peculiar situation where an original development team no longer owned the game it was working on, but continued to do so. Squad's support for the first game continued right up to its last-ever major update… but it hasn't ended there, because the team has been making an ever-increasing contribution to the development of *Kerbal Space Program 2*, currently in the works at Intercept Games and set to be published by Private Division, Take-Two's indie-focused label, in 2022.

That's to be expected: everyone who plays *Kerbal Space Program* ends up a fan, so a sequel was inevitable. What *was* surprising was the controversy following the announcement, as *Kerbal Space Program 2*'s original developer, Star Theory, saw many of its own dev team poached *by* Take-Two to work at a new studio it had set up… to work on *Kerbal Space Program 2*. Coupled with the wariness people have when a beloved indie project ends up in the hands of corporate giants, the sequel has been in the midst of a surprising uphill battle for hearts and minds so far.

There's an air of this need to 'prove' *KSP2* isn't an afterthought, or a corporate plaything, when talking to Nate Simpson, creative director on the project at Intercept Games – but any doubts quickly melt away, as his enthusiasm and genuine *love* for all things *Kerbal* shines through.

"A lot of my fondest memories are of playing the game back when it was in a very nascent state," he says. "I remember doing capsule rescue missions from the surface of the Mun before EVA existed, I'd make a special lander that used landing legs, a sort of Chuck E. Cheese-style

grabber claw to pick up the pods and try to carry it back to Kerbin.

"For me, I think the watershed moment, when I got truly obsessed with the game, was when docking ports arrived. I thought I'd conquered the getting-to-orbit thing, and I was like, 'What more can this game offer me?' And then the possibility of in-orbit construction entered view… that was when I went into drawing spacecraft in the margins of my meeting notes and that sort of thing, that's when it really took over my life. It's been a nearly decade-long love affair for me."

> ## "There's a tinge of sadness, but we're all excited about moving on"

But there is still a wall to break through: this is a full sequel to a game that made its name by being very transparently, publicly updated over the years – one that has changed significantly since day one. Couldn't *Kerbal Space Program 2* just have been more expansion, more building on top of what came before? It's not that simple, explains Simpson: "We were faced with two challenges that were unprecedented for this product. One of which was to simulate a universe that existed on an interstellar scale, as opposed to an interplanetary scale. The need to get precise positions for objects was more than an order of magnitude more difficult just from a computational perspective."

SPACE TOGETHER

And – somehow an even bigger element than interstellar space – the addition of multiplayer meant that decade-old engine needed more than just an oil change. "We had to re-architect the game pretty much from scratch, at least in terms of its core architecture, in order to be able to get the sort of precision [required for multiplayer]," Simpson says. "Also, we're using a version of Unity that's very advanced compared to the version on which the original game came out. But there's a bunch of cool new stuff – the job system, the burst compiler – that enable us to do things that
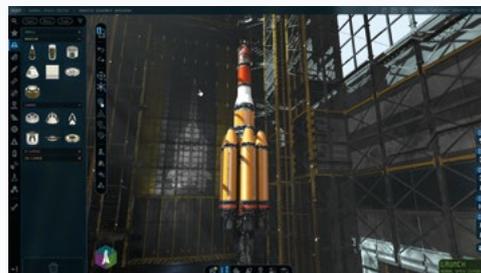
▲ Construction in the second game looks to make the process more user-friendly, while including all the aspects of the original that made it so captivating.

Colony-building is a big part of the sequel; a key element of any interstellar travel plans being that you need forward posts from where to take off.
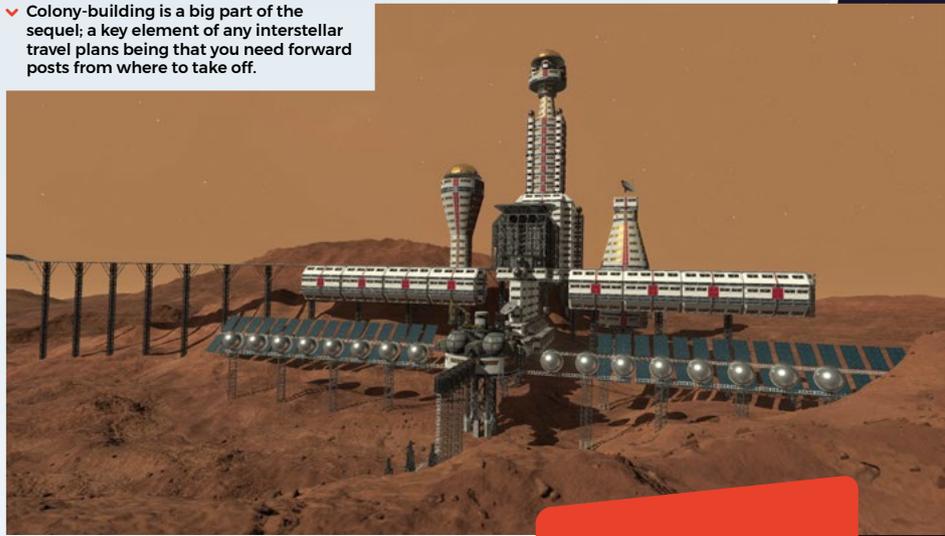
weren't possible in the original version. We do things more efficiently, everything is a lot more stable, we're getting incredible results just on things as simple as collision calculations. So we have something that's more performant, more stable, and more precise – with those three elements, we believe we're building a foundation upon which we can continue to expand for a really long time."

With an extended time frame comes changing tastes from the public. It's fair to say that in 2011, space science wasn't exactly a hot topic. But the intervening years saw the growth of SpaceX, NASA's plan to go back to the Moon, and a renewed focus from the public on all things dark-but-twinkly. This shift in public attitude will certainly have had a positive impact on the original game's success. And the hope remains from Intercept Games' side too that public interest will remain high: "*KSP* has been a gateway for a lot of people, including myself, into the world of real human space flight," Simpson says. "It was when I was starting to build my first interplanetary vessels in *KSP* that I started reading more articles about Nautilus X or other planned interplanetary mission architectures, because I was looking for ideas for the thing I was doing in the game… The hope is that we bring a lot of new people into this experience, to the degree that they begin to contribute to the real Mars campaign in material ways by becoming scientists, or astronauts, or however it is they feel they can contribute. We're pretty excited about that prospect."

Of course, a big question surrounds modding – is this something Private Division will support? "[The modding community is] ready to rock," Simpson says. "There's a strong desire on their side and a strong desire on our side to keep things going along with the modding community without missing a beat. One of the goals that we've set for ourselves in rebuilding the

architecture of the game is to make it more easily moddable, not less, so we fully expect – and hope – that the modding community will immediately begin playing with *KSP2* on release day."

So will *Kerbal Space Program 2* have the same impact as the first game? It's impossible to say. But – corporate controversy aside – there can be few doubts about the passion coming from the top of the sequel's development team.

"In terms of my personal creative journey, it's the most rewarding, consequential, beautiful thing I've had a chance to work on," Simpson says. "To me, there's still some beguiling mystery behind what it actually is about the formula of *Kerbal* that makes it so special, and I think that's what marks it as not just a video game, but almost a work of art. This special combination of elements creates something bigger than the sum of its parts. It's almost a medium – it's a means of creative expression… I wake up every morning and can't believe how lucky I am to get to be a part of it."

A passion project by a lone developer in Mexico, working at a studio that hadn't even thought about making video games when it was suggested to them. A core concept that never changed, and always engaged the imagination, inspiring generations to tinker, to mod, to make it a career in real space travel. A video game emulating the realm of space science that acted exactly like Cassini–Huygens, Kepler, Curiosity, and so very many more: remaining relevant, useful, *important* for so much longer than anyone expected. *Kerbal Space Program*'s giant leap is one it still hasn't landed from, and the future of the series is as bright as anyone could have hoped. Here's to the next few decades. ⓦ

TEACH ME MORE

Kerbal Space Program has been snapped up by schools and educational facilities around the world; its mix of approachable aesthetic mixing wonderfully with the hard physics-based science behind the veneer. And it's something not lost on the developers, as Jamie Leighton explains: "The educational aspects of *KSP* and going into the future are very good. I like the fact that a game I'm working on is being used as an educational tool for kids in school – we've got a lot of people in the community who, probably once every month or two, say 'Because of you, I got excited about space. I played *KSP*, I then decided I wanted to go and study astrophysics, and now I'm working for NASA/ some other space agencies', or something like that. That just makes it all worthwhile. It's more than a game; it's a learning tool that's used by people – and *has* been used by people – to launch their careers and their life's passion."

In praise of getting things wrong

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.

⌄ In Tom Happ's *Axiom Verge*, creating glitches becomes an integral part of the game mechanics.

In keeping with my place in the industry as someone who loves retro and doesn't keep up well with the times, I've just finished *Axiom Verge* – a Metroidvania that people were absolutely rhapsodic about in 2015, and for jolly good reason. There's a lot of reasons to praise the game, from it being such a detailed love letter to the likes of *Metroid* and *Bionic Commando* and various other NES titles to its genuinely interesting paradoxical plot and world build, but the best thing to me was how happy it was to let you, the player, feel like you were tearing the entire game apart.

Axiom Verge is a celebration of playing games with the cartridge only halfway in – a game where not just the aesthetic but the style of play is based on graphics and enemies becoming corrupted, as if the VRAM's just gone completely haywire and basically given up. One of your main tools allows you to not just corrupt enemy sprites, but entirely change the way they function, and it's a touch of genius. It takes you right back to the very first time you experienced such a severe glitch... how shocked were you? How long did it take for you to realise that a swirling mess of sprites might not actually be what the game's supposed to look like? Did it scare you when a game you were innocently playing suddenly collapsed into a heap of droning notes and flickering binaries? It certainly made me jump.

There's a certain fun to be had when a game decides it's no longer going to follow the script in this way. It was perhaps rarer in the simpler times of the nineties than it is now, when games are much more complex and it seems as though every triple-A release has a few vicious high-profile bugs that need stamping on. The bugs of old feel a bit more special perhaps, especially when speedrunners trigger them at will as another way of breaking an old game over their knees. Beyond software just crashing back to the desktop – clearly the most boring glitch of them all – these weird events can sometimes create wonderful memories.

Grand Theft Auto IV, perhaps overly praised on its original 2008 release, is one glorious example. One of the most expensive games of its time, production values out the wazoo, essentially Rockstar North trying to create the epic to end all epics... and one of the best things about it is a bugged swing set that sent vehicles absolutely flying, and is the subject of thousands of YouTube videos. It's to Rockstar North's credit that despite the possibility of this wicked little swing compromising the grand experience they were going for, they never made the call to fix the glitch because people were having too much fun using it. Sometimes, on rare but beautiful occasions, a bug can be celebrated. In the words of esteemed painter Bob Ross, "We don't make mistakes – we have happy accidents". ⓦ

> **"Did it scare you when a game you were playing suddenly collapsed?"**

Made in dreams

Some of the Dreams community's finest creators talk to us about their incredible projects

WRITTEN BY **JACK YARWOOD**

M edia Molecule launched Dreams, its creation platform, with the goal of giving players fun and approachable ways of making and sharing their own games. One year later, it's safe to say it's succeeded. The community has filled the Dreamiverse, the sharing platform inside Dreams, with all kinds of wonderful creations, from platformers to puzzle games, RPGs to rally racers. And what's so amazing about these is how many of their creators are only just dipping their toes into game development for the first time.

Paulo Lameiras, known on Twitter as Genesis8012, is a good example of this. He's an industrial designer, cartoonist, and Dreams creator based in Portugal. Before picking up Dreams, he'd never made a game before. But he's been using Dreams to create remarkable retro-inspired games to share with the rest of the community. This includes fantastic projects like side-scrolling platformer *Cyber Trigger* and aerial shoot-'em-up, *Metal Eagles*.

"Game design was a long-time dream, but I never had any patience to learn coding by myself," Lameiras tells us. "When I went to university, game design wasn't an option. So I went down the industrial design route, because I thought that would allow me to learn the programs that could eventually lead me to

▲ Oscar Hocking intends for
Ghost Hunt to come out by
the end of the year.

game design. Since it never happened, I saw Dreams as my opportunity to start learning programming in a user-friendly way."

Lameiras believes the advantage of Dreams comes from it being an all-in-one platform. Using the tools available in Dreams, he can put together a piece of music, or a sculpture, and share it with the rest of the community without having to jump between different programs. He also highlights how Media Molecule has designed the toolset to be more approachable than other platforms, putting an emphasis on playful shortcuts and visual scripting over coding languages. This opens up the creation software to those who have no experience with something like C++.

"The visual scripting in Dreams makes the coding behind it so much easier to understand, but it's also fun to use and experiment with," Lameiras says. "The fact Dreams is fast and seamless also helps a lot. You can jump between creating art, music, logics, testing, all in real time. It gives us a lot more time to focus on game design, and [the other] aspects of the creation process."

DREAMING IN PIXELS
Lameiras' games don't look like typical creations you'll find in Dreams. Unlike most creators, his games use tiny cubes to simulate a pixel art style – turning off lighting and other effects ➡
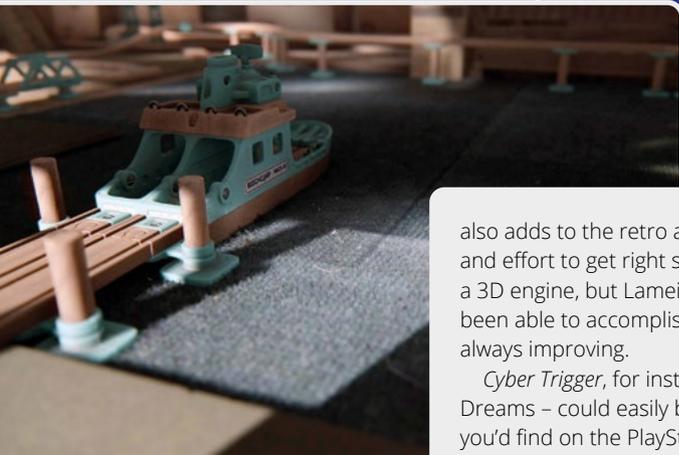
Beech Corp

A senior designer on Dreams, John Beech has also spent his spare time creating a project of his own in the engine. This is a model train sim featuring delivery vehicles, detachable tracks, and some extremely detailed carpet fuzz. As a fun way to promote his upcoming creation, Beech created a fictional company called BeechCorp. This has become something of an in-joke within the Dreams community, with many members speculating the company's clean-cut image and online communications may hide a much darker side.

also adds to the retro aesthetic. It takes time and effort to get right since Dreams is primarily a 3D engine, but Lameiras is proud of what he's been able to accomplish so far and finds he's always improving.

Cyber Trigger, for instance – his first foray into Dreams – could easily be mistaken for something you'd find on the PlayStation Store, due to its extraordinary level of polish. The game has you running and gunning your way across an alien planet, shooting enemies and uncovering secret routes along the way. "I always like to try and go around [the limitations]," says Lameiras. "Pixel art isn't new, of course, but there are not many Dreamers who do it. I found the formula while working on *Cyber Trigger*. People liked it and I received a lot of good feedback, which made me want to make even more."

His sophomore effort, *Metal Eagles*, uses many of the same techniques. It ditches the side-scrolling perspective of *Cyber Trigger* for a top-down aerial view. You play as a pilot, with the goal being to destroy enemy planes and tanks, while racking up as many points possible with the three lives you're given. *Cyber Trigger* and *Metal Eagles* have a combined 46,000 plays, but Lameiras isn't finished with Dreams yet: he's currently working on a new game building off everything he has learned.

> "You can buy a PS4 and then make your own game with nothing else"

"The game I'm working on now is more like *R-Type*," says Lameiras. "It's a side-scrolling shoot-'em-up. I'm using everything I learned on *Metal Eagles* and *Cyber Trigger* and I'm boosting everything – or trying to. The planes in *Metal Eagles* had a maximum of two sprites; in the game I'm building now, each enemy has eight to ten frames, so it's roughly five times more complex."

NEW PERSPECTIVES
It isn't just Lameiras who's experimenting with 2D art styles in Dreams, however. Based in Cornwall, Oscar Hocking's currently working on a project named *Ghost Hunt*, which uses a flat-shaded art style reminiscent of *Kentucky Route Zero* and *Mutazione*.

Hocking first stumbled across the style while working on a scene for Media Molecule's Ocean Jam. He realised he could turn the brightness up on all the objects to remove shadows from the scene and make the colours look flat. This was the first step to devising the signature style for *Ghost Hunt*. "I think, like everyone, I started off trying to make more realistic-looking things," says Hocking. "But after the Ocean Jam, I also played *Kentucky Route Zero*, which is one of the best games I've ever played. What I liked about that was all the characters were really square-looking, but they're not pixel-arty. There's no nostalgia to it. They've just got weirdly rectangle legs. So I tried to make a character like that. But I found I was making things look a lot brighter and a bit more friendly."

Though the story is still under development, Hocking says *Ghost Hunt* is about a young girl named Hunrosa (the Cornish word for 'to dream') who one day encounters the ghost of her best friend – who's still alive. From there, players are given the chance to walk in her shoes and find out more about the haunting and the mysterious apparition. Despite the unsettling setup, Hocking explains that he doesn't necessarily want the game to be a full-blown horror experience. Instead, he wants it to be more focused on the surreal, exploring the concept of ghosts and what it means to be haunted.

Although Hocking had messed around with other development tools in the past, even briefly going to university to study game design,

he considers *Ghost Hunt* to be his first proper attempt at making a game. He took to making the game in Dreams not only because of the low barrier of entry, but also because of the low cost involved. "The magic of Dreams is you can buy a PS4, and then you can make your own game with nothing else," Hocking says. "It's so accessible in that way. That's what I love about it. I don't have a lot of money, so it's really nice that this PS4 I got I don't know how many years ago is still alive and is a creative tool now, rather than just a *Resident Evil* machine."

Hocking doesn't have a finish date for *Ghost Hunt* yet, but he's hoping to get it out by the end of the year. Just in time for the Impys – Media Molecule's annual awards show.

DARK-TOWN

There are also a number of people experimenting with unique styles in 3D too. Scottish creator Marshall Porter, for instance, is currently hard at work on a retro RPG called *Dark-Town*, which takes inspiration from *Final Fantasy VII* for its visual style – complete with an isometric camera, cluttered backgrounds, and blocky characters.

Porter had always wanted to make an RPG of his own, but he didn't have much experience programming prior to picking up Dreams. Now with the tools at hand, he's set himself the goal of making *Dark-Town*, a five-hour tale that pays tribute to some of his favourite games. While the long production on *Dark-Town* continues, Porter's also been busy working on some episodic adventure games set within the same universe.

He labels these shorts *Tales from Dark-Town*, and has plans to release three in total. The first

of these, *Tales from Dark-Town: Homecoming*, is already out, and focuses on two characters, Jack and Syd, as they sneak into Jack's childhood. What's striking about *Homecoming* is its attention to detail. Not only does Porter try to emulate the look of *Final Fantasy VII*, but he's also developed a similar battle system, alongside other Dreams creators such as Dinox11 and FlashMedallion. According to Porter, this proved to be one of the most difficult aspects of the *Dark-Town* project so far, due to being relatively unexplored within Dreams. It's for this reason that *Homecoming* features just a small sample of what players should expect from the final project.

"An RPG battle system is something that eluded me for a very long time, so I made just RPG episodes that never had any deep battle systems to them," says Porter. "But it's actually quite simple. Learning to use variables and maths was the big turning point for me. These really helped to add depth to the battle system. Whereas before the battle system was good for maybe ➡

Many of the environments in *Dark-Town* are assembled using community-made assets from the Dreamiverse.
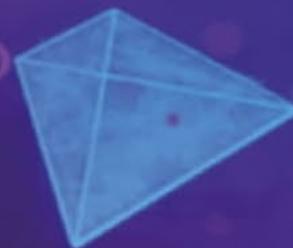
Here's a peek at what *Ghost Hunt* looks like in creation mode.

POS 7   LAP 1 24.26   3.96
         LAP 2 23.83

⊗ REPLAY ⊙ MENU

● Oil Slick

^ Hectic racing in *Drifter*.
See if you can spot our car.
Hint: it now doubles as a
heat source.

You Do You

Dylan Aiello, aka Ghostfruit64, is a digital artist and musician. He's been making stuff in Dreams for a while now, with his most popular track being the song *You Do You*, written for Media Molecule's Open Mic jam. He says Dreams represents brilliant value for money for musicians and newcomers alike. "I'm surprised by the amount of great sounds and instruments," says Aiello. "There was a huge update recently where they added new orchestral instruments – and these are beautiful samples too. They sound like libraries that would typically cost $1000, which is amazing, and I don't know how they've done it. It's amazing to see what people do with these tools, because it's a bunch of people who wouldn't [usually] have this access."

one or two battles (for fun), now it has stats: scalable attributes, buffs and debuffs, weapons and armour management, and so much more."

MICRO MACHINES

Porter isn't the only user who's turned to old favourites for inspiration. Chris Smith, a London-based Dreams creator, recently released *Drifter*, a game based on classic racing titles such as *Mashed* and *Micro Machines*, with a removed camera, an emphasis on drifting, and lots of ways of scuppering your opponents.

In *Drifter*, you'll race against eleven opponents across four detailed courses, drifting around corners and avoiding oil slicks and enemy fire to try to finish in the top three positions. It's chaotic and challenging, but also incredibly engaging as you try and master the corners on each stage. There are a quite few racing games on the Dreamiverse, but *Drifter* is one of the few to include convincing AI opponents. Unsurprisingly, this was a challenging aspect to get right.

"The hardest thing was the tracking," Smith explains. "Trying to track all those cars to the minutest detail. Because the thing with racing games is it's got to be down to the split second. I've got to know the exact position of all the cars and that was a real tricky one to do, but I did get my head around it in the end. Basically, you can't rely on just Dreams physics, because it's not fast enough, so I had to write my own engine inside an engine to handle it."

According to Smith, there are 16 waymarks spread throughout each stage, with each AI using the same points to navigate the tracks. It's a simple yet ingenious workaround to the problem

and leads to some great pile-ups as you and the other racers wrestle for space on the track.

For Smith, Dreams was a return to programming games. Growing up, he had a ZX Spectrum, and later went on to study computer science, but for a while after that, he lost track of gaming. Then he stumbled across a trailer for Dreams and decided he wanted to give it a whirl. "I was completely out of the game scene for years, really," says Smith. "It's only as I've had a bit of time for myself that I went on the computer and really wanted to get back into programming or something like that. I was just looking on YouTube before Dreams came out and went, 'Oh my god, this is exactly what I'm looking for.'"

Drifter has been played almost 2000 times at the time of writing, and Smith has plans to add new features to his racer – which isn't actually that straightforward. "I want to come back to it," he explains. "But because I've basically built the engine for the first stage, all the other levels were quite easy. If I want to change or add anything new, I have to go back to the beginning."

RE:LOAD

As you can probably tell, new projects in a variety of genres appear on Dreams all the time. With this in mind, it's worth mentioning the work of Jonathan Hunter, aka 800pixelgorilla, and the puzzle game *Lock*. In it, you're asked to solve puzzles to locate four letters, which you need to arrange into the correct order to open a locked door. It's one of the best puzzle games on the platform, and was a labour of love for its creator, who conceived the project way before Dreams was even released. "When I knew Dreams was something I was going to get into, I was like, 'OK, what will be the game that I actually make?'" says Hunter. "That was the moment I started making *Lock*, because I started most of it on paper. I knew that was my end goal – to get good enough to

v *Lock*'s puzzles are solved using
Morse code and ciphers, so
keep a notebook on hand.

make that game. But, along the way, some other ideas came up."

To solve puzzles in *Lock*, you'll have to pay attention to your environment: the rhythmic dripping of a tap, how items are stacked in a cupboard, or the contents of a nearby book. Many of the problems are real head-scratchers, and will likely require you to keep a pen and paper close at hand.

When developing the game, Hunter had two major touchstones: the website Puzzled Pint, dedicated to logic puzzles and ciphers, and Jonathan Blow's *The Witness*, whose influence on the game is unmistakable. "*The Witness* introduced me to the idea of game design as a conversation between the player and designer," says Hunter. "There's a give and take there. I'm trying to make the player do something, and the player is supposed to respond accordingly, so that's always been sitting in my head ever since I played that game."

Hunter says the reason he created the game in Dreams was because it reminded him of his old Flash days, where the barrier to entry was low and the time investment minimal. Like many others who gravitate towards Dreams, he didn't want to learn a new coding language. Instead, he wanted something reasonably non-committal that would allow him to get started straight away.

> "I had to write my own engine inside an engine to handle it"

Since *Lock*'s release, the community has played the game a staggering 81,000 times, making it one of the more successful games on the platform. Impressively, Hunter also took home three awards at the second Impys for the creation. So what's next?

"It's hard to follow up something like that," Hunter says. "I'm flirting with doing a sequel, but I'm not as interested in that because I feel like I said all I needed to say with that game... I'm also working on something currently in Dreams. But it's completely in the [opposite] direction. I'm making, like, a reverse *Pac-Man* game where instead of the ghosts chasing you, you're chasing them. It's going to be a high-score [type of game]."

So, there's no shortage of great things to play in Dreams, and the quality is only getting more impressive as people get more familiar with the tools. It'll be very interesting to see how the platform develops in the future, and whether any of the creators we see in Dreams will go on to pursue a career in game dev in the future.

Many of those we spoke to were interested in game dev, but they have their hopes set on the platform evolving alongside them to the point where they can bring their Dreams to other devices and even sell their creations. For now, though, that's just a dream. ➡

Strange applications

TannicAlloy is a Dreams creator from the US who uses the game's tools for unusual applications. In the past, he's created fitness games where your character will level up for every press-up you do, made musical instruments out of cardboard and string, and even created a game of motion control pool. If you want to follow what he's up to, you can check out his creations on Twitter: TannicAlloy Dream Journal (**@tannicalloy**).
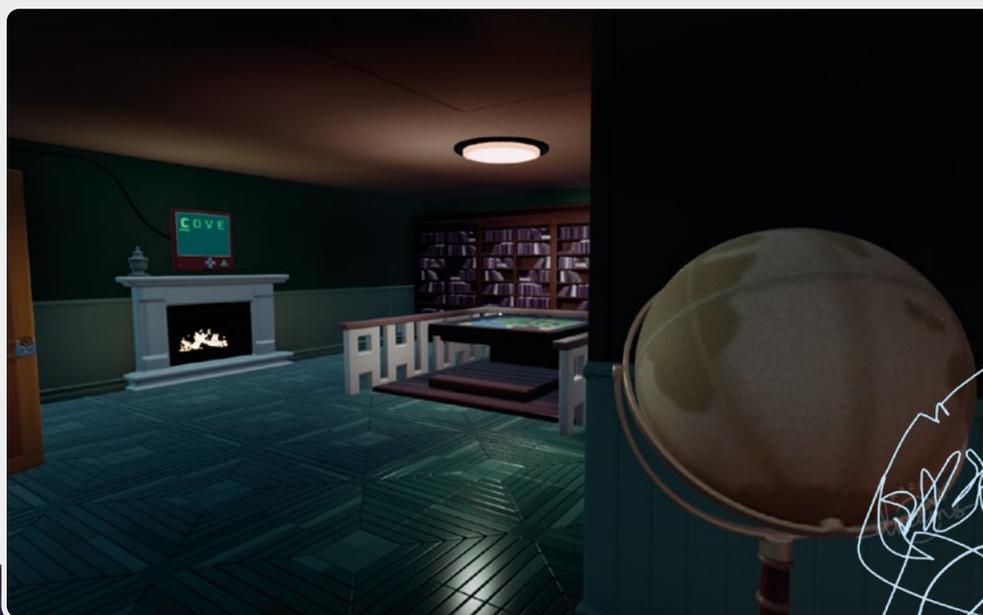
‹ *Lock* takes place in the confines of a house. You'll have to open doors to progress and uncover the mystery within.

Moraine Lake
IansaneArtist

IansaneArtist is known for their incredible scenic creations, and this is no exception. Take a walk around Moraine Lake in Alberta, Canada. A nice, relaxing lake scene to take photos and roam around in. Just don't get too close to the water's edge.

A walk to remember

A small sample of the stunning scenic art produced in Dreams
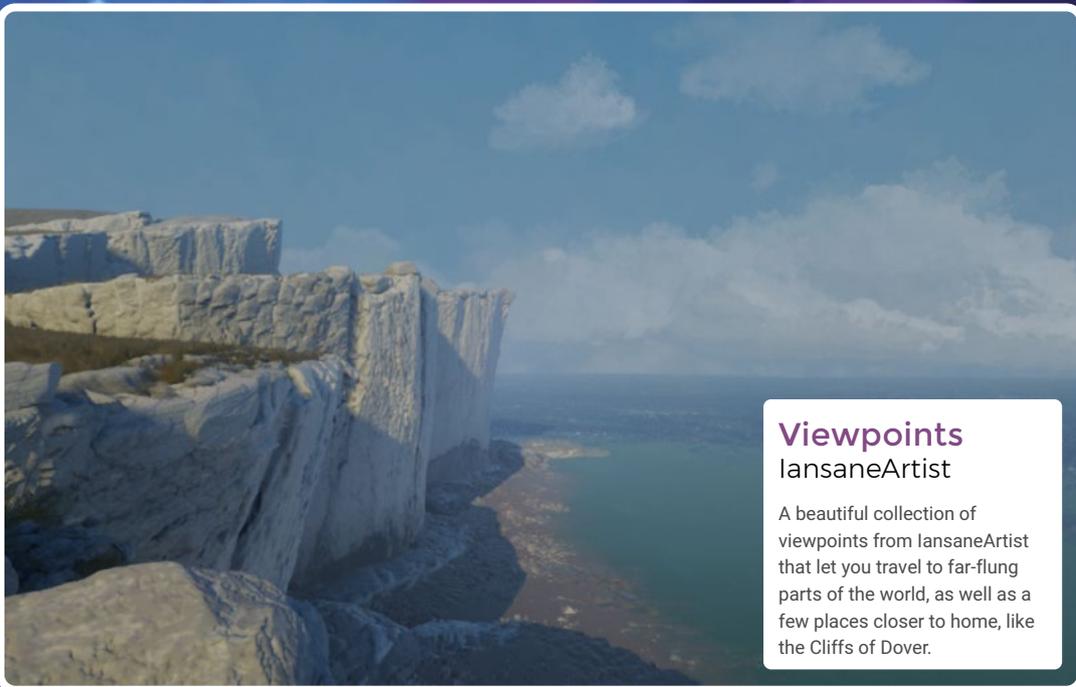
Viewpoints
IansaneArtist

A beautiful collection of viewpoints from IansaneArtist that let you travel to far-flung parts of the world, as well as a few places closer to home, like the Cliffs of Dover.

Score attack

RETICA girl from croydon/hymen_trouble/JimmyJules153
This spherical shooter has players defending a planetoid from UFOs, asteroids, and other space debris. Exciting stuff.

TRIA-GONE Angelotje
A tunnel shooter that has you threading through narrow gates. It's like Llamasoft's *Polybius* merged with the sort of synthwave playlists you'd find on YouTube.
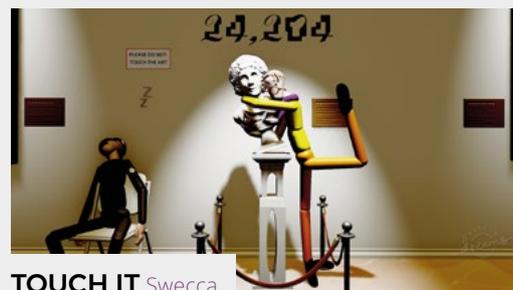
TOUCH IT Swecca
Earn points by touching a statue without alerting the museum's security guard. The longer your touches, the more your multiplier will increase. Just don't get caught in the act.

BEAT RUNNER shadow124900/Bella_Iris
Rhythm games on Dreams can be a bit hit or miss, but *Beat Runner* is one of the good ones. Avoid spikes, jump chasms, and rock out to the electronic soundtrack. ⓦ

Arashiyama Bamboo Grove BADROBO82

An astonishing Dreams creation and a showcase of what the software is capable of in the right hands. BADROBO82's photorealistic depiction of a bamboo grove had everyone and their uncle guessing how he pulled it off. A creation that simply has to be seen to be believed.

Château du Lac ZIIQ

Why not explore a lovely château on foot in this beautiful creation from master sculptor, ZIIQ? Perfect for practising your virtual photography, and boasts some stunning architectural detailing.

Toolbox

The art, theory, and production of video games

> We head back to 1985 for this month's Source Code, with a re-creation of *Gradius*' rock-spewing volcanoes.
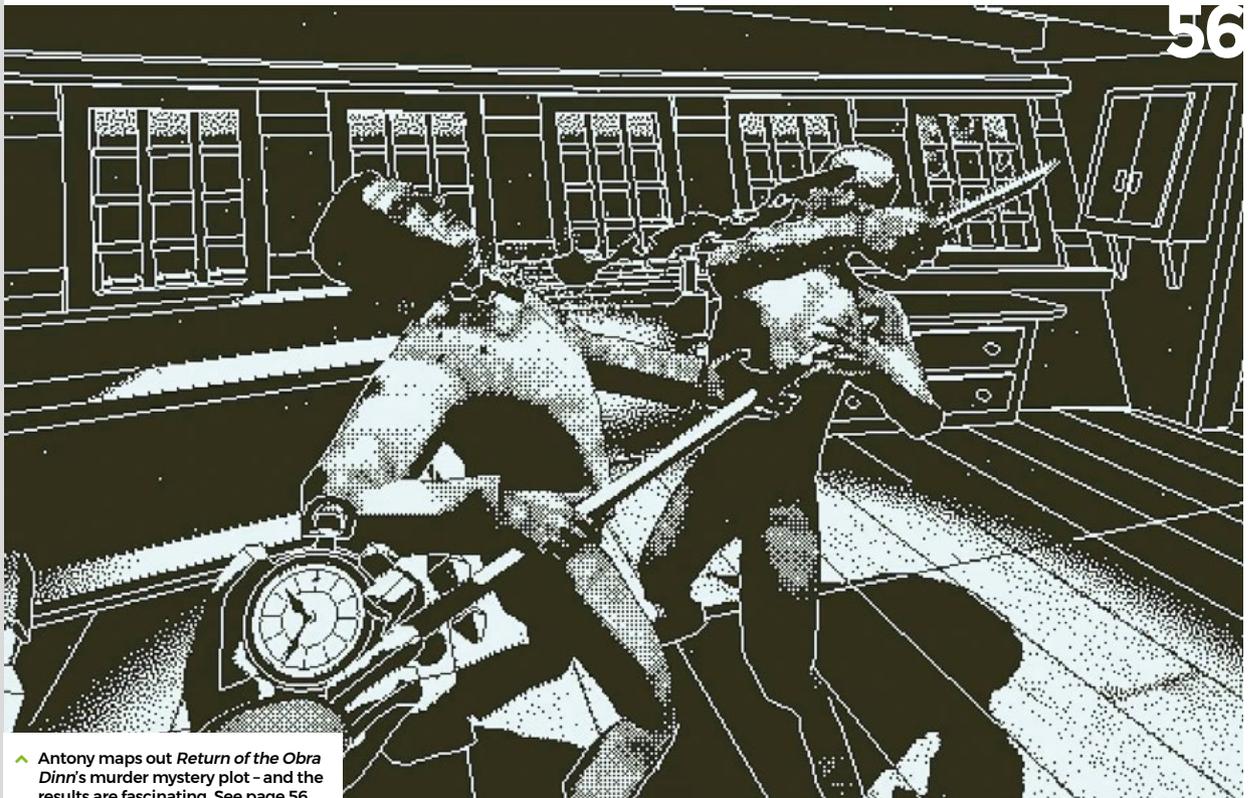
> Antony maps out *Return of the Obra Dinn*'s murder mystery plot – and the results are fascinating. See page 56.

Build the ultimate, backlit Game Boy Advance. Tito shows you how on page 50.

50

46

58

What do pillars and triangles have to do with *Rime* and game development? Find out on page 58.

How wide should the roads be in your video game city? How tall is a lamp-post? You'll find the metrics you need on page 46.

Exploring city sizes, scales, and metrics

Konstantinos provides a tour of the numbers and relations that define both real and virtual urban spaces

AUTHOR
KONSTANTINOS DIMOPOULOS

Konstantinos Dimopoulos is a game urbanist and designer combining a PhD in urban planning with video games. He is the author of the *Virtual Cities* atlas, designs game cities, and consults on their creation. **game-cities.com**

Scale and measurements are important in video games, particularly when it comes to cities. Real-life metrics can't always be directly transported to all types of games, but certain measurements, sizes, and relations are crucial when designing believable places. It's important to remember, though, that urban metrics are subject to differing engineering and estimation methodologies, and are meant to be adapted to the requirements of specific eras, places, cultures, technologies or, even species.

THE LARGER PICTURE

The first thing you need to decide on is a settlement's size. This isn't merely about quantity – it's also qualitative, as a village isn't just a smaller city. It's simpler, less dense, and has fewer functions. And though qualitative differences aren't necessarily easy to demonstrate, certain numbers are both revealing and helpful when it comes to placing a house or a skyscraper.

When it comes to the sizes of contemporary geography, a village tends to carry a population of up to 5000 residents, a small town lies between 5000 and 10,000, a town between 10,000 and 100,000, a small city between 50,000 and 200,000, a medium-sized one between 200,000 and 500,000, a large city between 400,000 and 1,500,000, and a metropolis rises above 1,000,000. In most cases, at least 2,000,000 inhabitants would make more sense for the latter, though such categories are always porous. A megalopolis or mega-city can hold populations in the tens of millions, whereas a planet-wide city – at least by Earth standards – would probably house several dozen billion people. Historically and geographically, things can differ wildly: a medieval city with a population of 100,000 would be considered huge, and Chinese planning treats a city of 300,000 differently than European planning.

Population densities set a city apart from its environs. Per country, average population densities range from 281 people/km^2 in the UK and 90 people/km^2 in the US, to India's 325 people/km^2 and Germany's 240 people/km^2. Urban average densities on the other hand, range from New York City's 10,716 people/km^2, Los Angeles' 3276 people/km^2, and London's 5666 people/km^2, to Athens' 7500 people/km^2, and Berlin's average of 4227 people/km^2. (Berlin can fit in a circle with a radius of 40 kilometres.)

Another type of density to take into account is that found in a city's built-up space. In US

A football stadium is a large element of the urban fabric. The Johan Cruijff ArenA (pictured here in *FIFA 21*) fits in a 242×210 m rectangle.
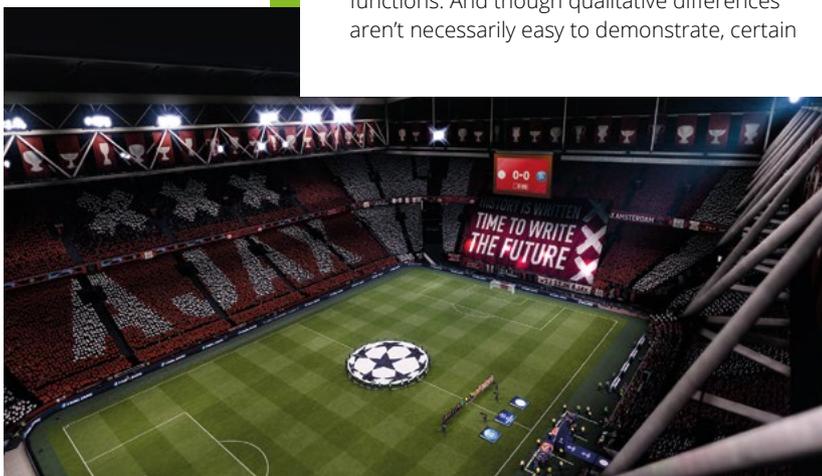
cities, buildings on average take up 50% of the overall urban area; the rest is dedicated to roads, parking spaces, parks, and so on. In an ancient Roman city, however, buildings would take up roughly 90% of the overall area; horses and carts ate up much less space than the private automobile. Reinforcing the sense of density (and thus in most cases, urbanity) is enclosure: the sense that you are inside a city and surrounded by it. The ideal sense of enclosure for a pedestrian is achieved with a building-height-to-road-width ratio of roughly 1:1. A ratio of 5:1 is considered claustrophobic, whereas 1:6 would be too formless to feel meaningfully urban.

DESIGN DIMENSIONS

Next, let's consider roads. Contemporary local roads feature two lanes, collector roads at least four, a major highway can go up to 32, while Manhattan's avenues have an average width of 30.5 m with standard streets being 18.3 m wide, and a tendency to get narrower in lower Manhattan. Traffic lanes range from 3–4.5 m wide, the diameter of roundabouts ranges from 15–150 m, and a highway interchange can cover up to 3 km².

Historically speaking, street widths depended on transportation tech – a laden donkey or camel, a tram, car, or pedestrian all have different requirements. Bicycle lanes must be at least 1.5 m wide, tram lanes are on average 3.3 m wide, pavement heights should not exceed 20 cm (12–15 cm is more comfortable), and their widths should be proportional to the road they accompany. A pavement should allow two citizens to walk abreast, and leave enough space for signage and street furniture.

Other important street elements include mounted traffic signals (4.5–6 m height) and standing traffic signals (2.5–4 m), benches (1.5–1.7 m length, 0.70–0.85 m height, 35–45 cm sitting space), street lamps (from 6 m high on local roads to 12 m on boulevards), and street signs (around 2.1 m). Telephone booths are around 1×1×2.5 metres.

A city's architectural scale is greatly defined by its buildings' sizes. The average floor height is 3.5–4 m, and while apartment buildings can cover as small an area as 10×10 m, they can be high-rise, mid-rise (6 to 14 floors), or low-rise, whereas residential towers in New York City often exceed

> ### "A megalopolis can hold populations in the tens of millions"

60 floors and sometimes reach 113; much higher than a typical Gothic cathedral whose towers can rise up to 140 m. Other heights worth noting are those of telephone poles (usually around 10 m), mobile phone towers (120 m, 30 m when on buildings), and bell-towers (up to 113.3 m).

Finally, a few city block metrics: the unit that defines urban planning. Manhattan blocks are 80×274 m, Chicago's are 100×200 m, and Berlin's are 160×90 m, whereas a medium-sized urban park block is 300×400 m. As a rule of thumb, longer blocks fit residential areas better, and shorter ones make places friendlier and are suited to retail and leisure. Commercial needs often shape city forms too: Paris's diagonal streets, introduced in the 19th century and allowing for more shops, are a prime example. Here's a handy time-based metric: a small block should be walkable in a minute or two, which could be reduced to 30 to 40 seconds for a video game. Oh, and don't forget the streetwall: the unbroken series of buildings along a block. Between 50–100% of city streets often feature these streetwalls. ⓦ

▲ **The iconic Obelisco de Buenos Aires was constructed in 1936 and is 71.5 m high – tall enough to dominate the city's skyline.** *(Photo by Deensel)*

DIMENSION

Human Dimension & Interior Space by Julius Panero and Martin Zelnik is a classic book on anthropometrics, and an incredible tool when designing spaces (virtual or not) for, well, humans. The PDF is freely available via **Academia.edu** at **wfmag.cc/dimension**.
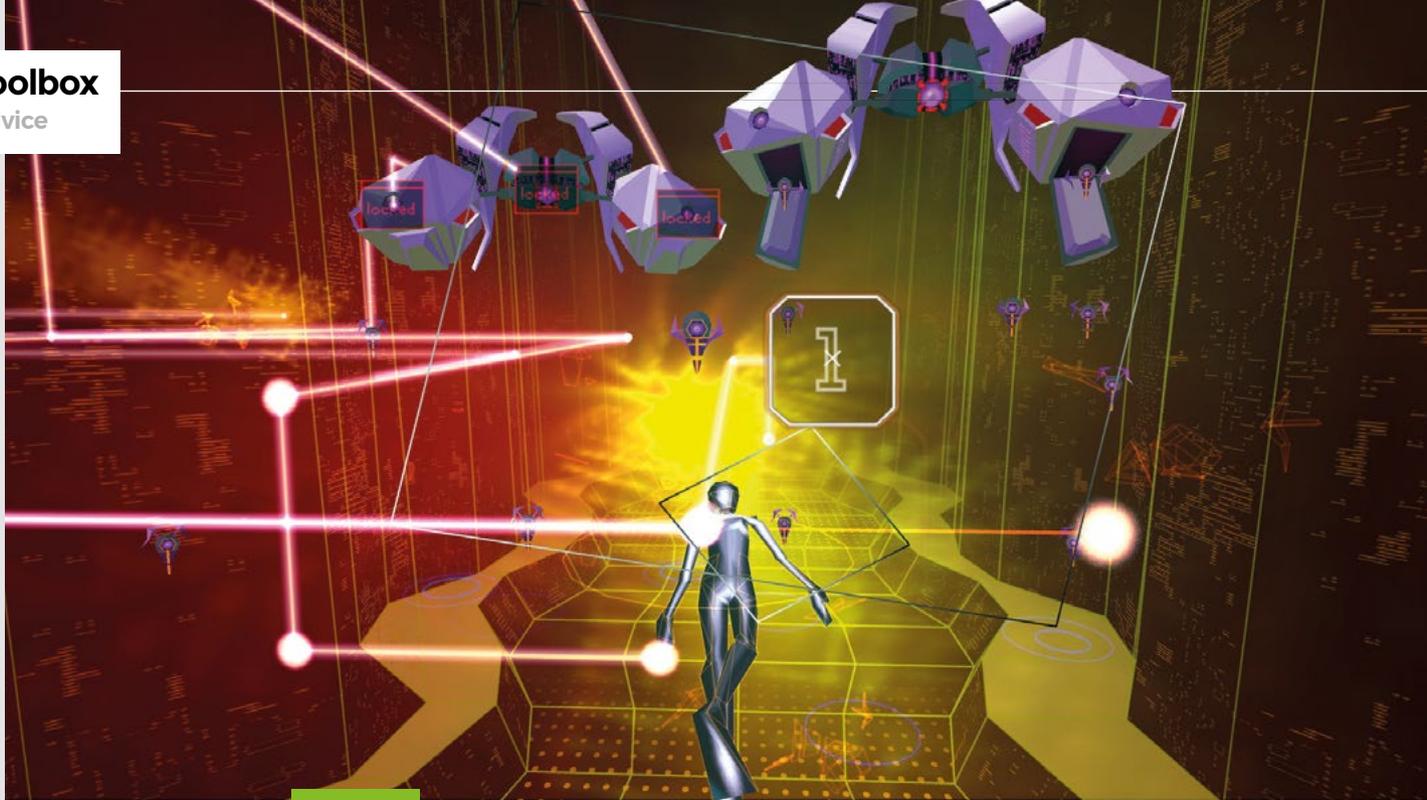
The principles of game design

Are games art, craft, or a science? Howard puts an age-old question to rest once and for all

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**

▾ *Rez* was not only a superior into-the-screen shooter, but also one of the most mesmerising, beautiful games of all time.
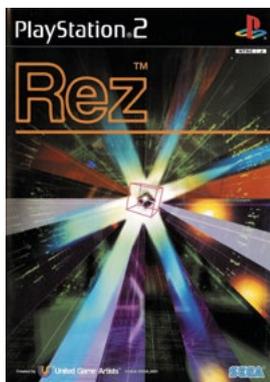
O ne beautiful thing about video games is how they blend art and tech. It takes both to create a good video game. But what is a good video game? Is it a piece of art or a piece of technology? This begs the question: What is a video game maker? Artist, or technologist… or hybrid?

Roger Ebert, the late, internationally acclaimed film critic, once said: "Video games can never be art," and many people listened. What's up with that? Ebert's statement bothers me on several levels.

First off, I find it a tad unsettling that a Hollywood film critic determines what is and is not art. If anything has ever seemed clear to me, it is that any medium *can* be art and no medium must be. Art is a communication. Any medium which conveys information (like a computer) can clearly be used to produce art. Art is independent

of medium. If anything ever proved this, film has. Saying "games can never be art" is like saying "films are automatically art". It's absurd. I love movies and I've seen thousands of them. They are many things, but they are not all art. Likewise, games are *not* all not art!

But I'm not the kind of guy who describes things in terms of what they aren't. Let's speak for a moment about what games are.

According to Ebert, a video game can't be art, so what are the alternatives? Science? Technology? After years of debate in a variety of media, I've come to the conclusion that video games are neither science nor technology. Video games are a craft, not unlike painting, architecture, or filmmaking. What's the difference between art and craft? They're very similar terms, but art seems to communicate in some way, whereas craft is more about specific function or performance. Craft can certainly rise to the level

▲ Art, craft, and technology combined to create the gorgeous *Ōkami*.

VR versus AR

VR offers alternative realities which are very compelling, regardless of usefulness IRL. But AR creates incredibly useful possibilities IRL. I predict, when the dust clears, AR will be the single greatest contribution to the well-being of human beings. VR entertains us in remarkable ways, but AR improves our lives immeasurably. Imagine quickly scanning the kitchen for ingredients, then having a menu of choices appear, guiding us through the recipe. How about repairing things by showing us the exact tool, where to find it, and how to use it? Video games create fun, but their by-products enhance the art of life.

of art, but it doesn't have to. Building a house can be a purely functional endeavour, yet who would doubt Frank Lloyd Wright is an artist?

I see games in this light. A game as pure entertainment is craft. When a game goes beyond entertainment to evoke or provoke, then it is also art. Some games kill time; others kill our conceptions. They are transformative. And when a game achieves this level of impact, it's magical. Speaking of which…

Video games are more than mere craft. To be precise, they are Techno-tainment (a craft that is a hybrid of engineering and entertainment). It needs both to succeed. Interestingly, this isn't such a new field. Magicians have used technology to entertain for many years. The Great Houdini is a prime example. Would Ebert deny Houdini artistic status? M. C. Escher also comes to mind as someone who blurs the boundary between art and science in a way that can mess with your head. Is he any less an artist?

An excellent video game example is Tetsuya Mizuguchi's *Rez*, which uses a carefully crafted mix of sound and colour to induce "synesthesia", thus creating an experience in the player well beyond the scope of basic video game play. Synesthesia is a neurologically based condition in which stimulation of one sensory or cognitive pathway leads to automatic, involuntary experiences in a second sensory or cognitive pathway. Synesthesia has been used by artists for hundreds of years, including Kandinsky, Georgia O'Keeffe, and many modern performance artists. Video games are inherently

> **"When a game goes beyond entertainment to evoke or provoke, it's art"**

multisensory, a perfect medium for this type of art (as *Rez* proves).

Back at Atari, the goal for each game was clear: to create a newer, hotter player experience. Was this art? I don't know. We just wanted to make something cool, hopefully for the mass market. Is there such a thing as art for the mass market? That's another discussion entirely.

If we think of art as communicating deep mood, thought, and feeling, then what of the visceral connection games offer? When you can reach out and pull the player into a world that is compelling, empowering, and immersive, is there any limit to the potential? And when you supercharge the whole thing with virtual reality, oh my god! What better opportunity to realise the old film maxim: "Show me, don't tell me." Do you feel me?

If art is the conveyance of experience, then what medium has ever been riper for enabling users to feel, sense, and believe they are participating in the experience? In the history of humanity, nothing else can match a video game's capacity to provide an immersive simulation of all worlds; past, present, future, and even hypothetical. Can you imagine a world with no hypothetical situations?

Or is it that some people don't understand video games enough to comprehend their dynamism? Sometimes we lose touch as we age. Had Ebert simply failed to recognise the medium's true potential? Perhaps, but I do know this much for sure: video games haven't just hosted art – they've redefined it. ⓦ

▼ *Duke Nukem Forever*: almost certainly not art.

How to build the ultimate, backlit Game Boy Advance

Add a backlit IPS screen, custom buttons, and a new shell to make the ultimate GBA

AUTHOR
TITO PEREZ

Tito Perez is the founder of the YouTube channel, Macho Nacho Productions. A channel dedicated to repairing, modding, and modernising retro video game consoles. **youtube.com/c/MachoNachoProductions**

J ust a few years ago, the thought of adding a backlight to the Game Boy Advance, or GBA, seemed like an unachievable dream. Sure, the Game Boy Advance SP came with a backlight as standard, but its form factor was more compact and, in my opinion, less comfortable than the original. Fast forward to 2021, and you'll find there's no shortage of mod kits available to backlight the original GBA, with each new kit becoming increasingly user-friendly and easier to install. Early kits often required some soldering and even physical modifications to

the console's shell – thankfully, this isn't the case anymore.

To demonstrate just how accessible these mods have become, I'll guide you through all the necessary tools, parts, and steps you'll need to successfully build your own custom, backlit Game Boy Advance.

FINDING A DONOR CONSOLE
To start things off, you'll need a working Game Boy Advance. The unit I'll be using for this tutorial is in pretty rough shape (see **Figure 1**) – it's missing the battery cover, and it looks as though the previous owner tried to do a bit of their own customisation. But fear not – this GBA may look bad, but we're going to fix it right up!

Finding a beaten-up console and restoring it is a rewarding process, and also a great way to save money on these types of projects: GBAs that are listed with problems such as a burned LCD screen or are missing parts, like a battery cover, tend to be relatively cheap, so it never hurts to shop around for a grungy console.

SOURCING THE PARTS
There are so many parts and accessories available for the GBA that it can be quite overwhelming. This does, however, enable you to build a GBA to your own individual specifications, making it unique to you – the permutations of parts is endless.

⌄ **Figure 1: Finding an old, beat-up donor console can save you serious cash. This GBA has seen better days, so it's the perfect candidate for our project.**

For this tutorial, I obtained all my parts from an online store called Retro Game Repair Shop, located in the US. There are many stores like this located throughout the world, though, so I recommend you find one in your country to save on shipping costs. If you're in the UK, you could head to RetroSix (**retrosix.co.uk**) – you'll find a bit more on their range of Game Boy Advance mods on page 106.

Because my donor console is in such bad shape, I'm going to be replacing almost everything. That is, the only item I need is the motherboard, which is essentially the brains of the console. The LCD screen, shell, buttons, and button membranes will all be replaced with brand new components. Speaking of which, let's go over all the parts I'll be using.

The centrepiece of this build is the backlight kit, which will also provide a crisp and vibrant image. More importantly, however, this kit is a 'drop in' solution, meaning you won't need to modify the shell in order to make it fit, nor will you need to solder any wires.

The next item on the parts list is the shell. I've chosen a clear version reminiscent of the 1990s, a time when this was a common design aesthetic – being able to see the device's internals is a really cool touch. The shell also includes some of the other parts we'll need, such as the power

"It never hurts to shop around for a grungy console"

switch slider, side grips, and the left and right triggers. As for the D-pad, A, and B buttons, I'll be using premium machined aluminium versions from a company called Retro-CNC (see **Figure 2**). Metal buttons will add a level of sophistication to our build, so I'm excited to try these out.

Next, in order for the buttons to work, we'll need button membranes. These have conductive pads on the bottom which register button presses. I have these custom, teal-coloured membranes which will look great under the transparent shell.

The last item we'll need for the build is a custom glass screen lens. This is a significant improvement over the stock GBA, which came out of the factory with a plastic lens that was easy to scratch. A glass lens means more scratch resistance and an increased clarity for our newly backlit screen – it's a win-win. ➡

^ Figure 2: Precision machined aluminium buttons bring a degree of sophistication to the build. These are from Retro-CNC.

^ Coloured button membranes are a great companion to clear shells, and add another degree of customisation to your build.
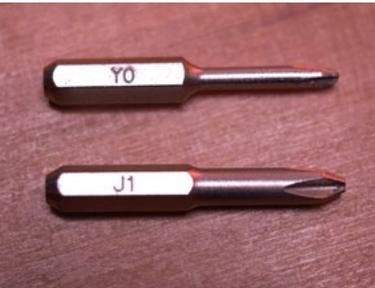
THE TOOLS

The great thing about this build is that you only need a couple of basic tools. The first is a tri-wing screwdriver. This is typically denoted as a Y0 bit (see **Figure 3**). Nintendo uses these types of screws to help deter consumers like you and me from opening their consoles – but that won't stop us, will it?

The only other item needed is a JIS screwdriver bit – the size needed is J1. The J1 bit looks similar to a standard Phillips bit but they're just ever so slightly different. If you use a Phillips screwdriver instead, you run the risk of stripping the screw. Having a screwdriver kit, like the iFixit set I'm using, will help you immensely with this project, and any other tinkering you may do in the future. A worthy investment, in my opinion!

PUTTING IT ALL TOGETHER

Now we've secured all of the tools and parts we need for this project, let's begin to disassemble our tired old donor GBA. Remember, we just need to remove the motherboard, since that's the only thing we'll be using from this old console. All the other components can go into your spares bin, as we'll essentially be using all new parts for this build.

To get started, remove the six tri-wing screws on the back of the console around the perimeter (**Figure 4**). There's also a lone JIS screw inside the battery compartment, so don't forget to remove that as well. If you don't have a JIS screwdriver, a suitable Phillips bit will work also.

> ## "The great thing about this build is you only need basic tools"
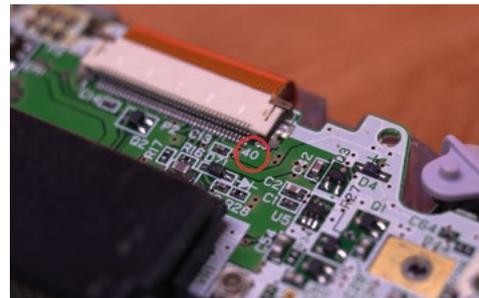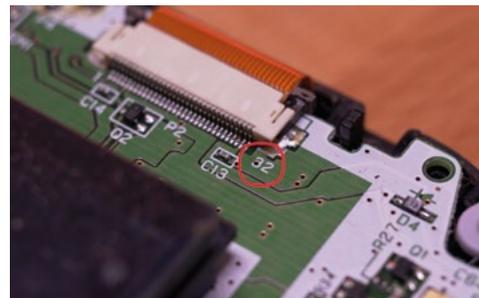
A final reminder: if you're planning to use a Phillips bit, take care to not strip the screw as this will be a more difficult project if you do.

With all seven screws unfastened, you can now remove the rear shell, exposing the motherboard. At the top of the motherboard you'll notice a copper-coloured ribbon cable, which connects the GBA's LCD to the motherboard. We need to disconnect it in order to remove the motherboard. De-latch the bails on either side of the connector by sliding them up using either your fingernail or a small flat-head screwdriver. Once released, you can disconnect the ribbon cable from the motherboard. On the silk screen below the ribbon cable connector, you will notice a number. Mine shows the number 32 (**Figure 5**), which indicates my particular motherboard as having a 32-pin connector. This information will come in handy later on.

The only things left holding the motherboard in place are two JIS screws, so remove each one. So far, so good, right? The motherboard should be free, so you can lift it out of the front shell housing (**Figure 6**). Now's a good time to clean the button contacts on the motherboard as well as any dust that may have accumulated on the speaker and other areas not protected by the shell. This will ensure that you have a clean motherboard prior to installing it in its new home.

Now, let's move our attention to the new translucent shell, and install the IPS screen.

▲ **Figure 3: The Y0 bit is primarily used on the exterior of most Nintendo consoles to deter consumers from getting inside. Internal screws are typically Japanese International Standard (JIS) – see box on page 55 for more info.**

▼ **Figure 4: Rear shell removed from the GBA, exposing the motherboard.**
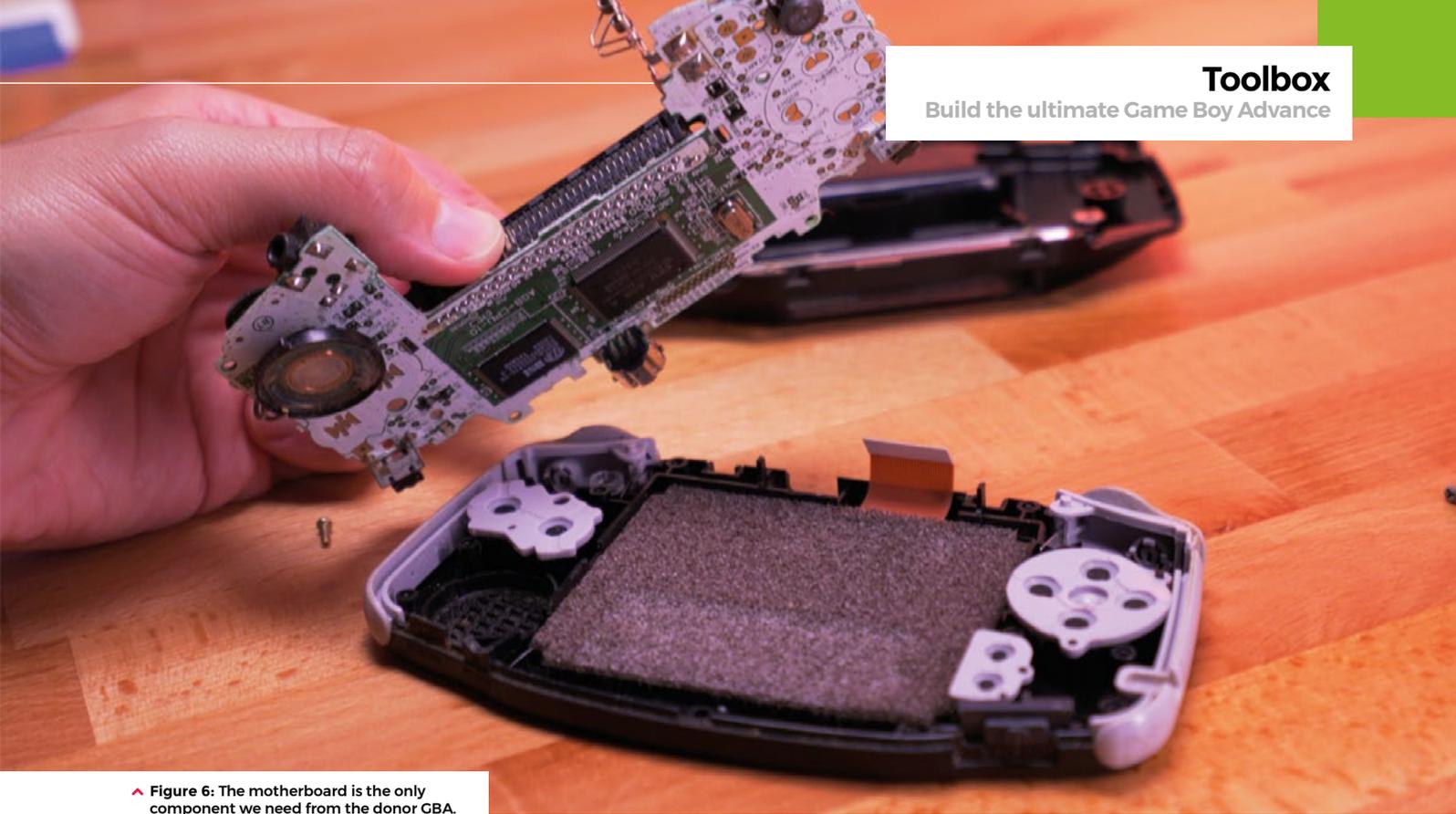
▲ **Figure 6:** The motherboard is the only component we need from the donor GBA.
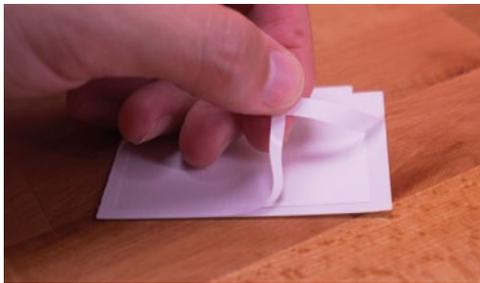
▲ **Figure 7:** Peel away the release liner to expose the foam gasket adhesive.
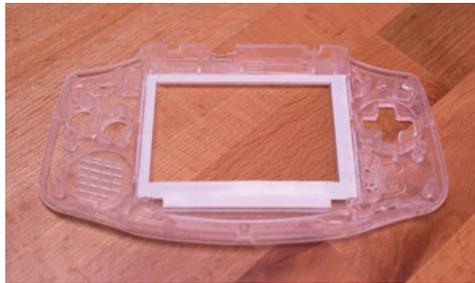
▲ **Figure 8:** Be sure the gasket is oriented correctly within the LCD cubby. The thinner border is on the left and the thicker border is on the right.

▲ **Figure 9:** Although difficult to see, the spacers are located on the bottom left and right of the LCD cubby.
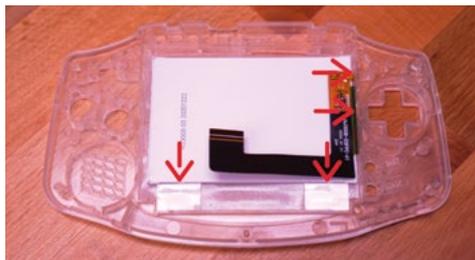

▲ **Figure 10:** Be sure to orient the IPS panel as shown.

To do this, grab the foam gasket that's included with the kit. It has adhesive on both sides. Peel off the release liner to expose the adhesive and carefully apply it to the inner shell around the LCD opening (**Figures 7 and 8**). Note that the gasket installs in a certain way: the left and right borders have different thicknesses, so make sure that the thicker border is on the right with the narrower one on the left prior to installation.

Once properly positioned and adhered inside the front shell, go ahead and remove the inward-facing release liner.

Next, we want to install the two transparent acrylic spacers included in the kit. They're positioned at the bottom of the LCD cubby, as shown in **Figure 9**. They'll be held in place by the adhesive on the foam gasket.

We're now ready to install the IPS panel. You want to get this right on the first try since it will be difficult to remove the panel from ➡


THE 'DROP-IN' IPS KIT CONTENTS

This backlight kit has two components: the IPS panel (left) and the Driver Board (right). The IPS panel is essentially a subset of LCD technology. IPS stands for In-Plane Switching, and it's a common yet superbly performing display. It generates deep blacks and vibrant colours, and typically has great viewing angles. The driver board is a custom PCB (printed circuit board) that translates the GBA video signal into something the IPS panel can understand. It's a sort of Rosetta Stone of video processing.
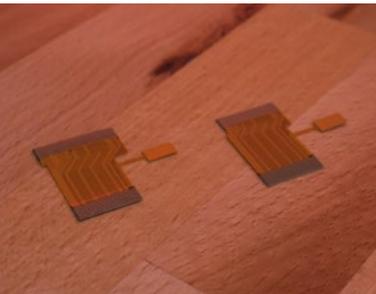
▲ **Figure 11: 40-pin ribbon cable is on the left and the 32-pin is on the right.**

▼ **Figure 12: Insert the ribbon cable so the touch sensor is oriented to the left.**

HEAVY METAL

There are now some talented and dedicated enthusiasts who've built entire businesses around manufacturing metal parts for Game Boy consoles. Of note is Boxy Pixel, a Michigan-based firm that manufactures premium machined aluminium shells and buttons for many Nintendo handhelds. The finish on many of their shells resemble Apple products. Retro-CNC, based in Montana, is another company that specialises in machined aluminium buttons for these consoles, which again are of the highest quality.

▲ **Figure 13: IPS panel connected to the driver board.**
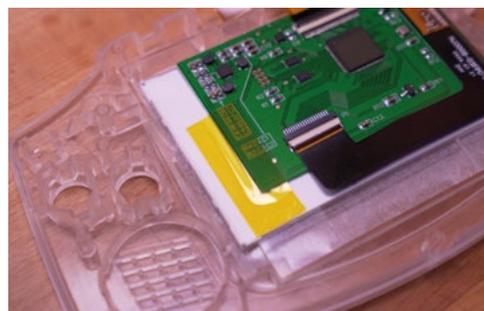
▲ **Figure 14: Taping the driver board to the back of the IPS panel keeps it from shifting around and makes the installation easier.**
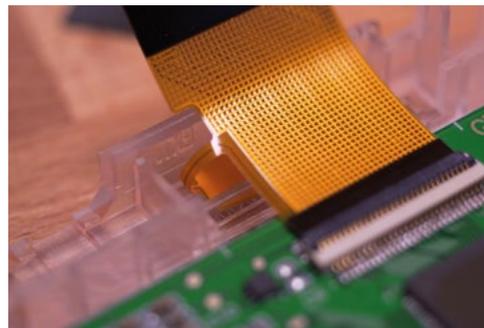
▲ **Figure 15: The touch sensor should be folded over facing towards the front shell.**

▲ **Figure 16: Putting the protective film over the driver board will prevent shorts when you put everything back together.**

the gasket adhesive if you get it wrong. Before proceeding, remove the protective film on the IPS panel. (Useful tip: save the protective film as we'll be using it later in the installation.)

The IPS panel must be placed as far to the right as possible, with the bottom edge of the panel sitting on the upper edges of the two acrylic spacers. Please note the orientation of the panel is with the ribbon cable originating from the right side. Refer to **Figure 10** for further clarification.

With the IPS panel set in place, let's start to prep the driver board. Remember we determined that my particular GBA motherboard used a 32-pin connector? With that information, we can grab the 32-pin ribbon cable (**Figure 11**) and insert it into the top connector on the driver board (**Figure 12**). If your GBA motherboard uses a 40-pin ribbon

> ## "Congratulations – you've built a custom Game Boy Advance. Now you can enjoy your GBA games as they were meant to be played"

cable, install that one instead. Now go ahead and place the driver board behind the IPS panel. Insert the IPS ribbon cable into the lower connector on the driver board. Be sure it's fully seated, and then lock the bail (**Figure 13**).

I used a piece of tape to keep the driver board from moving around (**Figure 14**). You'll notice there's a small pad sticking out on the left side of the upper ribbon cable. That's a touch sensor, which will control the IPS screen's brightness. You'll want to fold it towards the front of the console so that it sits behind the ribbon cable (**Figure 15**). Finally, take the protective IPS film I told you to save and place it on top of the driver board (**Figure 16**). This will act as a barrier between the motherboard and the driver board, ensuring nothing shorts out. This is a great little hack I learned over years of modding Game Boys.

LET'S BRING IT HOME
You've made it this far, and now, we're on easy street. Let's go ahead and install the aluminium buttons and D-pad, as well as the L and R triggers and the side grips. Oh, and don't forget

to install the LED light pipe – that's something I forget to install all the time. Then install the new teal button membranes (**Figure 17**).

Now we can install the motherboard. Carefully place it into the front shell housing and then secure it with the three JIS screws that it came with (**Figure 18**). It's important to *not* reuse the old screws from the original shell. There's a risk that the new shell wasn't designed for the old screws, and it could damage the shell. Once the motherboard's secure, insert the IPS ribbon cable into the motherboard and then lock the bails (**Figure 19**). Make sure the sensor tab is still folded properly.

OK, you're on the home stretch. Place the rear shell onto the front and secure it with the six tri-wing screws around the perimeter and the single JIS screw in the battery compartment. Toss in a couple of AA batteries, then put on the battery cover (**Figure 20**).

The last and most critical step is to install the custom chrome glass screen lens. Make sure to remove any dust that may be on the IPS panel, then carefully peel the release paper on the screen lens and set it into place on the front shell.

Congratulations – you've just built a custom, backlit Game Boy Advance. Now you can enjoy your entire library of GBA games as they were meant to be played. I find that playing some of my old favourites with a completely upgraded console changes and amplifies the experience. Enjoy your 21st century-ready GBA! ⓦ

▲ **Figure 17: Everything in place prior to installing the motherboard.**

▲ **Figure 18: Motherboard installed!**
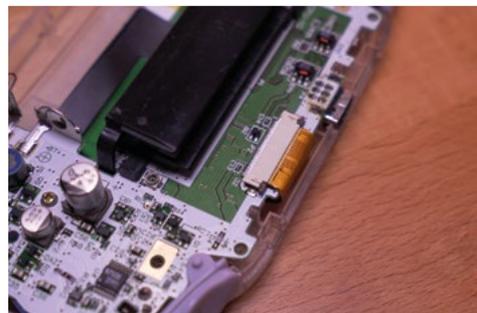
JAPANESE INDUSTRIAL STANDARD (JIS)

Japan has its own set of industrial standards. This means that, when it comes to Japanese electronics such as the Game Boy, the fasteners holding the console together use the JIS standard, which differs slightly from a standard (and similar-looking) Phillips screw. Using the correct JIS bit is crucial for reliably assembling and disassembling your Nintendo consoles.

❮ **Figure 19: Ribbon cable inserted into the motherboard.**

❮ **Figure 20: Batteries installed.**

Obra Dinn:
plotting a course

Return of the Obra Dinn masterfully manages plot reveals. Antony maps its entirety to discover the writing's hidden patterns
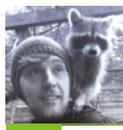
AUTHOR
ANTONY DE FAULT

Antony is Wireframe's game writing and narrative design columnist. He's also creative director of Far Few Giants, and you can find his work on **default.games** or **@antony_de_fault** on Twitter.

Last month, we analysed the 'rule of threes' guessing mechanic in *Return of the Obra Dinn*, a game about investigating an abandoned ship to deduce the fates of the souls listed on its manifest, with the help of a magical pocket watch that allows you to relive corpses' moments of death. This month, I've mapped every pertinent piece of information the game gives you, and beneath all the naval set-dressing and murder-mystery, found a surprisingly simple structure to add to our toolbox, as well as a mostly careful and regular delivery of clues which conceals the game's Achilles heel.

Once I'd finished mapping the game's 'parts', which is its word for a death-diorama seen via the pocket watch, the first thing that surprised me was its simple shape (**Figure 1**). There's a direct line of flow from the first part to the last, with a few brief narrative cul-de-sacs branching off, though never more than two at a time. This is cleverly obfuscated by the way bodies are strewn across the ship, some slightly hidden, some in plain sight, and the fact you're distracted by deducing fates and identities as you go. Objectively, you're walking through a mostly linear slideshow. In practice, you feel like the game's reacting to your inquiry.

Further, all the necessary plot detail – the beats involving monsters, mutiny, and magic – is on that main path, mostly unlocked in reverse chronological order from most recent to least.

> **"Men covet magic item, magic item summons doom, men back-stab"**

If you only saw those parts, you'd get the basics noted in brackets on the flowchart: men covet magic item, magic item summons doom, men back-stab and make things worse for themselves, men pay with their lives.

The remaining parts, away from the core path, serve to either flesh out the context of a chapter's plot events, or give texture by depicting life at sea. Then, once the player has witnessed every part accessible, the game invites them to finish it at any time they like. This is like *Paradise Killer*, another deduction puzzler: allowing the player to decide when to 'hand in their homework' and declare their deductions complete. The game *can* end having simply clicked on everybody and made no deductions, if you choose. But... a note in the player's journal tells them that there's a final chapter, which will remain deliciously secret unless they solve and input everyone's identities and fates before ending the game. The linear, sequential unlocking and in-your-own-time ending provide a great structure for a detective game. We're guided through it all once, making notes, then left to review and deduce at our leisure. While their causes of death are generally obvious, for each of the 60 souls on the manifest, there's a clear point at which some critical piece of identifying information is revealed. Some are obvious: the man referred to by a mutineer as "Captain!" in the first scene is Captain Witterel, duh. Most identities are challenging, only deducible through their associated objects or place in the

THE COLD SOLUTION

The 'correct' way to identify the four Chinese sailors is by noting their unique shoes and socks in other scenes, then cross-referencing this with sleeping sailors' feet hanging out of hammocks in *A Bitter Cold*. Each hammock has a small but noticeable tag on it with a number, and these numbers correspond to each individual's line number on the ship's crew manifest... so, yeah, as noted last month, the way most people solve these and other difficult identities is through brute-forcing guesses in the verification system.

ship's social hierarchy. Some are just devilish, requiring attention be paid to minute details.

Only half of the identities can be ascertained from the 25 parts on the direct path through the story. The remaining 30 identities can be cleared during the 19 other death-dioramas, suggesting that the core path through the story has a lower information density than the auxiliary parts. This seems sensible: overloading the player with information would slow their progress, and obscuring the main plot points with detail may harm their understanding. When key plot info's revealed, it's vital that the player understands the story while getting some easy solves.

THE ANOMALY

The core path through the game contains an info density of 1.2 IDs per part. But, hold on. *A Bitter Cold*, a somewhat incidental chapter in which a cow's slaughtered and two seamen die from disease, contains only three parts, but has the identifying information for 13 people. This is a far higher density than found elsewhere: it's 4.3 IDs per part. Many of the identifications you can find in *A Bitter Cold* can be made elsewhere with guesswork, or by brute-forcing the verification mechanic, but the chapter seems to have become designer Lucas Pope's dumping ground, of sorts. It's as if any time Pope struggled to fit identifying information into the rest of the plot, as he understandably has for many of the dogsbody seamen, they'd be included in *A Bitter Cold* along with a unique item that suggests their identity. It's an inelegant but practical solution, and my instinct says this chapter was added or augmented late in development in response to playtesters getting blocked on certain deductions.

This outlier aside, the remaining auxiliary parts have slightly less info density than the core, at 1.1 IDs per part. Our earlier deduction was semi-wrong: although I can't qualitatively show it, having played through the game several times while building this data it became apparent that the harder deductions are most often made in the side-parts. So what can we learn? Well, the structure is both simple and reusable, and despite one achilles heel chapter, Pope kept his info flowing evenly throughout the game, around zero to two key pieces per 'scene', but focused his information opacity in a way that encourages better comprehension of the critical plot elements. Plenty to build on, and tinker with, for anyone making the next great first-person deducer. ⓦ
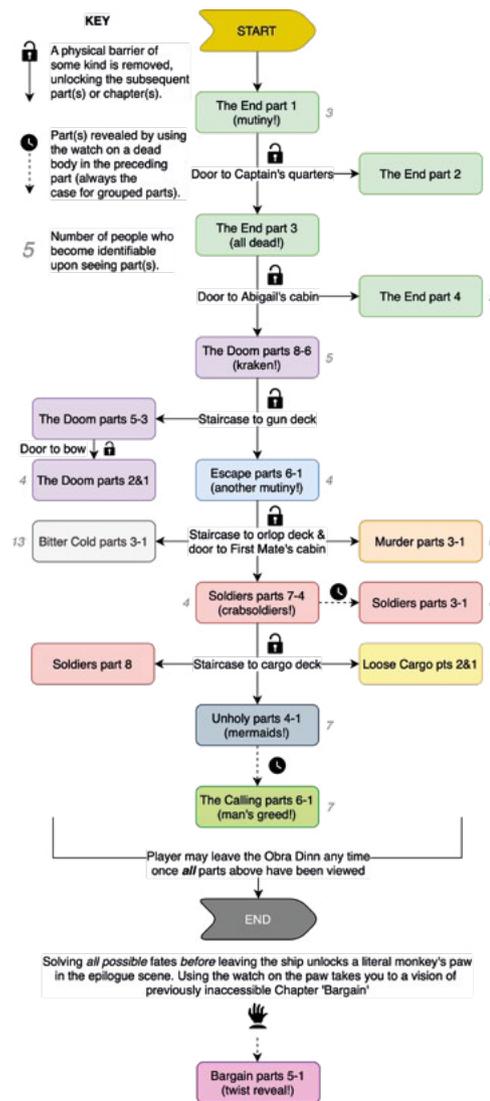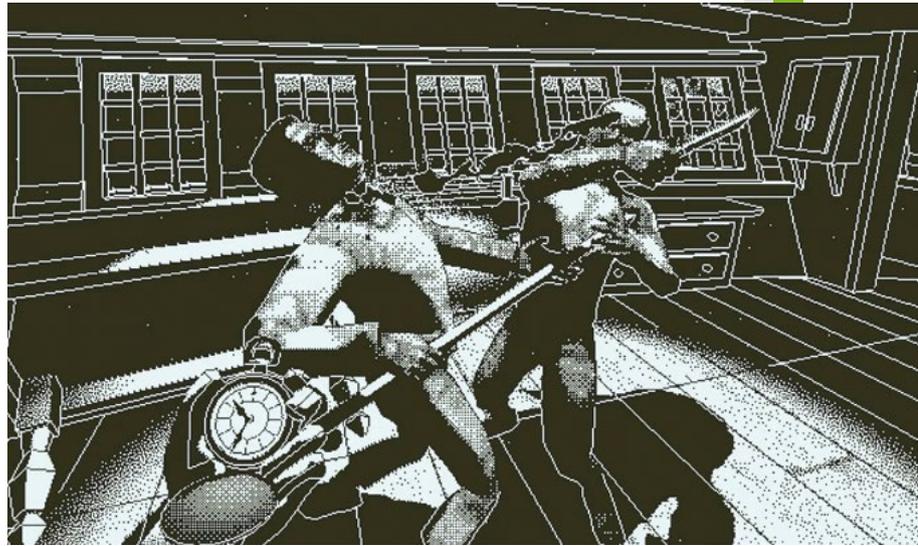
The pocket watch mechanic naturally makes the ship feel cursed: in order for the player to see something, someone has to have died in that moment.

Figure 1: This flowchart shows all information flow in *Obra Dinn*, abridged. The full version can be seen at wfmag.cc/obra.

Plan your game using pillars and triangles

In game design, freedom can lead to paralysis. Game pillars and the iron triangle will help you focus on what's important

AUTHOR
STUART MAINE

Stuart Maine has been a designer for 23 years across PC, console, and mobile. He helped set up Well Played Games, and is currently working on an unannounced title.

This article will cover two game development tools that are designed to help decide what's important in the game you're making. The iron triangle revolves around the practical realities of making a game, while game pillars cover the creative side, but both relate to the importance of focus. Let's begin with pillars.

GAME PILLARS
Every game media has its strengths, such as wargaming's communities, the shared experiences of board games, or the collaboration of RPGs. One of the advantages of video games is their sheer flexibility – we can race across alien worlds, explore Egyptian tombs, or keep fit while going on magical quests. But that infinite flexibility can be a real problem for game creators, because if the game you're making can include literally anything, then how do you know what to focus on?

Let's assume you have an idea for a game based on a particular world or character, or a certain type of gameplay. Alternatively, you might have used player types (see Wireframe issue 39) to decide on a particular audience and the features they like, or if you're working with someone else's IP, then that brand's owners might have a type of gameplay in mind. Game pillars help move beyond those starting points and guide you through development.

THE BASICS
A game's pillars are a list of around three 'core statements' created early in that game's development. You could come up with your pillars before you've started development to help narrow down the possible game you might make, or you might do this after prototyping has given you an idea you want to pursue. You can even retroactively create pillars to help rescue a game that's been in development for a while and has lost its way.

The flexibility of the medium of video games lets us experience concepts like the non-Euclidean geometry behind *Superliminal*'s 'whatever you see is reality'.

∧ A pillar saying your game is a platformer doesn't really help, it's what you do or say with that basic framework that matters.

‹ During development, *Rime* began to deviate from its original goals and the team had to take the decision to refocus on their pillars.
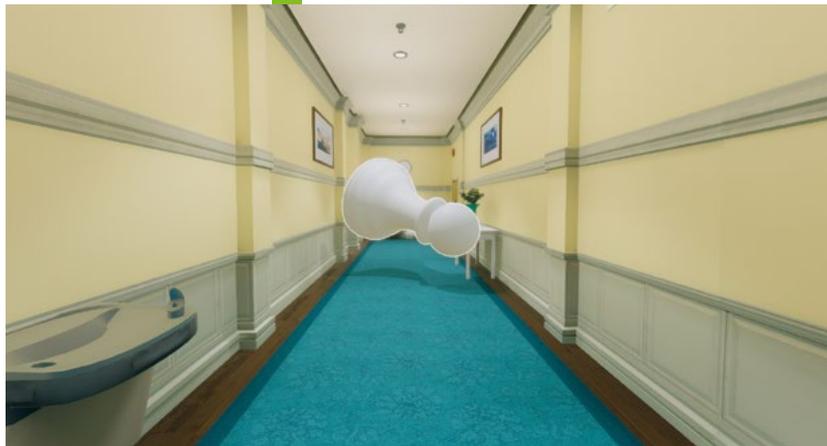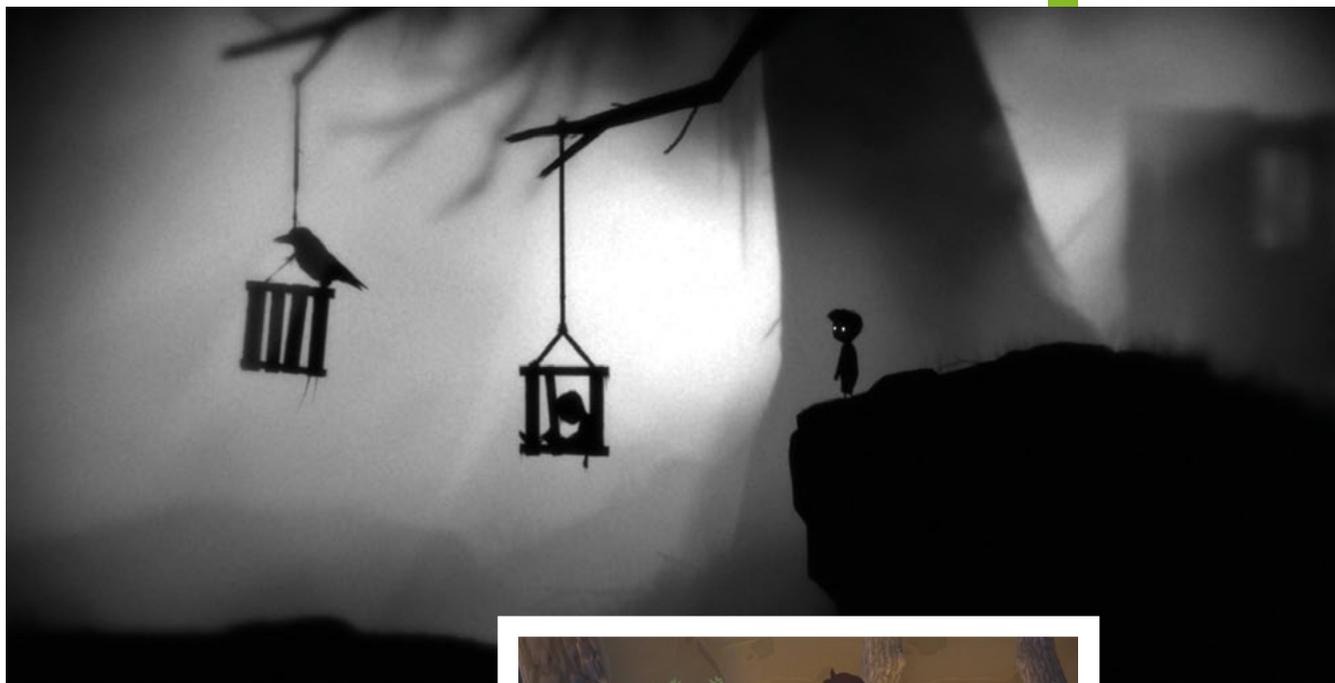
- Each statement should be short – no more than a sentence – and each should be phrased as a rule you will follow throughout development.

- Use active language. We will, we like, this game is, our audience wants, and so on. Don't use negative language if you can rephrase the same statement as a positive.

- Importantly, make your pillars focus on how your players will feel over the things they will do. This is probably the most important concept here, so let's explore it further.

It's easy to write 'our game will feature 2D puzzles and platforming', and technically that is a pillar because you can refer back to it later. But it doesn't really say anything about what that platforming is *for*. By that, I mean why are you making a game about platforming? To dig deeper into the 'why' behind your pillar, you could rewrite that sentence to one of these:

- Explore evocative alien worlds, telling a story through atmosphere and details

- It's satisfying to master deep systems and figure out hidden rules

- Our players will achieve a state of flow through challenging, precision gameplay

Those are my example guesses at a pillar each for the platform games *Flashback*, *Spelunky*, and *Celeste*. All are 2D platformers, but they're 'about' very different things.

WHAT TO DO WITH YOUR PILLARS

Note that none of the above examples specifically talk about the gameplay being platforming, because pillars should focus on the feelings and emotions you want your game to evoke, rather than how you're going to do it. That's because pillars aren't a feature list to check off, more a tool to help remember the things that are important when you're submerged in the day-to-day realities of game development. Pillars are the *why* of your game, and the actual development process is coming up with the *what* to match those initial goals.

Print your chosen pillars as large as you can and put them up somewhere you'll see them every day. That way they'll become ingrained in your thoughts and you'll easily be able to refer to ➡

SILENT SCOPE

There are many reasons games can struggle during development, but lack of creative direction is a big factor. If the team doesn't know what a game is trying to 'be', then it's difficult to know if you've done enough to get there, leading to projects that meander on with no end in sight. Games like *Rime* had to stop and rescope to match their goals, but probably the most famous example is *Duke Nukem Forever* – the game was finally released after eight years and was still a confused, directionless mess.

⌃ Another benefit of pillars is they can be used to communicate the game's vision to the public, helping to balance reality and hype.

⌄ When you're working with someone else's brand, involve that IP's holder in pillar discussions so that they're onboard with your chosen direction.

them when someone suggests a new feature or change to the game. Will that change help bring your game closer to your pillars (great), not really affect them (neutral), or work against them (bad)?

I've seen studios use pillars on struggling games to discard any areas which don't match them. You particularly see this if a game is taking too long to release (because most professional studios have to get a game out to some sort of deadline – more on this below), with people looking back to their pillars to help work out what to cut. If feature A is cool, but feature B aligns with the pillars, it'll take a strong argument to keep A.

> **"They're a tool for staying on track, not for coming up with ideas"**

ESTABLISHING PILLARS

There are a couple of approaches for coming up with a game's pillars, each with advantages, but also potential problems to look out for. Both of these approaches assume you already know to some degree what the game will be. Your pillars will help guide the eventual game's details, but they're a tool for staying on track as you forge ahead, not for coming up with ideas in the first place. If you haven't agreed on a concept for your game yet, then run game jams, conduct audience and market research, or paper prototype ideas first.

Second, both approaches assume any business, audience, IP, or technology factors are already agreed and set in stone. For example, you might already know that this will be a multiplayer game, that it must be released within this time frame, or that it must be built on the technology created for your previous game. We'll talk more about this with the iron triangle, but basically, any real-world issues that are beyond your control must be acknowledged or you risk coming up with pillars that set you up for difficulties later.

The two approaches are to have the entire team brainstorm potential pillars, or have vision holders dictate them:

- If the entire team is involved, then you run brainstorming sessions where everyone's potential pillar ideas are stuck up on a wall. Then the group chooses the best pillars

⌃ *Duke Nukem Forever* **is an example of a major game that suffered for its lack of creative direction.**

or combines a couple of ideas into pillars (remember the point about keeping them short – mashing many ideas into a long pillar is cheating).

The advantage of this approach is that everyone understands and buys into the chosen pillars because they had a say in creating them. The downside is that this process can take time, with potentially conflicting ideas needing to be whittled down until an agreement is reached.

- The other approach is for 'creative vision holders' to come up with the game's pillars and then present them to the rest of the team. Obviously, this is much less collaborative and more about saying, 'I have a vision for this game which I think could be incredible, will you help me make it?' The advantage of this is that everyone can rally behind a singular vision that someone is passionate about bringing to the world. As a result, the game's pillars are likely to be extremely focused and all pointing in the same direction. The downside is that it requires everyone else to get on board with the game's pillars even though they didn't help come up with them.

Either way, once the pillars have been created, everyone on the team has to work with them in mind – there's an implied contract that these rules must be enforced to ensure the game keeps moving in the right direction. Even though it can be unpopular to say no to someone's idea, that's what pillars are there to help with (and of course, pillars don't say 'that idea is bad', simply that it doesn't fit this particular game. Write the idea down and maybe build your next game around it).

EXAMPLES
Here are some actual pillars from games I've worked on:

- **Live through the apocalypse by any means necessary.** This pillar from a military-themed game establishes that any action is acceptable in order to survive, implying a gritty, survival-of-the-fittest tone.

- **Does it make me feel loved?** A pillar from a game that was designed to appeal to an audience that liked romances and was looking for escapism. This guided our characters, environments, and art style.

- **Make me feel powerful, and make me say, 'That was awesome!'** It's always worth considering a pillar covering who the player is in this game. If you're making a game about being a giant robot, then ensure players feel big and powerful.

- **Small actions = epic reactions.** From a puzzle game themed around combat. Because the player is making very small actions (tap, drag) we wanted to ensure the game responded with weighty reactions.

- **Express your own style in a safe way.** If you're working on a game for kids, it's worth thinking about the challenges and worries in their lives, and whether your game can help them safely explore those areas. ➡

BLOG OF WAR
Check out this Sony blog for an example of the pillars used in 2018's *God of War*: **wfmag.cc/blog-of-war**. Their approach is to list themes alongside gameplay features, but they still worked out what was important and purposefully developed in that direction. Strong creative vision is particularly important for the huge teams involved in blockbuster games to avoid sub-teams pulling in different directions.
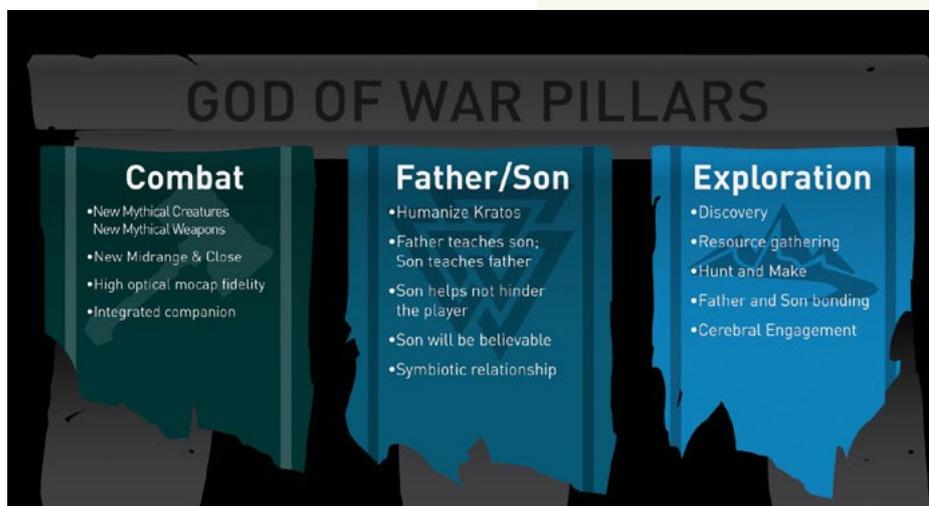
^ *Owlboy*: a game that favoured quality over time. It took about nine years to make, but looked spectacular.

HIT THE PILLAR

Should you change pillars midway through development? Sometimes – like *Borderlands*' late shift in tone and style – changing a pillar can take you somewhere more interesting, but usually, it's just lack of conviction. I would suggest asking whether you want to change a pillar because the game's theme has evolved as you 'found the fun', or whether you've just had a really cool new idea? It's dangerous to change pillars if it's the latter because it can just lead to a different – but not necessarily better – game, and going round in circles.

- **Trust the player – it's their game, let them play how they like.**
  We used this for a procedurally created game, reminding the team not to create puzzles but to focus on systems that players could use and abuse any way they wanted.

THE VALUE OF PILLARS

I realise that game pillars are quite an abstract topic, but in my experience across many games and studios, they have proven their worth. At the start of a project, they help avoid the 'blank page' problem of being able to make anything you can imagine, and later they help you say 'this, but not that' and avoid wandering in the development wilderness. So however you choose to structure or word your game pillars, I wholeheartedly recommend spending a little time thinking about the *why* before you launch into the *what*.

Speaking of which, let's take a look at the iron triangle and how it will impact your game,

^ The iron triangle is a project management tool to understand priorities and limitations. Which two points are most important to your project?

because no matter what you do in the games industry, the triangle will impact you. As a result, it's important to have an idea of how it works and what it means to your projects. A quick disclaimer: I'm going to simplify a complex area for space reasons, so if it interests you, check out online resources on this and other project management topics.

ART VERSUS BUSINESS

Have you ever played a game and clearly seen that it was unfinished? Missing features, obvious bugs, and a lack of polish show that you're playing a game that needed more development time. The iron triangle is the reason games are released in an unfinished state, but it isn't some malevolent force – it's simply where reality butts up against creativity in game development.

Coined by Dr. Martin Barnes, the triangle applies to premium games as much as free ones, and to indie games as equally as blockbusters. It relates to three areas of game development:

> **"The iron triangle is where reality butts up against creativity"**

- **Quality:** How 'good' is your game? Good could mean it has many features, levels, NPCs, and weapons, or that what you have is highly polished and balanced. It also dictates how many bugs you let through into the finished game (no one ever fixes all their bugs, you just choose which are most important).

- **Time:** Implementing all of the above takes time, so this point of the triangle relates to how long your game will take to be released. Most game developers have to release their games to some sort of deadline; see 'Time = money' for more on this.

> Although no one sets out to make a bad game, movie licences often feel the pressure of the iron triangle due to their fixed release date.

- **Money:** The longer a game's in development, the more money it costs, with most coming from the wages or living expenses of the team working on it. Money is the most complicated of the three factors because there's a limit to how much you can throw at a game. A feature that's going to take a lone developer ten months can't be done in one simply by paying to put ten developers on it – people get in each other's way and you have to pay even more because that many people need a lot of management.

CHOOSE YOUR PRIORITIES

Now we know the three points of the iron triangle – where things get interesting is that those points are all interrelated, and the rule is you can only control two of the three points. You can select which two points you want to control, but you have no say on what happens to the third. That's why it's called an iron triangle – the outcome of the third point is decided by what you do with the two you've chosen to control.

These are the outcomes you can expect based on the two points of the triangle you choose to control:

- Controlling time and money is where you see licensed tie-in games. Because they need to release alongside (say) a movie, they must come out on a certain date, and they can't cost more than a certain amount otherwise it isn't worth making the game in the first place. The point of the triangle not controlled here is quality, meaning the game will be as big and polished as it happens to be when the time and money run out.

- The second choice is to control time and quality, meaning the game must come out on a certain date and be at least 'this' good (e.g. large, polished, and bug-free). This option means you relinquish control over the game's cost – it will simply cost as much as it needs to, to ensure it hits your quality bar and is released on time.

- Finally, you can control money and quality, meaning the game will be big and polished, but the team is kept small to limit development costs. This means you have no control over how long the game will take to release because a small team making a polished product can only work so fast.

BUSINESS REALITIES

You might be wondering why any of this matters – after all, you could be making a game in your spare time or working at a studio where other people make these decisions. But if you understand which of the points of the triangle your project is trying to control, then you can work more effectively, making choices that work towards those needs rather than against them.

As a side note, if you're working at a studio and whoever's in charge insists they can control all three points of the iron triangle, consider that a Big Red Warning. That sort of denial of the fundamentals of project management means overtime – and a game that's likely to go off the rails.

The iron triangle isn't about hateful business realities quashing your creative dreams, it's about choosing and understanding your priorities so that you control your game, not the other way around.

To recap: choosing your game's pillars helps you focus on what's important, and choosing which two points of the iron triangle you want to control helps you focus on the reality of making a game. Both of these are important, because not deciding on a game's pillars can lead to the end result being a mess of conflicting ideas pulling in multiple directions, and ignoring the iron triangle leads to games spiralling into overtime, delays, and impossible demands. Yes, making games should be fun, but a little focus early in a project's life can pay off big time later on. ⓦ

TIME = MONEY

Time and money are separate points of the triangle, but for lone creators, they're effectively the same thing. That's because you either need to make each asset or feature yourself or pay someone for it. The first approach costs your time, which is precious because every hour spent creating something is an hour you could have been making something else. The second costs money – sometimes it's cheaper to outsource rather than doing it yourself. Of course, you may not have the luxury of outsourcing, but either way, you're 'paying' for each thing included in your game.

⌄ Shigeru Miyamoto spoke about delaying *The Ocarina of Time* until it was of the highest quality, making 'cost' the element out of his control.

❮ **Dodge and shoot the rocks in our homage to the classic** *Gradius*.

Source Code

Recreate Gradius's
rock-spewing volcanoes

Code an homage to Konami's classic shoot–'em-up

AUTHOR
MARK VANSTONE

Released by Konami in 1985, *Gradius* – also known as *Nemesis* outside Japan – brought a new breed of power-up system to arcades. One of the keys to its success was the way the player could customise their Vic Viper fighter craft by gathering capsules, which could then be 'spent' on weapons, speed-ups, and shields from a bar at the bottom of the screen.

A seminal side-scrolling shooter, *Gradius* was particularly striking thanks to the variety of its levels: a wide range of hazards were thrown at the player, including waves of aliens, natural phenomena, and boss ships with engine cores that had to be destroyed in order to progress. One of the first stage's biggest obstacles was a pair of volcanoes that spewed deadly rocks into the air: the rocks could be shot for extra points or just avoided to get through to the next section. In this month's Source Code, we're going to have a look at how to recreate the volcano-style flying rock obstacle from the game.

Our sample uses Pygame Zero and the `randint` function from the random module

to provide the variations of trajectory that we need our rocks to have. We'll need an actor created for our spaceship and a list to hold our rock Actors. We can also make a bullet Actor so we can make the ship fire lasers and shoot the rocks. We build up the scene in layers in our `draw()` function with a star-speckled background, then our rocks, followed by the foreground of volcanoes, and finally the spaceship and bullets.

In the `update()` function, we need to handle moving the ship around with the cursor keys. We can use a `limit()` function to make sure it doesn't go off the screen, and the **SPACE** bar to trigger the bullet to be fired. After that, we need to update our rocks. At the start of the game our list of rocks will be empty, so we'll get a random number generated, and if the number is 1, we make a new rock and add it to the list. If we have more than 100 rocks in our list, some of them will have moved off the screen, so we may as well reuse them instead of making more new rocks. During each update cycle, we'll need to run through our list of rocks and update their position. When we make a rock, we give it a speed and direction, then when it's

updated, we move the rock upwards by its speed and then reduce the speed by 0.2. This will make it fly into the air, slow down, and then fall to the ground.

From this code, we can make rocks appear just behind both of the volcanoes, and they'll fly in a random direction upwards at a random speed. We can increase or decrease the number of rocks flying about by changing the random numbers that spawn them. We should be able to fly in and out of the rocks, but we could add some collision detection to check whether the rocks hit the ship – we may also want to destroy the ship if it's hit by a rock. In our sample, we have an alternative, 'shielded' state to indicate that a collision has occurred. We can also check for collisions with the bullets: if a collision's detected, we can make the rock and the bullet disappear by moving them off-screen, at which point they're ready to be reused.

That's about it for this month's sample, but there are many more elements from the original game that you could add yourself: extra weapons, more enemies, or even an area boss. ⓦ

Vulcan Venture

Here's Mark's volcanic code. To get it working on your system, you'll need to install Pygame Zero – full instructions are available at **wfmag.cc/pgzero.**

```python
# Gradius
import pgzrun
from random import randint

jet = Actor('jet',(400,300))
bullet = Actor('bullet', center=(850, 0))
rocks = []

def draw():
    screen.blit("background", (0, 0))
    drawRocks()
    screen.blit("foreground", (0, 0))
    bullet.draw()
    jet.draw()

def update():
    if keyboard.up: jet.y = limit(jet.y-5,50,550)
    if keyboard.down: jet.y = limit(jet.y+5,50,550)
    if keyboard.left: jet.x = limit(jet.x-5,10,790)
    if keyboard.right: jet.x = limit(jet.x+5,10,790)
    if keyboard.space :
        if bullet.x >= 850 : bullet.pos = (jet.x,jet.y+5)
    if bullet.x < 850: bullet.x += 20
    updateRocks()

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

def drawRocks():
    for r in range(0, len(rocks)):
        rocks[r].draw()

def makeRock(pos):
    r = len(rocks)
    if r < 100:
        rocks.append(Actor('rock'+str(randint(1,3)), center=pos))
    else:
        r = getOldRock()
        rocks[r].pos = pos
    rocks[r].speed = randint(6,12)
    rocks[r].dir = (randint(0,60)-30)/10

def updateRocks():
    if randint(0,10) == 1: makeRock((215,480))
    if randint(0,10) == 1: makeRock((540,480))
    shieldsUp = False
    for r in range(0, len(rocks)):
        if rocks[r].y < 800:
            rocks[r].y -= rocks[r].speed
            rocks[r].x += rocks[r].dir
            rocks[r].speed -= 0.2
            if jet.colliderect(rocks[r]):
                shieldsUp = True
            if bullet.colliderect(rocks[r]):
                rocks[r].y = 800
                bullet.x = 850
    if shieldsUp == True:
        jet.image = "jet2"
    else:
        jet.image = "jet"

def getOldRock():
    for r in range(0, len(rocks)):
        if rocks[r].y >= 800:
            return r

pgzrun.go()
```


▲ The *Gradius* volcanoes spew rocks at the player just before the end-of-level boss ship arrives.

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ARTISTS
Karolina Neckman,
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RELEASE
2022

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Backbeat

Ichigoichie's next release following *Hexagroove: Tactical DJ* aims to offer a strong contrast when compared to the previous title. "Where *Hexagroove* takes place in the modern digital-only world, *Backbeat* is built on live jam band music and set in 1995," the studio says. "To reinforce the analogue feeling of both the live recorded music and the brick-and-mortar economy of suburban yesteryear, we chose to feature tangible materials in the art style. Characters and environments are textured with different printing styles to evoke a strong paper-based feeling on top of the low-poly art. Dialogue portraits and organic in-game materials are filtered through watercolour splotches. Logos, walls, and man-made materials bear a speckled half-tone finish. Upholstery patterns are striped like corduroy."

The aim with this "funky and mature" aesthetic is to represent the nineties era, but the studio is cognisant of slipping into stereotypical presentation: "Character colours are bold but not cartoonish or juvenile," we're told, "and environments are filled with desaturated earth tones and pastels. We wanted to create a feeling that is authentically 1990s and carries the celebratory feeling of getting a photocopied flyer of a live gig. As the characters in our story learn, music is a collaborative art and one that builds bonds not easily broken, between both musicians and fans alike."

type-in
of the Dead

A generation of programmers got their start by painstakingly typing in long games listings printed in 1980s magazines. We caught up with them to hear their experiences

BEEBUG magazine was full of type-in listings in each issue. Not bad for a quid.

Programmed by Fabien Fessard, the stunning shooter *Axys: The Last Battle* was printed over five issues of French magazine, CPC Infos.
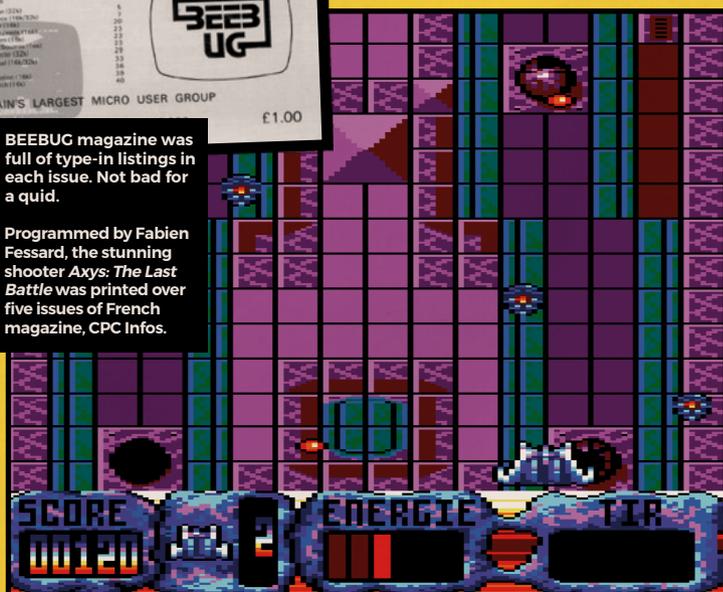
WRITTEN BY
DAVID CROOKES

All it took was a printing error, and suddenly readers were holding their magazine or book up to the light and scrutinising the lines of code. They were sure they'd typed every character into their computer with care, so why did they keep seeing "Syntax Error" screaming back at them from the screen? Was that letter 'O' really a zero? Was that a lower-case 'L' or a '1'?

For the readers and editors of the publications which carried them, type-in listings were a blessing and a curse. They'd dangle the opportunity of 'free' software in front of computer users, then make them work their fingers to the bone for it. The rewards would come to those who had the patience and nerve

Type-ins even appeared in unusual places. The MAD Computer Program for Apple, Atari, and Commodore computers was spread across two pages of MAD magazine in October 1985.

to accurately key in each line, and in the British computer scene of the late 1970s and early 1980s, type-ins were hugely popular.

Among the first to spot the potential of printing type-in listings was David H. Ahl. Hired by Digital Equipment Corporation (DEC) in 1969, he became manager of Education Marketing the following year, and his job was to devise programs to demonstrate (and sell) the firm's computers to maths teachers. In 1971, Ahl began editing the company's newsletter, EDU, calling for readers to submit their own programs. "Before long, users at our first installations began sending in various small, primitive games – and lots of them," Ahl says. "These came mostly from students, not teachers, and we started using the best ones on sales presentations as well as in the newsletter."

As more programs were printed, so more were submitted. Ahl accumulated so many, he decided they'd work well in a book. Published in 1973, *101 BASIC Computer Games* would go on to sell a million copies over the next decade. "In retrospect, it was a pretty crude book," confesses Ahl, now aged 82. "The text was typed, the cover cartoon was drawn by one of the artist contributors to EDU, and the games came from six or seven different versions of BASIC using as least many different

printers. I cleaned up or rewrote about two-thirds of the games in a minimal way, but I didn't put them in one standard version of BASIC. That would have been a huge job, and I felt it would be a good learning experience for users to translate from one version of BASIC to another."

Ahl believed so much in the value of type-ins that, after leaving DEC in July 1974, he launched a bi-monthly magazine called Creative Computing while working as educational marketing manager for AT&T. The first issue launched that October, and within four years the publication was being worked on by a group of eight people in a converted greenhouse above a truck garage. "I published lots of computer games in its pages and the timing of the launch was perfect because the Altair 8800 – the first widely available computer kit – was announced on the cover of Popular Electronics in January 1975," Ahl explains. "One of the most popular games was *Super Star Trek*, which underwent a long process of improvements and debugging from the original 1970 version, written by Mike Mayfield in HP BASIC." ➡

"ONE OF THE MOST POPULAR GAMES WAS SUPER STAR TREK"

Philip and Andrew Oliver's first ever game, *Road Runner*. "Back then, the bragging rights within our reach was to get a game published as a listing," Philip says.

A LEARNING CURVE

Super Star Trek was an early lesson that no matter how hard people worked on type-ins, something would invariably go wrong. Originally 650 lines of code, the newly published version was nearer 1000 lines long. "It was as bug-free as we could make it, but we got letters, some with yards of printout, complaining that it didn't work," Ahl says. "Trouble is, one typo in 8000 characters would screw up the execution."

Initially, Ahl and his team attempted to respond to every letter. "But we eventually realised we couldn't afford to pay a full-time programmer to debug every program that readers entered incorrectly," he continues. "We ran several articles in Creative Computing about debugging techniques and told readers it was all part of the learning process."

Listings were soon viewed as a tool for education; Amstrad understood their benefits, and printed listings in its manuals. "It was very important to us that people could do something productive with our computers as soon as they got them home," says Amstrad's former technical consultant Roland Perry, who wrote the manuals for the company's CPC computers, which included such games as David Radisic's *Raffles*. "Looking at the listings gave people a starting point for creating their own simple programs."

Although simple, some of the programs published in magazines and books were surprisingly decent. Readers of BEEBUG magazine for the BBC Micro may remember *Artillery Duel* by Colin Walton – a 1983 type-in as playable as any commercial release. They may also have fond memories of *Block Blitz* by David Pilling, printed the following year. Some CPC users may have designed graphics using GPaint, printed in Schneider Magazine, or they may have purchased five consecutive issues of CPC Infos to enter the huge listing for space shoot-'em-up, *Axys: The Last Battle* – possibly the longest type-in ever printed in a magazine.

TAPPED FOR CASH

Matthew Smith received £150 (the equivalent of £500 today) for the three pages of code that comprised his *Jet Set Willy* spin-off, *Andre's Night Off*. Robin Nixon, who worked for BBC Micro User, Mac User, and more besides, said contributors tended to receive between £50 and £150. Amstrad Action, meanwhile, only paid £20 per listing, which didn't prevent some from trying to game the system. Issue 70 of the magazine printed *Bomber*, issue 72 carried type-in of *Breakout* clone *Thro' The Wall*, and issue 73 ran *Picstore*. Yet the first two were lifted from the CPC manuals and the latter from rival Amstrad Computer User. "Needless to say, the perpetrators won't be getting a penny," the magazine said.

Type-ins were breeding grounds for up-and-coming talent; a way for programmers to share expertise and code. "It was interesting to see the same names pop up across many type-in books," says Mark Shepherd, who blogs at **typeinbooks.co.uk**. "I have more than 500 in my collection now, and some authors were very prolific, publishing many books across different machines. Some of these were by people barely out of school, and others by seasoned academics. It really was a pioneering time."

GENIE IN A BOTTLE

Regular names included Ian Sinclair, Clive Gifford, Ian Stewart, and brothers Clifford and Mark Ramshaw. David Perry began his career writing games for Interface, the magazine of the National ZX80/ZX81 Users Club edited by Tim Hartnell. "I learned a lot from magazines like Interface, and ended up submitting my own programs," Perry tells us. "I think the act of typing in code from other programmers taught me how to structure things such as 'LET lives=3' and question, 'What if I change that?' But it was also interesting because Tim kept saying 'Dave, can you write a chapter?', 'Can you write a book?', 'Can you write a mini-magazine?'".

Perry contributed to many books, and would later go on to develop a host of hit games including *Earthworm Jim* and Disney's *Aladdin*. But he wasn't alone in forging a long and successful career after cutting his teeth on type-ins. Sean McManus contributed regularly to a section of Amstrad Computer User, which specialised in programs of ten lines or less. He also wrote longer listings, including Easi-

Sprite Driver for Amstrad Action, which added new commands to BASIC so you could move sprites around the screen and make more colourful games.

Robin Nixon, a home computer hobbyist from the 1970s and 1980s, also became known within the type-in pages of magazines. "I bought all the magazines and decided I could write programs of equal or better quality, so I did and sent them in," he tells us. "Mostly, magazines just looked at submissions and rejected them, accepted them, or asked for improvements, but after about a year or so, a publisher offered me an editorial job. It became part of my salary to write type-ins and assess those submitted by readers."

In general, editors wanted anything fun and useful; programs to catch the eye and inspire. Although users tended to type them in because they wanted to use the program ("I first got into them because I was essentially getting a 'free' game," says Shepherd), lots of people →

"TROUBLE IS, ONE TYPO WOULD SCREW UP THE EXECUTION"

> Crash magazine didn't print listings, but made an exception when it incorporated a tie-in with anarchic comic, Oink!. It included type-ins written by Frank Sidebottom, the character created by songwriter/comedian Chris Sievey.

> Benny Bunny hopped his way to a type-in franchise with six games bearing his name, published in Sinclair Programs magazine and another in Sinclair User.

who would become professional developers got their start on type-ins. "I figured out BASIC programming from reading type-ins of games and algorithms from Your Sinclair, C&VG, and Personal Computer World magazines before I even had a computer at home," says Ripstone's head of technology, Paul Hughes, who has also worked for Ocean Software and EA among many others. "One of the first things I started to do when I got a ZX81 and then a VIC-20 was convert type-ins from one platform's BASIC to another to see if I could port the game. But I also read an article about computer chess artificial intelligence, which blew my mind."

RACING AHEAD

Sometimes readers could learn from the masters: *Jet Set Willy* designer Matthew Smith, for example, contributed *Andre's Night Off* to the June 1984 issue of C&VG. It was promoted on the cover and claimed to be a "missing screen" from Smith's aforementioned smash hit. It was commissioned by the magazine's editor Tim Metcalfe as a way of boosting sales. Indeed, type-ins were a money-spinner for magazines, although the wealth didn't always trickle down. Brothers Philip and Andrew Oliver earned just £10 for their Dragon 32 game, *Road Runner*, printed in C&VG in 1983. But the Oliver Twins, as they'd later become known, were

nonetheless chuffed to see their top-down racer in print. "Our skills weren't good enough to make games that people would have to pay money for," says Philip. "That was the next goal."

The brothers were already fans of type-ins. "We learned to code by typing other people's listings and modifying them," Philip says. "Mostly, this was from the manual that came with the computer, because there were so few listings in Dragon 32 magazines. We also tried listings designed for other computers and getting them working."

Even so, they found BASIC to be pretty slow, so they kept things simple for *Road Runner*. "We'd discovered if you printed text to the bottom line and it overflowed, it would scroll the contents of the entire screen up," says Philip. "So we came up with the idea of a top-down racer, which sounds grand, but was no more than blocks programmed to create the edge of a winding road with several more blocks to represent your car."

Rather than submit the game on tape, the brothers copied the code by hand and gave it to their mum to type on her work's typewriter. This cumbersome method is likely why it took a year for the game to end up in print. Shortly after, though, the brothers created *Super Robin Hood* for Codemasters, developed *Dizzy*, and eventually headed up Blitz Games Studios. They're still active in the industry today.

The same applies to John Pickford, one half of the acclaimed Pickford Brothers, whose credits

Sinclair Programs for the ZX Spectrum saw type-ins as a huge attraction for readers.

ESSENTIAL READING

Type-in books enthusiast Mark Shepherd reveals his top picks:

COMPUTER SPY GAMES
(1984)

"Usborne's series of books were aimed at younger kids, covered multiple machines, and were beautifully illustrated," says Mark Shepherd. "They contained small programs you could type in along with challenges to adapt them." Download the books for free at **wfmag.cc/usborne**.
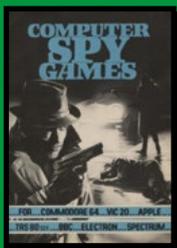
PROGRAMMING THE C64
(1985)

Some books went beyond listings and helped users hone their coding skills. Says Shepherd, "Rae West's book didn't contain any games as such, but it was a thorough reference book with lots of small examples of code that taught you all you needed to know about BASIC, machine code, and beyond."

C64 GAMES BOOK 2
(1984)

"Melbourne House has an excellent range of type-in books," Shepherd tells us. "This is a particularly good one. It contained a number of good quality games that used some elements of machine code. It was written by Greg Barnett who wrote [among other games] the *Horace* games and *The Way of the Exploding Fist*."

include *Zub*, *Plok*, and *Naked War*. Aged 18, he contributed a program to Popular Computing Weekly called Fast Loader, which sped up the process of loading and saving data from a cassette on the Spectrum – an example of how inventive some of these programs could be. "I remember a listing in Your Computer, which pre-shifted sprites to speed up sprite plotting on the VIC-20 and Spectrum," says Hughes of another notable program. "There was also an article in Your Sinclair about how David Webb's Starion used the Z80 stack to clear the screen lightning fast. That was a proper game-changer."

RIGHTING THE WRONGS

Even so, some type-ins were hard going. To play *Chopper Mission* in the first issue of Your Sinclair, readers needed to type in a Basic Loader, then a Hex Loader, followed by three dense pages of Hex code. "The elaborate stuff had to be included in machine code, and typing endless hexadecimal numbers was a burden, not something to learn from," says Elmar Krieger, who had listings published in several magazines, and made such commercial games as *Prehistorik 2* and *Super Cauldron*. "Type-ins were a good way of getting software published in the earlier days, but they were only good for simple freeware."

Still, data-laden programs made their mark. In 1986, German composer Chris Huelsbeck – later known for his *Turrican* soundtrack – entered a tune called *Shades* in a competition run by the magazine, 64'er. It won, and was printed as a type-in. Huelsbeck was just 17 at the time. "It was completely machine code and data so it was all hexadecimal numbers," he says.

After winning, he told the magazine that he was working on an editor to make the entry of music data easier. This was SoundMonitor, and it too ended up as a listing, printed that October. "I believe the program was an important stepping stone for any aspiring Commodore 64 musicians, and it's considered the grandfather for modern music tracker programs," Huelsbeck says.

Like Krieger, however, Huelsbeck didn't type such listings in himself. "I personally never typed in listings like that and, even though the magazine had a special editor with checksums,

△ The shoot-'em-up *Crossroads* by Steve Harter was published in COMPUTE! in 1987 and is arguably the best C64 type-in game.

I can only imagine how much tedious work that must have been. I've had a number of fans tell me that they typed it in. I admire that tenacity."

Checksums were useful for anyone looking to tackle a type-in. Introduced in the late 1970s, they would display verification codes next to each program's line and, by ensuring the value tallied with the one in their magazine or book, readers would know they'd entered it correctly. "Type-ins resulted in huge amounts of mail, mainly from people entering typos and telling us we'd made a mistake," Nixon recalls. "Checksum routines built into the type-ins would tell readers which line their mistakes were on."

"Over time, games became more complex, so the code became longer and longer," says David Perry. "The odds of typing in a 20-page game and it working were incredibly small, so you'd spend hours typing, then spend even more hours looking for mistakes."

Yet such effort, combined with the rise of cover-mounted media, meant type-ins soon faded away. Indeed, until relatively recently, type-ins were largely absent from magazines. But as the magazine you're reading shows, they're useful as a learning tool. "It's still possible to learn a lot from a type-in program and coding in general," says Ahl.

The Olivers agree. "We learnt our first programming skills from type-in listings, and it annoys us that many educators fail to grasp the power of games as a motivator to encourage kids to learn many digital skills. It's a message we will always shout loud about, and we encourage everyone else to do so, too." Ⓦ

> *"THE ODDS OF TYPING IN A 20-PAGE GAME AND IT WORKING WERE SMALL"*

△ Mark Shepherd, pictured here with some of his vast collection of type-in books, found that he could eventually pinpoint the print errors which crept into listings.

Online Diary

GITTIN' GUD

It's Capcom Arcade Stadium's turn to offer an alternative approach to showing off some online skills

WRITTEN BY **IAN "BABY HEAD" DRANSFIELD**

It doesn't smell of cigarettes, and there aren't bigger boys waiting to beat me into a pulp (in the game), so really *Capcom Arcade Stadium* is nothing like the arcades I remember from my youth. That said, this latest in a *long* line of Capcom retro collections does the best impression yet of a fully fledged arcade experience – machines are rendered in 3D, you put coins into them, you can even have the games output with scanlines and a curved effect to emulate an old CRT monitor. It's not the best emulation experience I've seen – not much can beat RetroArch when you really dig into its configurations and pick up some of the amazing add-ons people have created. But as far as officially sanctioned emulation packages go, this one is absolutely solid.

So it was, the joy of the past melting my brain once more, I jumped into what the *Stadium* had to offer. And while bigger boys weren't beating me senseless in *World Heroes* or *Time Killers* or whatever other nonsense was hidden in the darker corners of the room, I still managed to get my backside handed to me via the magic of online score challenges. It lured me in with promises of glory – 'Get a high score on one credit!' it cries, my eyes lighting up, 'and it will be uploaded for all to see, your skills living on in eternity!' Alright, not the exact phrasing, but when a game's hawking *1942* at me with the added bonus of online leaderboards, I'm up for the challenge.

I think it was about 25, maybe 28 seconds before my first death in Capcom's OAP of a vertical shooter. Safe to say, I did not place on the leaderboard, even after what I thought was a solid rally on my last life, pushing me to around the 55,000 region. On my last death – I missed the loop-de-loop button, as has been my main tactic in *1942* since what feels like about 1942 – I was met with the message that I hadn't met the minimum required score of 60,000. Well, then. Let's move on before my eardrums burst from this game's oh-so-'classic' soundtrack.

Street Fighter II: Hyper Fighting, which *Capcom Arcade Stadium* taught me for the first time isn't called *Street Fighter II Turbo* here in English-speaking countries, was next on the list. Another straight-up score challenge, I figured a few early

> **Sodom is the absolute worst sort of arcade game boss. In fact, he's a bit of a first-three-letters-of-his-name. Ho ho.**

Progear might not have made up one of the online challenges, but that's besides the point: it's really good fun, and I'd never played it before. Huzzah!

perfects followed by some solid performances on the bonus rounds would put me in good stead, definitely let's say, top 100 in the world? I'm not confident; I just know I can be good at *Street Fighter II* when the need strikes.

The need apparently did not strike – that or I just forgot how hard some (most) arcade games were at their peak. The first fight against Chun-Li wasn't hard, but it was annoying – she just Wouldn't. Stop. Jumping. And while the second battle against ol' Zangers himself, the Russian Bear, Big Scarbody McSpinnyClothesline ("Zangief") did grab me my first perfect performance of the run, it quickly went downhill. It's not that Ryu beat me – he absolutely *battered* me, hitting the sorts of combos someone not quite in the know might say looked 'a bit sus' and 'almost as though the AI was cheating its bottom off'. I paid extra-close attention and, just before I was met with another 'Nope, score not high enough' message, I did see Ryu go through a combination of moves that left me unable to even move, never mind get a punch out. Two-thirds of an energy bar gone in a couple of seconds. Oh, arcade games. You sly pooch(es).

An upside-down challenge followed on *1943: The Battle of Midway*, and it was… fun? All it did was flip the screen 180 degrees, but the difference was enough to make the whole thing feel fresh, and backed up with the online challenge aspect, it felt like a very simple, but very positive addition to the experience. No, I didn't get a high-enough score, but I did play a game

"I didn't get a high score, but I did play a game upside down"

upside down for a bit, and in my book, that's a huge achievement to definitely be proud of. My book is called *How Not To Get Any High Scores And Then Pretend You Don't Care*, by the way.

I focused a fair bit on the online challenges, but *Capcom Arcade Stadium* is made up of – in the most part – *regular* emulation of 32 games. So it was I gave up on attempting to place on leaderboards and instead spent the next couple of hours beating up potential voters in *Final Fight* (the Sodom fight is *ludicrous*) and enjoying something I'd never even heard of, the CAVE-developed *Progear*. That latter one is something I'm definitely going to be coming back to; its mix of bullet hell and steampunk reminding me of a more frantic (though less wacky) *Boogie Wings*.

So no, this grand return to the arcade – online – didn't end up with me claiming the online crown I definitely deserve. In fact, it was just a bit embarrassing. But at least in this case I have a lovely little retro package to enjoy offline, with as many credits as I want, with a screen the right way around. ⓦ

Failure is fun

Play

If, like me, you find yourself getting wound up at just how cheap arcade games were back in the day – and are in *Capcom Arcade Stadium* – then there's a couple of things you can do.
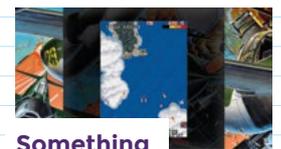
Something

One is to run into the settings and lower the difficulty, before absolutely riddling the machine with credits – there's even a trophy/achievement for pumping nine credits in. It's expected. Or…
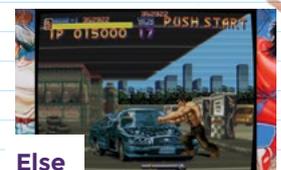
Else

You can just play something else, because honestly, 32 games is a lot to choose from (if you've bought them all) and who has the time these days to let something designed to take money from you steal, instead, your time?

Interactive / Dark Hospital

Solo developer Thomas Hopper revives
the classic gun game in Dark Hospital

Although it was born decades earlier, the gun game (or rail shooter) arguably reached its zenith in the 1990s with such hits as *Time Crisis*, *Virtua Cop*, and *The House of the Dead*. Home ports to the PlayStation and Sega Saturn brought those titles to a wider audience, with the era's CRT tech allowing a generation of players to blast away at their televisions with a lightgun.

After years in the technological doldrums, the gun game may be about to enjoy a renaissance, thanks in no small part to the Sinden Lightgun – creator Andy Sinden's peripheral that uses cameras to detect when the player's shot at a target on their screen. Suddenly, all those arcade games that were rendered unplayable with the phasing out of CRTs are potentially viable again – essentially, if a game has mouse support, it should work with the Sinden Lightgun.

British developer Thomas Hopper's among the first to take advantage of the Sinden shooter, with *Dark Hospital* being an affectionate homage to those aforementioned nineties gun games. "I've always loved lightgun games – they have a special place in my heart," Hopper says, adding that he's long wanted to make one of his own, but only recently figured out how he could get such a project started. "There were several

"The boss monster takes inspiration from *The House of the Dead 2*"

things that happened," he explains. "First, I was experimenting with custom scriptable render pipelines in Unity – this is a package that gives the ability to use C# code to define how a frame is rendered. I made a simple render pipeline that looked a bit retro: low-resolution render target, very simple lighting, no anti-aliasing, some basic scanline-type post-processing effects.

"Separately, I was investigating rendering techniques that could be used to pick objects from the screen with pixel-perfect accuracy. I combined these two things into a retro-style custom render pipeline that also did a pass for rendering the objects into an image that could be read back from the GPU, and used for working out what objects were under the mouse cursor."

Just as Hopper was figuring out his own way of making a gun game work via mouse control, he saw the Sinden Lightgun crowdfunding campaign. "I think this was the final push I needed to bring all these elements together," he tells us. "All the Sinden needs to accurately track the screen is a white border, so I also made the render pipeline add a white border to the game's output."

The resulting game, then, is a low-poly rail shooter that could easily have come from Sega or Namco's offices some 25 years ago: blocky enemies leap into view from all angles, and it's

▲ *Dark Hospital* starts off as an action thriller, but will take a more horrifying turn as the game goes on.

up to you to blow them away before they have a chance to attack. *Dark Hospital*'s opening will feature armed, human opponents – a nod to *Time Crisis* – while later sequences will introduce gruesome monsters, taking the game in a horror direction akin to *The House of the Dead*. "The low-poly monsters in retro games can often look kind of goofy, partly due to the limitations of the hardware," Hopper says. "The low resolution and low poly count can also leave a lot up to the imagination. I've tried to capture some of that goofiness in my monster designs. The boss monster for the first level takes inspiration from the Hierophant in *The House of the Dead 2*."

Since Hopper's making *Dark Hospital* almost entirely by himself – with Jason Page on music and Nic Freeman working on character textures – he's come up with some cunning ways to ease the path through development. The packages Cinemachine and Timeline have come in handy for positioning the game's camera and timing when enemies pop up. For animation, Hopper's

found a way to implement motion capture on a budget. "I'm not the best at making humanoid animation by hand, so for that part, I relied on motion capture using Rokoko Studio and the Rokoko Smartsuit," he says. "If you're making a game with a lot of unique characters (and you're not all that great at animation), it can be out of the budget of many indie and solo developers. This is what made the Smartsuit such a good choice for this project – I can jump in the suit at any time and produce very good quality humanoid animation. The only limit is my own time."

Hopper's now a good way into development, with much of the work left to do involving stage and enemy design. He has plans to release a demo, and once the PC version's complete, is thinking about a Switch port. So could *Dark Hospital* mark a renewed interest in the rail shooter? "It seems like there are a lot of people who loved playing lightgun games in the past who haven't had any way to do that since we moved away from CRTs and towards LCDs and OLED TVs," Hopper says. "I hope the emergence of the Sinden Lightgun prompts a resurgence in this genre and we see more indie developers making lightgun games." Ⓦ

SATURNALIA

Some of Hopper's Twitter posts show some *Dark Hospital* characters and assets moving about on an original Sega Saturn. So does this mean he's thinking of attempting to port the full game to the console? "I'd love to make a full game for the Saturn, but I don't know if I will ever have the time to make a full port of *Dark Hospital* in its current form," Hopper says. "I do hope to finish something playable on the Saturn at some point. As far as a disc release goes, that seems unlikely. The disc security on the Saturn is still very secure, so distributing homebrew games can be challenging. I'm currently using the Satiator to boot code on the Saturn – without that very specialised bit of hardware, I wouldn't be able to boot any custom code at all."
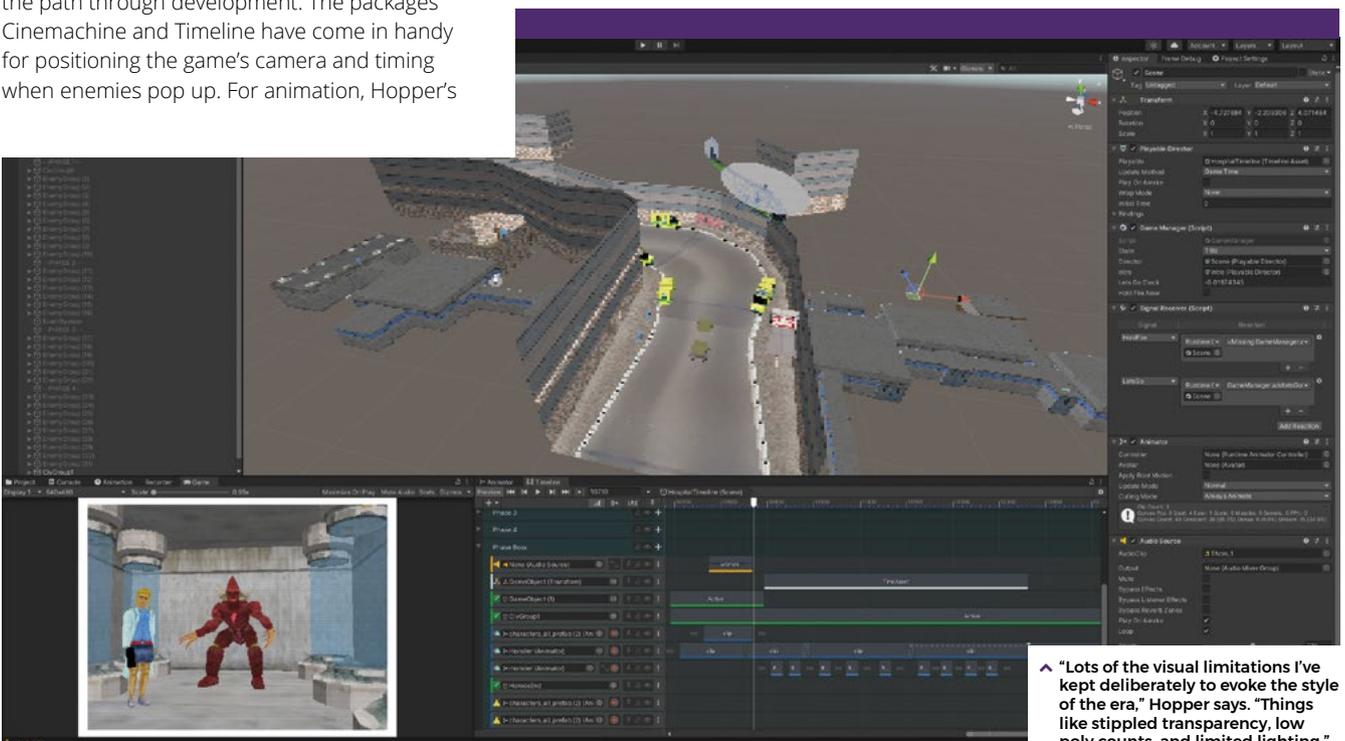
▲ "Lots of the visual limitations I've kept deliberately to evoke the style of the era," Hopper says. "Things like stippled transparency, low poly counts, and limited lighting."

FUZE and Wireframe's

retro coding competition:

THE WINNERS

Our pick of an incredible crop of entries, from 2D shooters to point-and-click adventures. Did your game make the list?

Back in issue 48, we launched our retro coding competition in association with the good people at FUZE. The brief was simple: using the FUZE4 Nintendo Switch platform, create a game with a retro theme – it could be a new take on an arcade classic, or an entirely new concept with an old-school look. It's fair to say that none of us expected quite such an enthusiastic response – or for the entries themselves to be so consistently good.

To help choose a winner, a crack team of judges was assembled, comprising

several members of the FUZE team, including Jon and David Silvera, Colin Bodley, Kat Deak, and Martin White. From Wireframe, editor Ryan Lambie and features editor Ian Dransfield (no, we've never heard of them, either). And most excitingly of all, design legends Eugene Jarvis (*Robotron 2084*, *Defender*), Jeff Minter (*Llamatron*, *Polybius*), and Philip and Andrew Oliver (the *Dizzy* series, *Super Robin Hood*).

Needless to say, picking a winner wasn't easy, but the sheer quality of the games meant that playing through them all was a lot of fun...
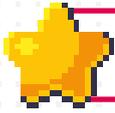
THANKS FOR PLAYING

There were some entries that were so good, we couldn't let them walk away without a prize. The creators of the following games, then, will each get a nice pile of retro books for their outstanding efforts…

LAST WORM CREEPING

CREATED BY **Spikey**

It's *Snake* from the old Nokia 3310 days, but with an added dash of modern, battle royale aggression. Gobbling up green blobs will increase the size of your worm, but there are about a dozen other worms hurtling around the screen, trying to do the same thing. If you can force a worm to collide into your invulnerable body, though, they'll die and transform into a row of more green blobs, which you can then collect to make your worm grow longer, larger, and faster – and the bigger you get, the easier it becomes to force your rivals into a deadly collision.

You know how businesses get to a certain point where they can start buying up other businesses, until they're so big that they rule the entire planet? Perhaps *Last Worm Creeping* is a meditation on that. Or maybe we're overthinking things. At any rate, this entry is a superb arcade game for the modern age: simple, fast, and endlessly playable.

Judge Ryan Lambie says: "The black sheep for me – more than the Snake clone it first appears. Incredibly addictive."

SCORE 124   LEVEL 2

DOWNLOAD: **NXK2L5FDN8**

3D TARGET PRACTICE

CREATED BY **Develius**

An original 2D shooter with two simultaneous views on the action.

Judge Jeff Minter says: "This has a Sanxion vibe (and even a bit of Laser Zone feel). Always good to see people trying out new visualisations and gameplay mechanics."

SCORE 220
TIME 110
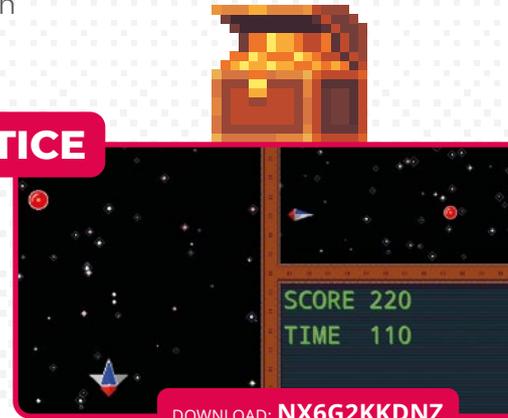
DOWNLOAD: **NX6G2KKDNZ**

DOWNLOAD: **LXK7U2Y5AN**

MONSTER INVADERS

CREATED BY **Doug MacFarlane**

It's *Space Invaders*, but in 3D: cowering behind your crumbling defences, you move left and right, picking off the horde of zombies slowly descending on your position. Our only gripe? The camera angle is a little low, making the individual zombies a little small and difficult to pick out. Otherwise, *Monster Invaders* handles nicely, and the action gets appropriately tense as the undead army closes in.

Judge Martin White says: "Kudos for tackling Space Invaders in 3D. I've done a 2D version myself and know there are parts that can be challenging enough as it is. I particularly like the use of the custom fonts and graphics, and the code looks neatly laid out which is always nice to see. If I was being picky I'd prefer to have seen it use a perspective a little more top-down than how it's currently presented." ➡

BOUNCE

CREATED BY **Richard**

DOWNLOAD: **ZKY73MND5M**

This entry is an ingenious collision of genres and ideas – it takes the bouncing ball and block-breaking mechanics of *Breakout*, fuses them with the vertical digging of Namco's *Mr. Driller*, and throws in a colour-switching puzzle element. Bouncing on a block the same colour as your ball will clear it; bounce on a different-coloured block, and your ball will take on its colour. This makes digging your way through the stage all the more challenging, since it's easy to get stuck if you create a hole of different-coloured blocks that can't be cleared. And just to add to the tension, the screen's constantly scrolling towards a set of deadly spikes, so your only choice is to keep on digging…

Judge Eugene Jarvis says: "A super clever Breakout bouncer with a novel colour mechanic!"

ESW

CREATED BY **AndyG85**

This entry from AndyG85 (aka Andrew Goulding) is also based on a ZX Spectrum title – *The Eye of the Star Warrior*, released in 1984. Like that game, this is a top-down dungeon-crawling adventure akin to *Rogue*, but there are some nice quality-of-life improvements to the original's formula, such as a full map of each dungeon floor that fills in as you progress, and an at-a-glance menu of the controls.

"*Eye of the Star Warrior* was a code-it-yourself game for the ZX Spectrum, from a book I found at a car boot sale," says Goulding. "Most of it was too advanced for me, and in any case, the Speccy I had was too weak to run it – but I had a lot of fun applying the things I'd learned. When I found FUZE, this is the first thing I wanted to revisit. I remembered the basics of the game, and once I'd worked through the tutorials, I got to work filling in the gaps myself. The end result is probably very different, but I'm really happy with it, and I think it's quite addictive."

Judge David Silvera says: "Excellent take on a classic adventure game, definitely gets the retro vibe across wonderfully. Perhaps a bit hard to figure out at first, but once it locks in, it's extremely playable."

DOWNLOAD: **HQ4L3MNDXH**

BLUEASTERS2D

DOWNLOAD: **FXC63MND1B**

CREATED BY **IR**

A distinctive take on *Asteroids* with slick visuals and shooting mechanics.

Judge Eugene Jarvis writes: "Unique asteroids blower-upper!"

NO ESCAPE FROM RED HELL 3D REMIX

DOWNLOAD: **5L353MNDHB**

CREATED BY **Monkee**

A fiery 3D platformer with a steep learning curve.

Judge Kat Deak says: "Potentially a very fun little game, just a shame about the difficulty/controls. Nice to get a choice of character, though!"

DOWNLOAD: **LNU23MND5M**

SNOWBALL

CREATED BY **Richard**

Presented in clean monochrome, this entry's a simple yet effective throwback to Nintendo's Game & Watch era.

Judge Jeff Minter says: "I swear I used to have the Nintendo version of this. I know it could've been done more smoothly but I guess they were aiming to nail the G&W aesthetic, which they did."

enemies Left: 242

DOWNLOAD: **NX7T4DNDSV**
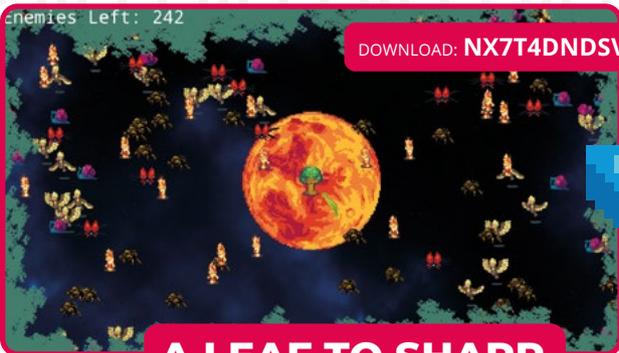
A LEAF TO SHARP

CREATED BY **Florin**

There's an ominously surreal element to this tower-defence shooter, in which you play a sentient tree attempting to defend the moon from an unending onslaught of random enemies. The twist is that those enemy waves will move slowly by default, but will speed up when you fire a shot in their direction – which means you have to choose your targets carefully, since your position will soon become overwhelmed by an assortment of birds, killer snails, and other deadly critters.

Judge Kat Deak says: "The variety of enemies with their different abilities is nice. Very hard, but a cool idea." ➔

UNDER-13s

We also had some extraordinarily impressive entries in our under-13s category. Each of the three runners-up listed below will receive an Evercade and some retro books, while the winning entry gets an Evercade Plus and their own selection of fine retro books. Congratulations!

Score 10

WATER FLOW

CREATED BY **Melon Kid**

Highly original action/puzzler about diverting streams of water.

DOWNLOAD: **NXKTCRZDSG**

BAXY

CREATED BY **Isaac & Ffion**

A modern spin on Simon. Outstanding work from two young entrants.

DOWNLOAD: **NXTHU8NDXR**

ROCK PAPER SCISSORS

CREATED BY **Pen and Pixel Party**

A familiar favourite gets a digital makeover.

DOWNLOAD: **1HQK3MND5P**

⌃ Pen and Pixel Party, authors of *Rock Paper Scissors*.
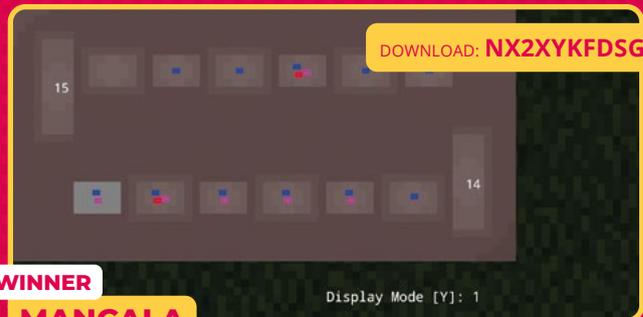
DOWNLOAD: **NX2XYKFDSG**

WINNER

MANCALA

CREATED BY **Melon Kid**

We picked this as our winning entry not just because of its creator's young age (Melon Kid is just 12 years old), but also because its AI programming is so wittily and intelligently done. *Mancala*'s a digital take on an ancient strategy game where players take turns moving stones around a board. The aim is to capture your opponent's pieces – whoever has the most stones at the end of the game is declared the winner.

Judge Martin White says: "Incredible for a junior entry. Hell, for any entry. I really like this, especially as it has the enemy AI (which is tough as nails)."

WRONG WAY RALLY

CREATED BY **Ben 2.0**

Although based on TOMY's fondly remembered driving sim toy from the 1980s, Ben 2.0's entry takes things much further. It's an infinite runner, essentially, where you hurtle down an endless road and try to avoid the oncoming traffic for as long as you can. What really makes *Wrong Way Rally* shine is its range of extras: there are more vehicle types to unlock, a split-screen mode, and best of all, Outlaw Mode, where you have to keep driving over markers on the road that speed your vehicle up – fail to hit enough of these, and the police car on your tail will catch up with you. It's a mode we returned to again and again.

Judge Jon Silvera says: *"A very impressive submission and very accomplished with the inclusion of different game modes, a garage for car upgrades and a two-player split-screen mode. Oh, and it's in 3D too! Very polished and a great take on the Runner genre."*

DOWNLOAD: **NXTZM9QD5K**

PARCHEESI

CREATED BY **Jonathan Avery**

A digital board game with excellent hand-drawn graphics.

Judge Philip Oliver says: *"Fantastic presentation of a classic board game. Well done!"*

DOWNLOAD: **NXYA9HMDS7**

DOWNLOAD: **NNRW5PND9K**
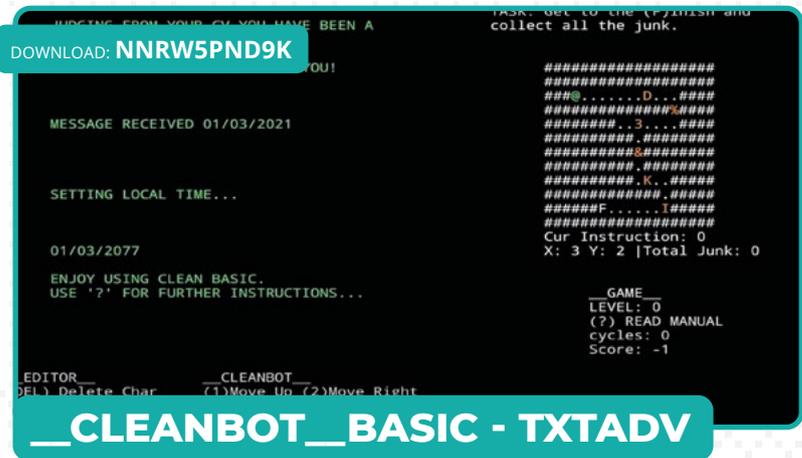
__CLEANBOT__BASIC - TXTADV

CREATED BY **LucasG1994**

It's an adventure game. It's also a programming language. *Cleanbot* is an imaginative and highly challenging entry: it asks you to program a robotic cleaner to navigate a maze and pick up the junk dotted around the place. You'll need a USB keyboard and at least a modicum of programming knowledge, which means *Cleanbot* isn't for everyone, but for sheer inventiveness, this one deserves a place on our shortlist.

"Making *Cleanbot Basic* has been a great learning experience, from learning new concepts such as pathfinding to building my own version of a BASIC Interpreter," says *Cleanbot*'s creator, Lucas Garaway. "FUZE4 Nintendo Switch is a great programming language, accessible, and easy to learn."

Judge Martin White says: *"This one surprised me. I knew of Lucas' efforts to implement an interpreter but not of the use in a game. I think it's genius and could really be developed further. It needs a few quality-of-life improvements, but overall, this is an incredible one to kick things off with, and a solid entry."*

DOWNLOAD: **4PX73MND5U**

SURVIVE

CREATED BY **Waldron**

This second entry from Waldron (who also made *ROBOLINT ARCADIUM* – see right) is an entertaining and tough arcade action platformer in the vein of *Donkey Kong*.

Judge Jeff Minter says: *"Nice. I like the little cameos from other retro games (like the Space Invaders laserbase). Slanty girders would've been nice, but it seems churlish to cavil about such things. Humorous and good fun."*
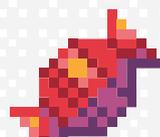
THE RUNNERS-RUNNERS-UP

The following entries were also strong contenders, so each will receive a regular Evercade system and some eminently readable retro books...

DOWNLOAD: **NRZXVMNDXH**

TYCOON DIZZY

CREATED BY **AndyG85**

This homage to the Oliver Twins' 8-bit mascot is, according to creator AndyG85, "a game 25 years in the making" – and its affection for the *Dizzy* series is clear in every pixel. In essence, *Tycoon Dizzy* (AndyG85's second entry) is a remixed port of *Fantasy World Dizzy* on the ZX Spectrum – older readers will no doubt recognise the opening screen's jail (complete with luminous green goblin) straight away. AndyG85's game features plenty of ingenious new puzzles, though, and it's packed with the same charm – and challenging moments – that made the official *Dizzy* games a hit all those years ago.

Judge Andrew Oliver says: "Blimey, it's Dizzy – what a flashback! And what a close copy. What else can I say other than, 'absolutely brilliant!'" Philip adds: "Twenty-five years in the making – awesome! You must be very proud to have realised it."

DREDGE

CREATED BY **Sniperpon Productions**

This entry channels the spirit of *Gauntlet* to impressive effect. It's the work of Sniperpon and his two kids: Hennapon and Spacemario. It's a particularly slick dungeon-crawler, too, with all the elements you'd expect: aggressive enemies belching out of destroyable spawn points, treasure-chests full of loot, and keys you'll need to enter locked areas.

Judge Ian Dransfield says: "Really cool Gauntlet-alike."

COSMIC SPACE HORSE

CREATED BY **Toxibunny**

A mesmerising homage to Jeff Minter's psychedelic games. It's more tech demo than finished product, but there are the makings of a terrific into-the-screen shooter here – an eyeball-frying fusion of *Space Harrier* and *Rez*.

Judge Jeff Minter says: "It's not finished, but it's trippy, has a beastie as the main character, has [procedurally generated] music, and it's an obviously large step in the right direction."

DOWNLOAD: **NX2YVVFDS3**

DOWNLOAD: **F1Y23MND1P**

MISSILES DOGFIGHT

CREATED BY **LinkCraft**

This top-down, competitive shooter makes clever use of the Nintendo Switch's Joy-Con, allowing two players to hurtle through the skies, taking pot-shots at one another. The planes handle superbly, while a radar means you can keep track of your opponent's position. Another highly impressive entry.

Judge Kat Deak says: "A very polished game. The controls screen is a lovely touch and it's nice to see another multiplayer offering."

DOWNLOAD: **TTQ73MNDDC**

ROBOLINT ARCADIUM

CREATED BY **Waldron**

An 8-bit style platformer, tidily realised: you move from screen to screen, collecting tiny pieces of lint and avoiding deadly obstacles – including the scariest vacuum cleaner ever depicted in a game. Some surprisingly deep jumping and wall-hanging mechanics add lasting appeal, while some of the level layouts offer a stern challenge worthy of *Super Meat Boy*. The game's designer, Waldron, says he employed his skills as a gardener when it came to his entry's level design. "*ROBOLINT* was a part-built game I made for the FUZE game jam, so this was a good chance to tighten up the code and add some more content to it," he says. "I didn't stick to a particular formula and just experimented with the game's stages. I'm a keen gardener, and when designing levels, it's good to have focal points like you would when designing a garden to draw the observer to certain parts."

DOWNLOAD: **ND6TCNND5U**

Judge Philip Oliver says: "Nice retro platformer with a great jump mechanic."
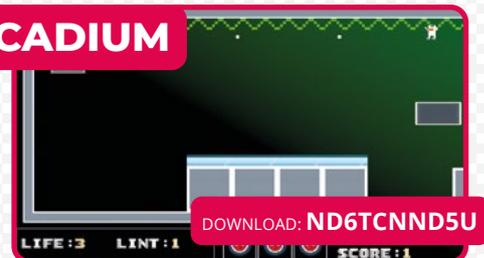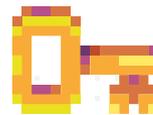
THE RUNNERS-UP

These entries were all contenders for the top, but were just pipped to the post by the winner (or winners, as you'll see later). Still, these games are magnificent efforts, and thoroughly deserve their prizes: an Evercade Plus each, as well as a generous selection of retro books…

RETRO TIME

CREATED BY **Joyrider3774**

An anthology of eight arcade games gets a time attack twist: you have a couple of minutes to play each title (there's a *Space Invaders* clone, a *Frogger* homage, and so on), and your final score depends on how well you do in each one. Each arcade game is extremely well programmed, and *Retro Time* gets bonus points for including a rendition of one of our favourite coin-ops ever, *Pang*. "I had the idea when I first heard about the competition," explains *Retro Time*'s creator Joyrider3774, aka Willems Davy. "So, I started with the *Space Invaders* clone and then *Breakout*, and then went looking for inspiration and other games I could add on the internet… I also learned new things thanks to the competition, like 'tweening' – I incorporated this in the *Space Invaders* and *Breakout* clones."

Judge Andrew Oliver says: "Unbelievable! Eight well-realised games all in one pack. An extremely well-executed idea!"

DOWNLOAD: **NXQNRDNDXD**

DOWNLOAD: **DT6M2MND9D**

MODULOUS

CREATED BY **SteveZX81**

Tried-and-tested arcade game concepts collide to create something quite different here: you roam the screen, moving over tiles to make them disappear. Meanwhile, enemies on the edges of the play area take pot-shots at you. To protect yourself, you can collect flashing objects that light up a menu of power-ups at the bottom of the screen, *Gradius*-style. It all adds up to an experience that feels retro and modern at the same time.

Says designer SteveZXK81, aka Stephen Thomber: "I've been a massive video game fan since the late 1970s, living in Blackpool – the sight and sound of arcade games just enthralled me. When I got my hands on a ZX81, I dreamed of coding my own games and the same with the BBC, Spectrum, and C64. But I always struggled to even learn BASIC properly. I dabbled with AMOS on the Amiga and later, Game Maker Studio, but nothing ever 'clicked' like FUZE… The thrill of seeing your game coming together is a real buzz."

Judge Jeff Minter says: "A game that seeks to answer the question, 'What would Solar Fox look like done on Williams hardware?' Nice classic game references throughout, and obviously influenced by our Euge [Eugene Jarvis], which is, of course, an excellent thing."

WHITE OUT

CREATED BY **Vinicity**

This entry's simply too slick and impressive to resist: a side-scrolling blaster with a cool monochrome aesthetic, spot-on controls, and a surprisingly stern challenge. There are even some imaginative and pulse-quickening boss battles, and the number of projectiles sometimes threatens to reach bullet-hell levels at times.

Judge Jon Silvera says: "An outrageously polished and comprehensive entry. Beautifully playable and so very slick across the board. Again, this is another title and coder that we need to consider developing into a full release. I also think this one has so much potential for improvement – not in the basics but in level and enemy design, especially so with the bosses. Also, the upgrades really should be expanded to add even more to the cool aesthetics. I love the game – I've played it through a couple of times. Now I want more!"

DOWNLOAD: **DWRP3MND5C**

THE WINNERS

We were so impressed with the quality of the competition's entries that we simply couldn't choose one winner. So what did we do? We picked two. Congratulations to the following entrants, who walk away with the grand prize of a computer case and a stack of retro books…
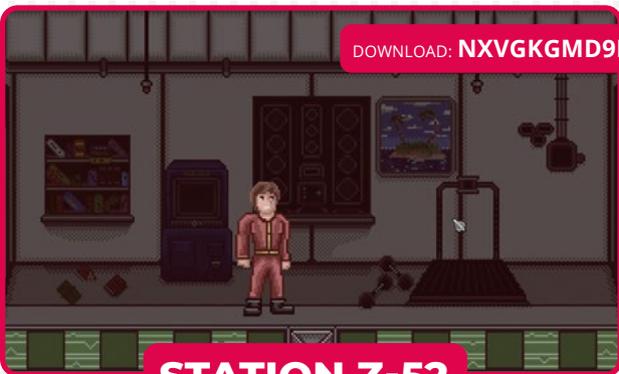
DOWNLOAD: **NXVGKGMD9F**

STATION Z-52

CREATED BY **Dinocoder**

The opening seconds are brilliantly audacious: just when you think the entry's little more than a simple *Asteroids* clone, it's revealed that you're simply playing on an arcade machine *within* the real game. In reality, *Station Z-52* is revealed to be a full-featured point-and-click adventure in the LucasArts mould: you're an astronaut on the titular station, now stricken by an asteroid strike, and it's up to you to make repairs and generally save the lives of everyone aboard. A truly impressive entry, with clever puzzles and niftily drawn graphics. Fun fact: this entry is so vast, it takes up 30,000 lines of FUZE BASIC code.

"I really enjoyed making *Station Z-52* for the Wireframe competition," says creator Michael 'Dinocoder' Fuller. "I didn't have much coding experience before I started using FUZE4 Nintendo Switch, but their tutorials have really helped me get started creating my own games. They included 2D Image Editor, which I used to make the assets for *Station Z-52*. It enables you to create assets for almost any 2D game that you can imagine."

Judge Jon Silvera writes: "Anyone attempting to write a point-and-click adventure is brave as it stands, but to do everything themselves is insane. All the graphics are self-drawn and are of an incredible standard considering the limitations of the tools provided! This is so polished and so comprehensive it deserves to do really well."

SUPER FUNKY BOWLING

CREATED BY **Scrubz**

The standard of entries has surprised all the judges in this competition, but *Super Funky Bowling* is something else. Sure, its concept owes a huge debt to *Super Monkey Ball* or similar games, but it does truly remarkable things with the FUZE platform: here, you have a sphere rolling around full-3D environments, with no slow-down and perfectly judged controls. What's even more impressive is the imagination in its stage design – some areas have switches that affect gravity, meaning you're forced to control your wayward sphere as it rolls on the underside of suspended platforms. A superb technical achievement, and for our panel of judges, one of the competition's clear winners.

Judge Philip Oliver says: "Incredible. I hope this developer gets a career in the games industry. They clearly have what it takes!"

Andrew Oliver: "Wow! A really impressive grasp of 3D and momentum physics, as well as great feel and presentation. It's just lacking some 3D models on the maps to make it an outright classic."

Jeff Minter: "Yep, this is excellent. Great presentation and I like how it takes the Monkey Ball idea and adds stuff like gravity reversal. Really jolly good." ⓦ

DOWNLOAD: **NXZZDNNDNP**
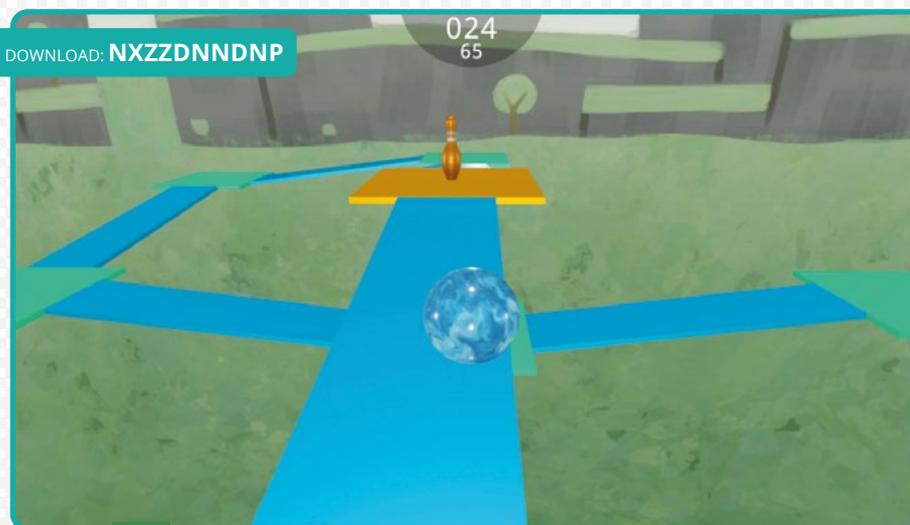
The greatest game of all time

STEVE MCNEIL

Steve recognises that proclaiming anything the "greatest thing ever" is usually subjective. But not in this case. He is right.

⌄ Were a lesser person (who isn't Steve) writing this caption, they might take advantage of the situation to say "*Everybody's Golf* is better!" But we're above that. Probably.

n these times of stress and uncertainty, many of us turn to familiarity for comfort. The great thing about golf games* is that even if you've never played a particular title before, you can probably dive straight in. Almost without exception, they'll pick the best club for you, point you in the right direction, and then your job is to just press a button three times at the right moment to make the ball go where the thing said it would. If you're feeling fancy, you might work out how to whack a bit of spin on the ball but, frankly, who has the time. Three taps is plenty.

Stupid people might think this makes the games unbearably repetitive, but within this simplicity comes infinite variety – every playthrough will be different thanks to the impact of the wind, the lay of the land, and your inability to factor all that in or press a button three times at the right moment to make the ball go where the thing said it would.

An idiot might make the argument that all golf games are essentially the same. But

> **"An idiot might make the argument that all golf games are the same"**

they're not. The EA franchise is the Prettiest Thing Ever, whilst the indie-RPG spin offered by *Golf Story* fully commits to its pixel-art aesthetic. Our features editor, Ian Dransfield, thinks the free-roaming *Everybody's Golf* is the best, wilfully ignoring how tediously Byzantine the online multiplayer on it is. But, as you, wise reader, are fully aware, the best golf game of all time is, of course, *Mario Golf: Toadstool Tour* on the GameCube.

Power shots. Super back-spin. Petey Piranha violently yeeting the living Koopa poop out of every ball he can get his hands/leaves on. The mere mention of any one of those things is enough to send me into the warmest of reveries. And so, of course, I am currently no longer failing to sleep because of the collapse of civilisation or my inability to function as an adult. Instead, I am consumed in the dark hours with a desire to just get my hands on *Mario Golf: Super Rush* on the Switch.

By the time you read this, of course, we'll all be playing it. Or I will, at least. After a 17-year wait for a console sequel to *MG:TT* (as the cool kids call it), there's nothing I want more than to grind away unlocking and acing every single character, course, and collectable the glorious kings and queens of Camelot Software Planning have no doubt hidden away for us.

If you've never given golf games a go before, I urge you to grab a copy of *Super Rush*. In any other game, so little happening, so repetitively, would be tedious. But in *Mario Golf*, there's the perfect blend of Nintendo joy and peaceful serenity. Unless, of course, it turns out the new one's rubbish. Then just grab a GameCube and a copy of *Toadstool Tour* off eBay. In fact, let's all do that anyway. ⓦ

* No segue, we're just going straight there.

Backend Contents

Reviews, retro games, and lots more besides

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
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50–59
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60–69
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70–79
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80–89
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90–99
Cutting edge, original, unique, and/ or pushes the medium forward.

100
Never say never, eh?

Page 96: *Resident Evil Village* brings a change of tack, at least to the first-person *Resi* games.

PLUS
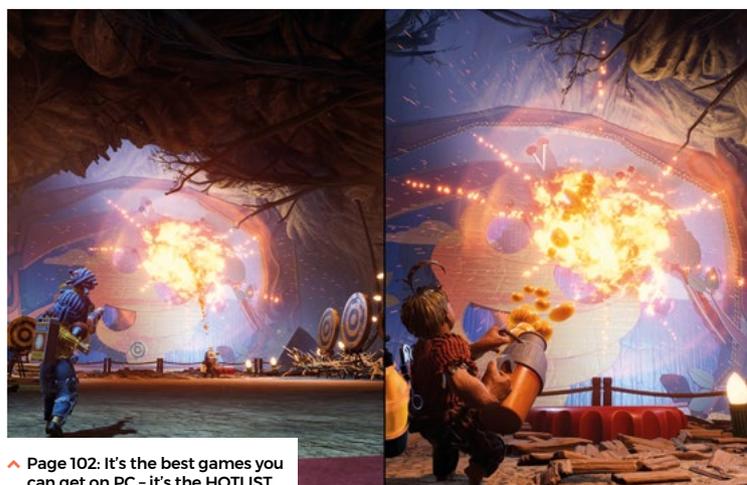
Page 102: It's the best games you can get on PC – it's the HOTLIST.

Locate the "White Shadow" broadcast
Return to Crimson Wastes

Review

Wireframe CERTIFIED HOT
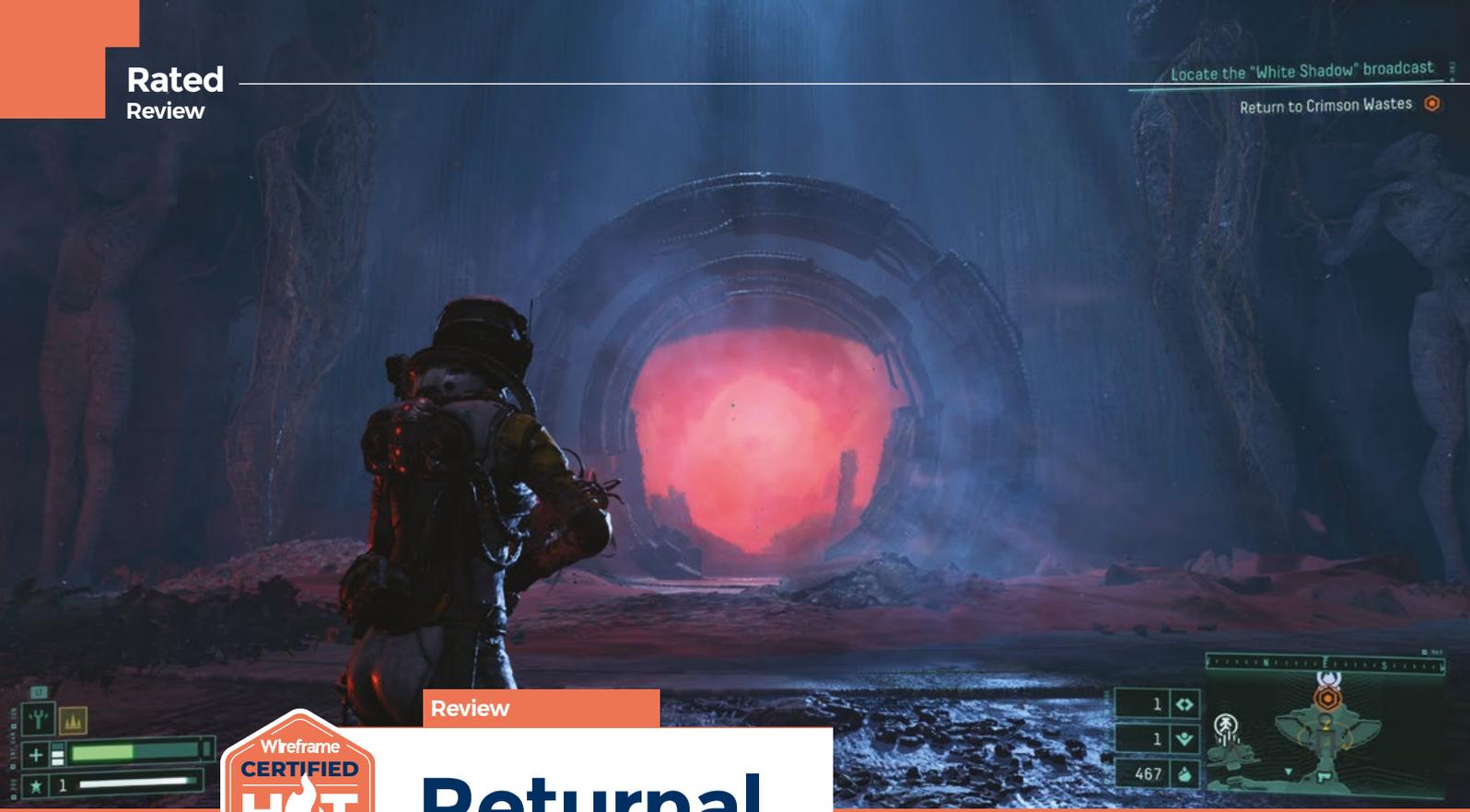
Returnal

Endless runner and gunner

REVIEWED BY
Jon Bailes

⌄ Killing from distance is safer, but there are bigger rewards for getting in close.

Atropos is an odd host. Aggressively rude yet adamant you stay. It's a planet of cold statues and organic machines, *Metroid* via H.R. Giger, provoking trepid curiosity. Its tendrilled flora is repulsive but clingy, beckoning you into flying octopoid swarms that accost you with patterns of pretty, painful neon orbs. It knocks you down, rearranges the furniture, then invites you to sit again, toying with your thirst for knowledge and adrenaline to ensure you never want to leave.

Returnal is what happens when you let the masters of arcade revamps like *Resogun* and *Nex Machina* loose with a sizeable budget. It's a twitch injection into third-person shooters – as close to *Robotron* as *Gears of War*. It even makes *Vanquish* look a little pudgy. More complex than Housemarque's usual wares, it's no less immediate or precise, doing so much so well with such little fuss. Control of Selene, your tormented protagonist, is instinctive to the point you can almost finish the tutorials' sentences for them. DualSense rumble is the only reminder that her bounding, strafing, and dashing doesn't stream direct from your cerebral cortex.

The frictionless flow is ideal for one of those precious games that offers the faintest of guiding hands, leaving you to test its systems, the limits of naturally forming cover points, and the risks of stasis in open space. It silently hopes you'll be

daring and observant, and readies rewards for when you are. Atropos is varied and bountiful, compressing, elongating, or fragmenting its structures. It prods you to improvise manoeuvres that many games would reserve for their proudest set-pieces, then to break walls or find beneficial uses for man-eating vines, to excavate the treasures tucked in its nooks.

From colour palette to ominous alien music, each biome recalls a different sci-fi aesthetic. The close opening jungle, interrupted by ruins and stalked by pack predators, warps into a pastel-red desert, wide and planted with stone settlements, where floating cuboid squid gob out waves of hot plasma. Yet the whole thing coheres with convincing visual and audio detail. The tentacles – so many tentacles – squirming for a second after their owners have been shot to goo. The honking siren as robotic security forces react to your presence. The crisp chirp as your secondary fire

⌄ Atropos is full of fascinating feats of alien architecture and engineering.

PARASITE
DESTABILISING COLDBLOOD
Reduces **Alt-Fire Cooldown** by 3s.
Dropped **Obolites** disappear 1s faster.

△ HOLD TO PICK UP

AST-AU-001
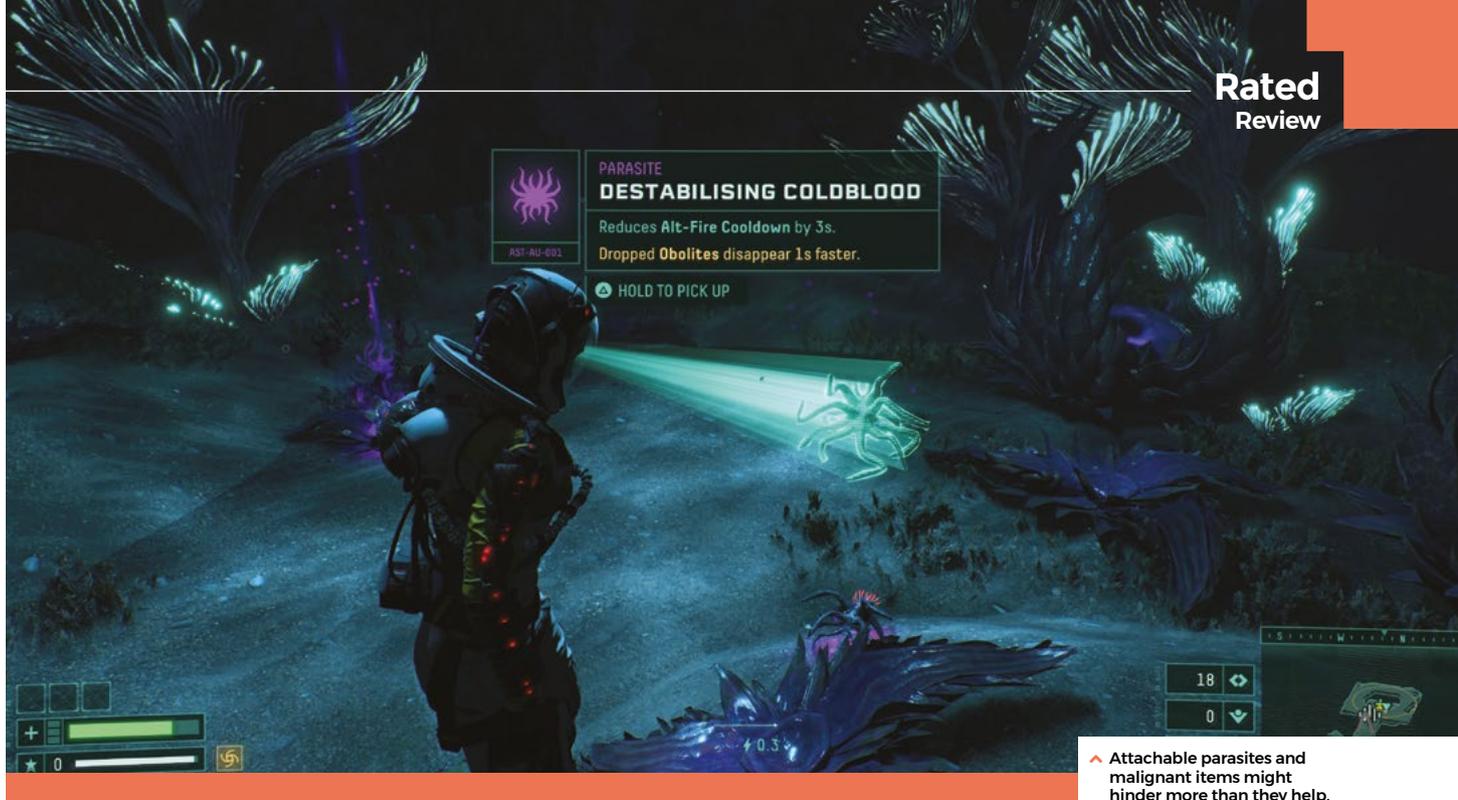
▲ Attachable parasites and malignant items might hinder more than they help.

mode recharges. Swirling particles, meaty blasts, and an unrelenting pace harmonise until this impossible, shifting world of combat arenas and laser traps makes perfect sense.

With Housemarque's pedigree, none of this is unexpected, except perhaps how clinically they've upscaled. The real surprise is how they've worked this immaculate action around a quietly powerful narrative. Its key is in Selene's personal backstory and in Greek mythology, with names cribbed with a pertinent nod from old gods, goddesses, and titans. Yet aside from a gut-punching midpoint twist, its impact stems less from the plot than the overlap between your own toil and Selene's struggle to comprehend her situation, alone in a loop that never ends.

As you stumble across voice recordings left by past (or future?) Selene corpses, and Selene's own thoughts echo in your ears, *Returnal* spellbinds in the meeting of your states of mind. Other games do time loops, but none capture the terror of facing an eternity, or the growing desperation, the way *Returnal* does. To play it is to be in Selene's head, and in the loop – there's not even a title screen to exit to for respite. Everything from demoralising ambushes to the ecstasy of vanquishing bullet-hell bosses melds with Selene's mental tremors as she chases answers, recoils into nihilistic spirals, then spies a fresh glimmer of hope.

In this way, any gripes that *Returnal* lacks some of the iterative comforts of other modern roguelikes feel beside the point. *Returnal* isn't a

roguelike with a story. It's a story that dissects the roguelike, extracts the organs it needs, discards the rest, and elegantly replaces what's lost. Each significant achievement equates to permanent progress, as *Metroid*-like keys and upgrades shortcut you through portals or across chasms. New gear also opens new paths in starting areas, and in the case of the zippy hookshot grappling beam, adds another dimension to combat. Plus, rooms aren't procedurally designed so much as procedurally arranged and filled from a pool of possibilities – why else would the arenas be so uniformly fit for purpose? The randomness within can be harsh, with occasional chambers that raise all hell, but it's precisely that sudden jolt that brings the best highs. And as much as *Returnal* dwells on the darkness in its *Groundhog Day* scenario, it equally values the perks of learning and anticipating. You're at once the victim of this world and, eventually, its master.

If anything, a level of mastery might come a little soon, after the steep climb in the first half of the game. Once you acquire the burliest weapons and bonus traits, a lucky synergy of items and buffs can make you hard to kill, at least for one blessed run. But whether you see the ending(s) sooner or later, the corporeal thrill of simply playing *Returnal* sticks. Boosting and blasting through its vibrant rain of death is compulsive, for online daily challenges or purely for its own sake. You die. You go again. Until you accept that Atropos isn't your host, it's your new home. There really is no place like it. ⓦ

> **"*Returnal* is what happens when you let the masters of arcade revamps loose"**

The fourth biome greets you with a whistling *X-Files* melody that whispers ever louder as you follow the critical path. As you ascend towards the finale, it reaches a crescendo, revealing the source – an organ-playing monstrosity of a boss. It's a stunning moment, only surpassed when you later comprehend the tune's real significance.

VERDICT

An immaculate blend of sublime artistry, arcade purity, PS5 pyrotechnics, and emotional punch.

93%

Info

GENRE
Narrative runner

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

DEVELOPER
Aerial_Knight

PUBLISHER
Headup

PRICE
£11.99

RELEASE
Out now

REVIEWED BY
Alan Wen

VERDICT

A bold, colourful albeit short-lived runner with *Aerial_Knight*'s identity firmly intact.

70%

Review

While technically a 3D runner, the switch from the 2D plane is actually quite rare, and often better without.

Aerial_Knight's Never Yield

Running is the name of the game

Will Aerial_Knight be destined to become a household name like Sid Meier or PlayerUnknown? Regardless, it's got me thinking that perhaps solo developers should make it a norm of putting their name on their game. If *Never Yield* plays not unlike most endless runners, the developer has at least injected it with his personality and identity, from the game's Black protagonist Wally to the Tokyo-style cyberpunk vision of Detroit, a fusion of his hometown and his love of anime and Suda51.

While it's referred to as a narrative runner, don't go expecting cutscenes or dialogue – the action drives the narrative as you're seemingly on the run from a shady organisation, avoiding cop cars, drones, and all manner of other obstacles in your path. The core of *Never Yield* is about surviving each stage with a limited set of actions mapped to each of the four directions of the D-pad or face buttons. You can jump over objects, slide under them, somersault-vault over shorter obstacles (or ones where jumping too high is dangerous), as well as sprint. The way each button is colour-coded (inputs indicated by the rather large UI on the top left of the screen), matching the oncoming obstacles almost makes it feel more like a rhythm game, although there is still the fluidity of a platformer so that sometimes a different action will still work.

If you do mess up and crash into a Game Over screen, you're prompted by the title words as you can choose to defiantly try again ('Never') or give up ('I Yield'), while a generous amount of checkpoints ensures it's never that punishing. I daresay it's a little too forgiving as I'd often hold down the sprint button just to speed things up, but even on the default difficulty, the action automatically slows down whenever you're approaching an oncoming obstacle, which not only disrupts the flow but dulls the vibrant visual palette at the same time. While the game does unlock two higher difficulty modes, the 'Insane' mode removing slow-down while also adding extra obstacles, I would have preferred more granular customisation.

As a relatively short game – Aerial_Knight likens it to watching a movie – *Never Yield* is essentially an arcade experience where you keep playing to improve your score. There's also the option to change Wally's look with a number of snazzy unlockable outfits. I'd almost liken *Never Yield* to the playable album gameplay of *Sayonara Wild Hearts*, not least because there's also a fantastic soundtrack here. Where it falls short on Simogo's masterpiece, however, is memorable setpieces: once you've got the fundamentals down, that runner gameplay gets a bit repetitive, even as it approaches its climax, which then jarringly takes the control out of your hands with a spectacular yet abrupt cutscene before it cuts to black. Ⓦ

HUNTINGDON

monkeypuzzler
John

frkl_23
Tooke

LOXLEY

I love *Hood*'s maps – sprawling castle complexes and citadels perched on the coast, surrounded by graveyards, or rising from marshland. These areas, with their climbable structures and secret tunnels, form a fantastic foundation for future modes.

Review

Hood: Outlaws & Legends

Robin from the rich, keeping the loot for yourself

Hood: Outlaws & Legends offers a more focused, thematic take on the PvPvE battle royale – gaming's current most popular genre. It's also a title that proceeds to stab you in the back and steal your wallet before you've even managed to get the monster-infested vision of *Hunt: Showdown* out of your mind.

At its core, *Hood*'s an online medieval heist game that sees you and your band of merry men (and Marianne) break into a castle to steal a treasure-chest filled with the state's ill-gotten gains. The formula is always the same: pickpocket the Sheriff, open the vault, extract the chest, and winch it to freedom.

But here's the kicker: another band of player-controlled outlaws is hunting that chest, too. It gives off some real parallel dimension vibes as you face a team of bloodthirsty doppelgangers, trading blows across the map until one team manages to winch the loot to freedom.

It's a decent loop, supported by diverse maps dotted with enemies, respawn points, and various modes of ingress, and also *Hood*'s roster of reprobates. Each of the four characters fulfils a particular niche, whether it's Marianne's ranged stealth and agility, or John's speedier winching and ability to lift a closed portcullis.

It feels special to stealthily infiltrate a citadel, working together, and using character strengths to overcome obstacles. But the issue is it rarely happens that way. *Hood*'s enemies are too dumb and easy to assassinate from behind even when they're alerted, which doesn't exactly incentivise
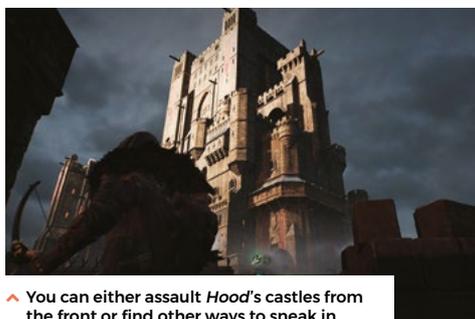
> You can either assault *Hood*'s castles from the front or find other ways to sneak in.

stealth. The Sheriff – an armoured juggernaut who can one-shot you – is the only enemy who feels like a threat, but he's generally too slow to catch up.

PvP is also unbalanced. That you can immediately assassinate any player from behind when crouching is tantamount to the exploitable *Dark Souls* back-stab (which hindered PvP in that game too). There's also no limit on the number of characters you can bring, meaning a team could just use four Johns to melee blitz the level.

Issues with matchmaking are also rife, and typically I'd spend around five minutes waiting for a game, which is bad when *Hood* only has one mode. Having written all this, *Hood* still has the potential to go right where *Hunt: Showdown* went wrong in terms of post-launch support.

It took *Hunt* three years to get a new boss, whereas *Hood* already has a new mode and map incoming. Whether they appear or not is another question, but with a couple more modes and PvP rebalancing, this is a game that *could* be great. Right now, though, it's only decent. Ⓦ

Info

GENRE
Online PvPvE

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

DEVELOPER
Sumo Digital

PUBLISHER
Focus Home Interactive

PRICE
£26.99

RELEASE
Out now

SOCIAL
@LoreScavM

REVIEWED BY
Sean Martin

VERDICT

Hood: Outlaws & Legends has potential, but right now, issues with matchmaking, PvP, and lack of game modes mean it's hard to wholly endorse.

60%

Review

Maskmaker

Cloak and chisel

⌃ Statues strewn around the levels have you striking a pose in virtual reality to access the mask finale.

Info

GENRE
Puzzle

FORMAT
PC VR (tested) /
PlayStation VR

DEVELOPER
Innerspace VR

PUBLISHER
MWM Interactive

PRICE
£15.49

RELEASE
Out now

REVIEWED BY
Jordan Oloman

VERDICT

Maskmaker shifts focus away from its fantastic workshop in favour of a dull and padded narrative.

68%

I n *Maskmaker*, you make masks, but I wish developer Innerspace VR would have stopped there. Augmented by virtual reality, the player must visit several biomes searching for curios that you can bring back to a workshop between worlds. This is in service of crafting more elaborate and aesthetically pleasing masks which, when worn, unlock new areas to explore and develop your understanding of a plot that is kept tightly under wraps.

There's a unique haptic feeling to carefully applying and dipping specific mask accessories into paint pots to realise the briefs you've found throughout the game's worlds. You commit mask templates to memory by observing their wearers with a spyglass, which you pull into place with your hands. Unfortunately, while the mask tinkering is magic, using the spyglass is anything but. The sensitivity is so high that at some points, I had to sit down and hold my headset in place to proceed…

Then all you have to do is pull the mask from your face, and you're back in the shop, seamlessly transported between fantasia and reality – a lovely bit of VR flair. From here, we find the nitty-gritty brilliance of *Maskmaker*. You set up your stall, chisel away at a woodblock, pull at your mask mount, and refine your humble wooden creation into high art.

Arcing your arms to affix plants and charms into a mask's holes takes precision and care, so it's always rewarding to don your finished design and enter a new area flush with items and obstacles. *Maskmaker* isn't a challenging game,

but to its credit, it does manage to coordinate its mask-swapping mechanic with the puzzle gameplay to decent effect. As an example, you'll have to load and lower a basket of resources while wearing one mask and then access the contents by wearing another. You're essentially using the masks to body-swap between areas, gain new perspectives, and solve puzzles.

As you explore each level, the narrator witters on, delivering grandiosities about the importance of your quest as a Maskmaker's apprentice. Regardless, you don't really learn why what you're doing is so important until you've played three-quarters of the game. *Maskmaker* is unnecessarily sheepish about providing any meaningful plot to the player, and as a result, boredom quickly seeps in. The writing wasn't helped by monotone delivery and some dodgy dialogue either. I'm told the fantasy lands I'm travelling through were once bustling, diverse societies – but they're entirely vacant now, and the scarce archaeology left behind tells me precious little about their lives.

I wish the whole game was just the mask shop, as this is where *Maskmaker* shines. Hacking, chiselling, soaking, and adorning your creation makes for great VR gameplay that I've not experienced elsewhere, but the rest of the game feels shoehorned in on top of that to pad it out. It would justify itself if the story was resonant, but the sad reality is that *Maskmaker*'s fantastical worlds are far more boring than the humble workshop hub. Simply wandering in VR can have meaning, but yanking levers and sifting through rubbish in lonely checklist biomes doesn't inspire. Ⓦ

Review

World Splitter

Dimension-hopping in a world divided

World Splitter takes one of gaming's most enduring physical anomalies and makes it spin. Parallel realities have featured in everything from *A Link to the Past* to *The Medium*, and developer NeoBird coaxes a few more miles from the concept. If anything, *World Splitter* is reminiscent of the world of the dead mechanic in *Guacamelee!*, where the press of a button alternates different configurations of platforms and hazards in the same space, and your head hurts trying to keep both in mind. Yet the difference here is that both worlds inhabit the screen at once, separated by a line that carves the play area in two. Your job is to move and rotate this line around each single-screen stage, creating paths so you can guide your little spaceman avatar from left to right.

It's a more considered affair than the acrobatic demands of *Guacamelee!*, then. Slow and precise, its 60 levels are puzzle-platform challenges with the emphasis on puzzle, as you manipulate the scenery, find the spaces that exist in one dimension but not the other, and fashion bridges to reach them. It's not only which side of the split you're occupying that matters, but the exact position and angle of the line, bringing just enough of a platform into view to jump across to it, or cutting off corners to create inclines you can run up to reach higher ground.

Simple? In theory. But *World Splitter*'s layouts are quite capable of causing the brain to stumble. Key moves such as rotating the line around your character's position, or pushing up higher platforms in the alternate world from beneath their feet, may require some mental rewiring. And each new environmental wrinkle introduced in the game's six areas – from patrolling enemies to portals and the eventual paradigm shift of dividing the world into four – demands a little bit more.

Also, as cerebral as it is, *World Splitter* does require careful control, swiftly punishing a heavy touch. Exaggerated momentum can boost your character into trouble when navigating slopes, while their jump range – surely the tiniest in platform game history – makes crossing chasms a fraught prospect. And when you're working the line around tight spaces, there's always the danger that a single rash rotation might crush you with a wall from the other dimension, or erase the ground from beneath your feet.

Persistence should see you through despite the occasional mishap, however, as you figure out which bits of scenery to use and how to keep them safely in play. Indeed, even with all its toys and tricks in the mix, once you do get your head around the game's logic, you can often rely on the same few techniques. For every level that forces you to stop and conjure up a cunning plan, there's a couple that fall to steady application. Even so, *World Splitter* remains a pleasantly engaging twist on an old formula. Just don't expect the earth to move. Ⓦ

▾ **There's an optional objective in each level to round up your scattered alien buddies.**
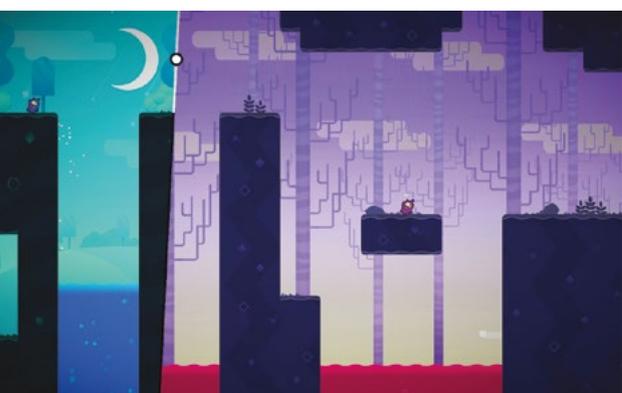
VERDICT

A solid concept and neat design. *World Splitter* just lacks a touch of genius.

63%

REVIEWED BY
Alexander Chatziioannou

Review

Resident Evil Village

Lycans in the Balkans

As far as spoilers go, here's a 9'6"-sized one: for all the pre-release attention she received, Tall Vampire Lady will be hounding you for barely one-fifth of *Resident Evil Village*'s duration. Alcina Dimitrescu and her cabal of ferocious daughters rarely venture outside the confines of their labyrinthine, lavishly furnished castle – a far cry from the hamlet it overlooks – and their hive is but a single stop in Ethan Winters' quest to rescue his abducted daughter. In fact, the imposing matriarch isn't even the game's most captivating antagonist, that honour falling squarely to the double-faced Karl Heisenberg, the proprietor of a seemingly disused factory outside town.

Ninety minutes in, you'll be already acquainted with every power player in *Village*, a motley congregation of monstrosities, grief-stricken telepaths, and petty tyrants, though it will feel a lifetime away from the scenes of domestic bliss glimpsed during the introduction. Following their ordeal in Louisiana, Ethan and Mia Winters have been relocated to an unnamed city in Eastern Europe, presumably on BSAA orders for the couple's own safety. But then a series of grim events sees Ethan and his newborn daughter Rosemary kidnapped. One crash later, and Ethan wakes up near a snow-covered forest trail; his captors are dead, and his daughter is nowhere to be found.

At the end of that trail lie not only the answers to Ethan's pressing questions but one of the most breathtaking vistas in all of gaming: a fairy-tale realm of mist-shrouded peaks, looming Gothic spires disappearing into the clouds, candle-lit shrines, and colossal statues carved onto the surrounding mountainsides. The sheer spectacle is such that it's nearly enough to justify your engagement alone. And it's not just the majestic panoramas: Capcom constructs exquisitely detailed interiors as well, of all shapes, sizes, and conditions, from the opulence of Lady Dimitrescu's ornately decorated chambers to the squalid hovels in the valley below.

While criticisms of second-hand xenophobia (also aimed at its spiritual predecessor, *Resident Evil 4*) aren't unwarranted, this latest instalment does dress up its bigotry sumptuously and demonstrates a staggering visual range, perfectly complemented by its drastic gameplay about-turns. Because, picturesque scenery aside, *Village*

▾ **Castle Dimitrescu looms over the – untypically peaceful – village square.**

▾ **The charismatic Karl Heisenberg in his office, about to make you an offer you can't refuse.**

▲ **In a not-so-subtle allusion, the game is obsessed with inflicting increasingly gruesome punishment on Ethan's hands.**

is no walking simulator – at least not for the most part. This is an experience that radically shapeshifts in terms of scope, tone, and even length across its main chapters, to the degree that if someone played through each section independently, they'd be hard-pressed to identify them as parts of the same game. Sprawling, open-world arenas give way to the rigid demands of a corridor shooter. Then the pace slows down to a crawl and you're stripped of all offensive capabilities for an entirely combat-free investigation of a haunted manor, following which you'll be chased through an archipelago of half-sunken windmills by a leviathan with Oedipal issues.

The sheer exuberance with which *Village* tries on and discards new ideas, coupled with its consistently arresting flamboyance, mean that it could never hope to match the overwhelming dread of its immediate predecessor; it's hard to be frightened when you're oohing and aahing at an impeccably dressed Lady D advancing on you, claws unfurled. But even the emphasis on stylish action sequences changes from chapter to chapter – the slower-paced exploration of House Beneviento is as scary as anything in the franchise's history, and injects some welcome *Ringu*-inspired chills into the carnival-esque ride.

Combat is still the crux of the experience, naturally, but it's also varied, so much so that unfavourable comparisons to *Resident Evil 4*, though technically accurate, are missing the

> ## "House Beneviento is as scary as anything in the franchise's history"

point. While set pieces aren't, admittedly, as elegantly choreographed as in Mikami's classic, *Village*'s best fights are dynamic affairs, less like scripted skirmishes from *Call of Duty* and more akin to *Halo* arenas, bursting with alternative scenarios, unpleasant surprises, and ad hoc heroics. The uncertainty engendered by these messy sprawls, assisted immensely by the visual overload camouflaging your pursuers, and a type of vertical design that facilitates a Lycan lurking on the roof above you or a cultist climbing from the basement below, strikes a note of true panic that's been rare in recent examples of the genre.

Village's greatest triumph, however, is that it doesn't force its moment-to-moment narrative decisions on you. Every bloody conflict won, every last-minute escape feels genuinely earned by your composure or attentiveness to your surroundings, not predetermined by plot-point requirements – as if things could have always turned out differently. It's an illusion, of course, but a masterfully maintained one, and it works wonders for the game's atmosphere.

If the latest *Resident Evil* stumbles anywhere, it's near the finale when it reverses these priorities, shoehorns in a feeble twist, and adds a final tweak to its combat mechanics to account for a pointless subplot. Still, for the most part, *Village* plays like its star villain, the mercurial Heisenberg: a volatile beast with a brutal streak and boisterous, irresistible charm. Ⓦ

HIGHLIGHT

How can something explicitly inspired by a 16-year-old classic feel so fresh? Your first encounter with a group of Lycans registers as genuinely dangerous and unpredictable, in a way the survival horror genre hasn't felt since the Ganados started climbing through the windows in *Resident Evil 4*.

VERDICT

Trekking through Eastern Europe hasn't looked this grim since Eli Roth's *Hostel*. *Village* makes the ordeal worth it.

82%

R-Type Final 2

Wave hello, say good Bydo

The original *R-Type* featured some of the most iconic creature designs in 1980s gaming: a Giger-like colossus with a whipping tail and sharp teeth. A similarly humongous, pulsating alien heart with a deadly snake that slithered out of its valves. In *R-Type Final 2*'s first level, I found myself shooting at some geometric shapes that looked like abandoned refrigerators.

This isn't to say *R-Type Final 2* is a bad-looking shoot-'em-up: built in Unreal Engine 4, it's packed with saturated colour and moody, atmospheric lighting. But in terms of imagination, the dark ingenuity that made the early games so memorable is conspicuous by its absence here. I bring up the visuals early because they're so key to what made the series a hit with shooter fans in the first place; these have always been slow-paced games, and sometimes frustratingly unfair in terms of difficulty, but their imaginative weapon designs and creative enemies carried them through.

Admittedly, *R-Type Final* – intended as the series' swansong – didn't have quite the same visual flair as the earlier titles, either, but it still had a sense of grandeur about it. Still, it's exciting to see the *R-Type* name back, and this new entry has a solid pedigree: designer Kazuma Kujo worked on *Final*, and *Final 2* feels very similar in terms of pace and style. Taking control of your R-9A Arrow Head (or any one of a number of unlockable craft in your hangar), you fly at a stately pace through waves of mechanical and biological aliens. To help you in your mission, you have the Force – an indestructible satellite that sticks to the front or rear of your craft – to help clear a path through the enemy throng. Like all *R-Type* games, *Final 2* offers a formidable challenge – not endless waves of ordnance like a bullet hell shooter, but rather maze-like stages that have to be carefully navigated and enemy patterns that require careful memorisation.

One of the more unfortunate challenges, however, comes from a design flaw: it's sometimes difficult to discern what's part of the background (and harmless) and what's a deadly obstacle. There's one area where enemies fly in from the foreground, and it's hard to tell whether they're on the same plane as your craft or just really large. At other times, you find yourself exploding because something you thought was harmless really wasn't.

That gripe ebbs away as you memorise each stage, though, and the further I got, the more enjoyable it became: the visuals may lack verve, but there are still some interesting, almost puzzle-like set-pieces to navigate.

This isn't exactly classic *R-Type* then, but it's still an enjoyable blaster, despite its drawbacks. Ⓦ

▲ Iconic area boss Dobkeratops makes an appearance, though it'll remain covered in ice unless you're brave enough to play on the highest difficulty level.

VERDICT

A welcome – if not exactly triumphant – return for the legendary shoot-'em-up series.

66%

New Pokémon Snap

Gotta snap 'em all

The first thing I wanted to check in *New Pokémon Snap* was whether I could play it using my Switch Lite as if I were holding a real camera. Did it have 1:1 motion and 360-degree aiming? The answer is, sort of. Motion control settings are there, though I'd recommend setting the sensitivity to max. If I swivel around in my chair, the view spins around in the game world, while I can also change the control layout so that the right shoulder button takes the photo. It's not quite 1:1, leading to occasionally awkward restrictions – though you can still realign your view with the left stick. Still, *New Snap* certainly manages to immerse you in a world where you're not out to capture, train, or battle Pokémon, but rather to watch them live blissful existence.

It's just one of many areas where *New Snap* improves over the 1999 N64 cult classic, the other being a greater dollop of content. Whereas the HAL-developed game featured only 63 of the 151 first-generation Pokémon and could be finished in a few hours, Bandai Namco's packed in over 200 Pokémon from all generations. It's set over 20 different levels around the new lush Lental region, and filled with enough optional objectives to keep eager shutter-bugs busy. Graphical leaps in the intervening two decades also means Pokémon feel more alive in their natural habitat than ever, making it more like a Pokémon safari as opposed to an animatronics-filled theme park ride.

> ## "More like a Pokémon safari as opposed to an animatronics-filled theme park ride"

The core element that remains is the on-rails action. While some players may prefer more freedom, especially when you really want to get closer for that perfect shot, the restriction's key to how *New Snap* plays. It's about creating the illusion of being a nature photographer where there's skill in taking a picture at just the right moment, with just a few ways to catch an animal's attention. Your photos are also scored based on a number of different factors, from the Pokémon's pose, size, and direction, as well as whether other Pokémon are also in the shot.

It's annoying, however, that the game's bountiful content unlocks at a snail's pace, requiring you to replay levels again to rank up your research level of an area or sometimes complete rather obtuse objectives, thus forcing a number of extra replays. The repetition isn't all bad, though, since there's almost certainly going to be things you didn't see the first time (each Pokémon also displays four unique behaviours which you'll need to register on separate playthroughs); some levels even have multiple routes, while moving up a research level also changes the Pokémon layout. Even then, it takes time to unlock extra mechanics, such as a way to speed up the pod you're riding on.

Yet even if I wished things could have progressed a little, well, snappier, these blemishes were never enough to sully *New Snap*'s relaxed charms, which it continues to provide even after the credits have rolled. ⓦ

VERDICT

Despite a grindy progression system, *New Pokémon Snap* is a serene delight that will keep both *Pokémon* fans and avid photographers snapping away.

74%
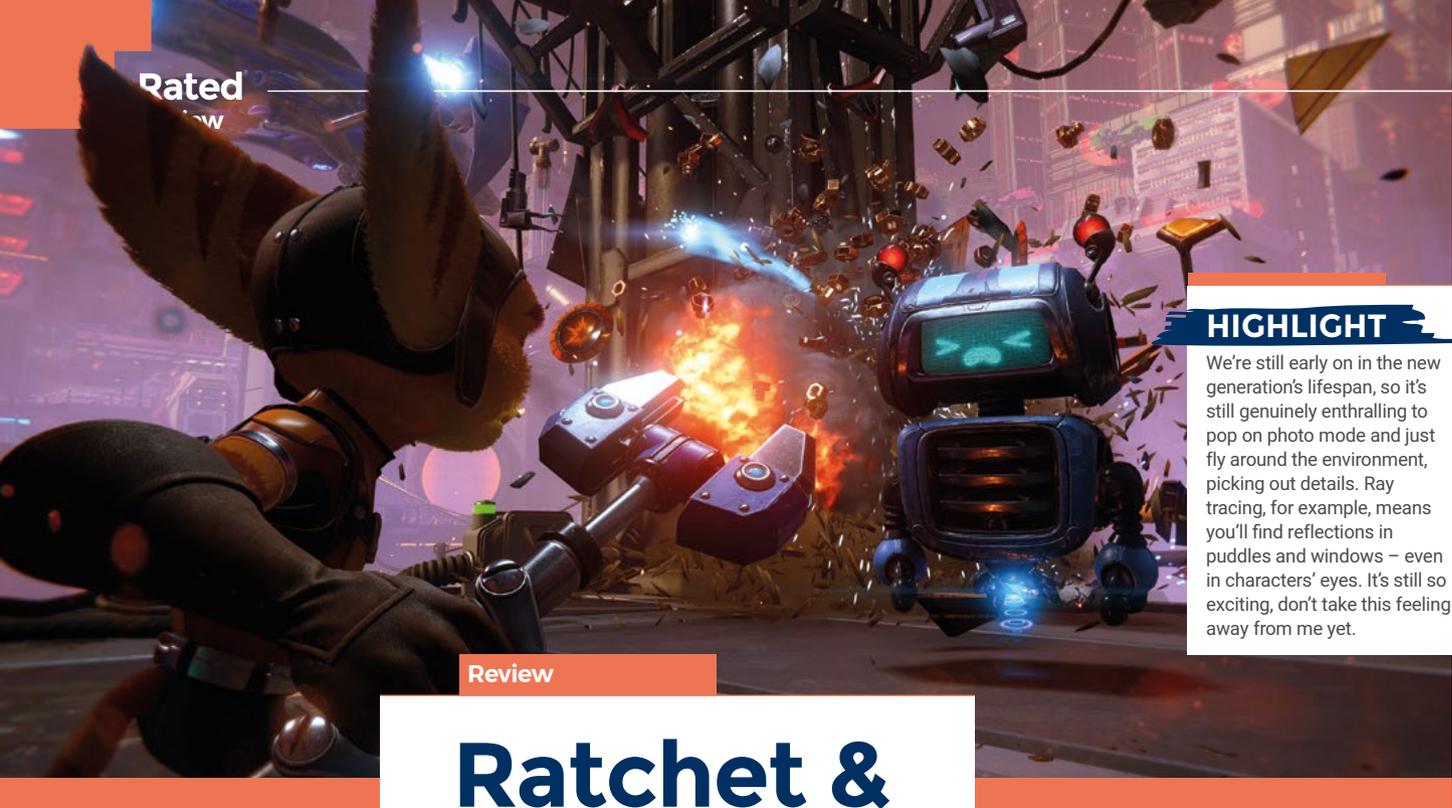
Review

Ratchet & Clank: Rift Apart

Crossing dimensions feels simultaneously fresh and stale

VERDICT

Gorgeous looks and a truly next-gen gimmick can't completely cover up for a 20-year-old formula that was old hat 15 years ago.

62%

The first grand hope of a new generation for Sony's first-party exclusives, *Ratchet & Clank: Rift Apart* looks superb and relies on a gimmick that suitably blows minds almost every single time you use it. The dimension-hopping mechanic – as simple as walking through a purple shattered gateway between realities – is so utterly seamless as to render all previous hard drive or physical media-based storage systems obsolete. There's no delay: it's just there. The world you're in instantly switching to a completely different one, complete with new terrain, items, enemies, and locations to explore. And all it takes is a single step.

It's a shame, then, that *Rift Apart* seems so reticent to take a step itself, as the rest of the game is nigh-on exactly the same thing we were playing on the PlayStation 2. The levels might be bigger, the array of weapons and gadgets might be wider, there's ray tracing – but the underlying action; the running around a series of planet-based levels smashing boxes, collecting bolts, and walloping enemies with a giant spanner or shooting them with your guns… that's all *exactly* the same as ever. And honestly, it comes as a big disappointment.

Rift Apart isn't a bad game – yes, it's been focus tested to the point that it has the personality of a particularly milquetoast rock, and the almost complete lack of ambition on show for actually developing the minute-to-

minute action would be shocking if it didn't offer plenty of wows elsewhere – but it's not *bad*. Dull? Sometimes, yes. Often banal in the extreme and still the place where senses of humour go to die? Absolutely. Worth £70? Well, that I can't say, dear reader: value is in the eye of the account holder. I wouldn't pay it, though.

So yes, we have here a story of multidimensional planet-hopping, with players taking control of dual protagonists Ratchet – lovable lombax wielding a giant spanner – and Rivet – lovable lombax wielding a giant hammer (also: female). Bolts must be found, weapons must be upgraded, waves of enemies defeated, quests conquered, and side-quests ignored unless you want special armour unlocks: it's all there. There's next to zero difference between playing as Ratchet and Rivet – it feels almost a *Mortal Kombat*-level palette swap at times. You get the odd distraction of simple 'blast the virus' minigames, and at points, things open up to a more open-world version of the usual exploration. As an exercise in box-ticking, it's fine.

The dimensional rifts are proper next-gen stuff, no doubt. They could be fudged on previous gens, sure, but they could only be done this way – streamed and loaded instantly – on modern hardware. So that's a big positive, and something I'm keen to see taken advantage of elsewhere. As for *Ratchet & Clank: Rift Apart*? I can say one thing for certain: of all the games I've ever reviewed, this is the most recent. Ⓦ

▶ STREAM OF CONSCIOUSNESS

Marta Camilo, aka ThisIsMartaaa, chats to us this month

What's your favourite game?
That's a very tough question! I can't pick just one... Right at this point in time, I would maybe say *Yakuza 0* and *Yakuza: Like a Dragon*.

And why is that? What is it about that those particular games that resonates so much with you?
The *Yakuza* series is just phenomenal. It goes from a serious, yakuza drama-filled narrative into completely bizarre scenarios where you're not even sure you're still playing the same game. It's engaging, fun, outright silly at times, and incredibly entertaining! I started playing *Yakuza* during a rough patch in my depression, and it was one of the few games that gave me a spark, not only to play it consistently, but also to stream it and share the *Yakuza* love with the world.

Which game was it that got you into gaming to begin with? What are your enduring memories of it?
I started playing games very young, so this is a tough one! *Sonic & Knuckles* was a game I played a lot as a kid and that I still have very fond memories of. It was the first game that was my own, and I remember spending hours and hours playing it on my super-tiny CRT TV.
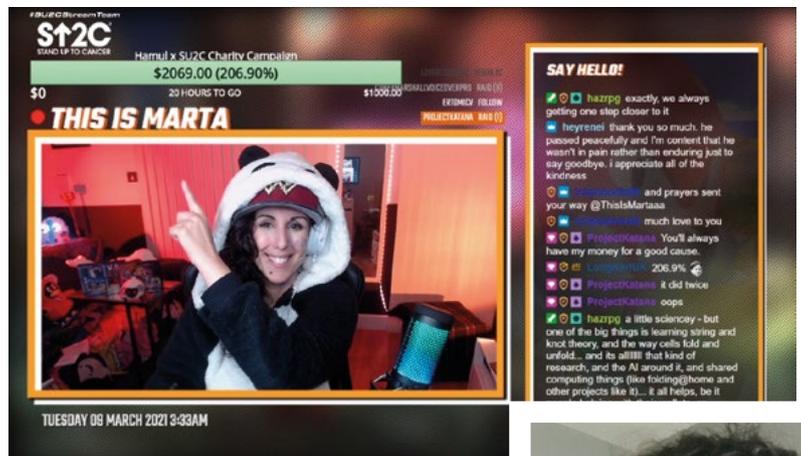
Has there ever been a point where you've been put off gaming?
I believe most people go through a phase where they're a bit put off by gaming. Particularly when you move from your teen years into adulthood, sometimes you're made to believe that games are something that should stay in your childhood. And for a while, I didn't play as much. Of course, this couldn't be more wrong – gaming should be a healthy part of everyone's lives! I work in the video game industry today, and I gladly live and breathe it!

What's the appeal of playing games for an audience – whether that's pre-recorded or livestreaming?
It's all about sharing your favourite games with people! I love how streaming games can spark so many interesting conversations with a wide range of people from all over the world. It never stops to amaze me how much we can all learn from each other as human beings just by talking about our favourite games. ⓦ

ThisIsMartaaa streams on Tuesdays, Thursdays, and Saturdays at 9pm (UK time) over on Twitch: **wfmag.cc/Martaaa**

*"**Yakuza** was one of the few games that gave me a spark – not only to play it but also to stream it"*

The Wireframe HOTLIST

The best PC games, according to Wireframe,
catering for whatever your mood might be

The games for... BIG ADVENTURES

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)

The Last Campfire / *Hello Games* / **86%** (Issue 47)

Resident Evil 2 / *Capcom* / **86%** (Issue 7)

⌃ **Far Cry New Dawn** / *Ubisoft* / **85%** (Issue 9)

Journey to the Savage Planet / *Typhoon Studios* / **84%** (Issue 33)

The Outer Worlds / *Obsidian Entertainment* / **84%** (Issue 28)

Monster Boy and the Cursed Kingdom
/ *Game Atelier* / **84%** (Issue 6)

Nioh 2 / *Koei Tecmo Games* / **80%** (Issue 38)

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)

Mutazione / *Die Gute Fabrik* / **86%** (Issue 26)

Whispers of a Machine
/ *Clifftop Games/Faravid Interactive* / **85%** (Issue 14)

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 Procession to Calvary / *Joe Richardson* / **80%** (Issue 40)

Outer Wilds / *Mobius Digital* / **80%** (Issue 17)

The games for... FIRING UP BRAIN CELLS

Telling Lies / *Sam Barlow* / **92%** (Issue 24)

Kentucky Route Zero / *Cardboard Computer* / **90%** (Issue 33)

Heaven's Vault / *inkle* / **89%** (Issue 12)

The Pedestrian / *Skookum Arts* / **84%** (Issue 35)

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)

⌃ **It Takes Two** / *Hazelight Studios* / **81%** (Issue 51)

Wanna Survive / *PINIX* / **80%** (Issue 42)

Superliminal / *Pillow Castle* / **80%** (Issue 34)

The games for... HIGH-INTENSITY PLAY

Tetris Effect / *Monstars Inc./Resonair* / **90%** (Issue 4)

Sayonara Wild Hearts / *Simogo* / **89%** (Issue 25)

Star Wars: Squadrons / *EA* / **86%** (Issue 45)

Devil May Cry 5 / *Capcom* / **84%** (Issue 10)

Black Bird / *Onion Games* / **84%** (Issue 3)

BPM: Bullets Per Minute / *Awe Interactive* / **83%** (Issue 45)

^ Catastronauts / *Inertia Game Studios* / **82%** (Issue 1)

Olija / *Skeleton Crew Studio/Thomas Olsson* / **81%** (Issue 48)

DUSK / *David Szymanski* / **81%** (Issue 7)

DOOM Eternal / *id Software* / **80%** (Issue 36)

The games for... CURING THE INDIE ITCH

If Found... / *DREAMFEEL* / **92%** (Issue 44)

Can Androids Pray
/ *Natalie Clayton/Priscilla Snow/Xalavier 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)

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)

Xeno Crisis / *Bitmap Bureau* / **81%** (Issue 33)

Art of Rally / *Funselektor Labs* / **80%** (Issue 45)

PC Top 10
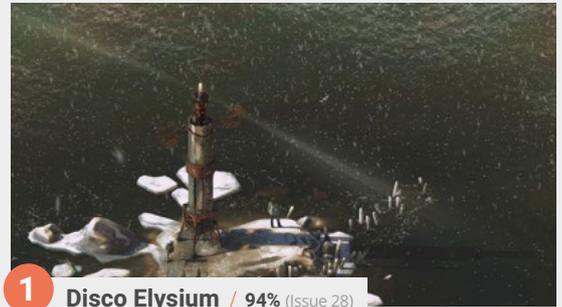
1 **Disco Elysium** / **94%** (Issue 28)

Smarter and deeper than anything else; truly
an RPG in a class completely of its own.

2 **Hades** / **94%** (Issue 44)

Proving 'roguelike' isn't a dirty word, learning-
and-dying is a joy from start to finish.

3 **Assassin's Creed Odyssey**
/ **93%** (Issue 1)

The point where Ubisoft realised over-the-top
adventures were the right direction.

4 **Telling Lies** / **92%** (Issue 24)

This FMV mystery asks more of the player
than most, with rewards to match.

5 **If Found** / **92%** (Issue 44)

A compelling and beautifully illustrated
narrative, as moving as it is memorable.

6 **Yakuza: Like a Dragon** / **90%** (Issue 45)

A bold, brash, and joyous rebirth for the
long-running gangster series.

7 **Tetris Effect** / **90%** (Issue 4)

The question is 'how do you better *Tetris*?'
The answer is: like this. This is how.

8 **Kentucky Route Zero** / **90%** (Issue 33)

Abstract style meets concrete commitments
in this fantastic magical realist adventure.

9 **Can Androids Pray** / **90%** (Issue 21)

A healthy dose of existential anxiety in a
minimalist, bite-sized package.

10 **Tales From Off-Peak City Vol. 1**
/ **89%** (Issue 39)

A walking sim/adventure; a work of
remarkable imagination and humanity.

Backwards
compatible

WRITTEN BY **IAN "IS THIS TOO DULL?" DRANSFIELD**

Power fans

No but really, I'm going to talk about power supplies and fans right now, because it's something that's been – somehow – dominating my retro focus for the past few months. I think I just need to get it out on the pages, then it'll be cleansed from my brain forever. Well, that, and I've done most – maybe all – of the upgrades and tweaks I wanted to do, so if I were to continue thinking about it, it would be little more than a waste of brainpower. But I digress.

Old games consoles all have one thing: a power supply. The thing about old

games consoles is that they are, as you may have guessed from the name, old. As such, the power supply units – PSUs – inside them can start to break down. It's honestly not super-likely, but they *can*. What they definitely are though, is less efficient than modern PSUs. So what can we do? Well, personally, I can't *do* much as I'm not an electrical engineer. But I can be a well-behaved consumer, so that's what I did do.

Rather than sticking with the poxy old official Sega PSU in my Dreamcast, a couple of years ago, I swapped it for an

Indiegogo project going by the name of DreamPSU. It was good: a small-board power supply you dropped right into the console that allowed worldwide compatibility, regardless of where the console was from, so long as you used the right kind of plug for it. Basically: it wouldn't blow up if you forgot to use a step-down converter. But I've upped the game once more, switching *that* PSU out for a design called PicoDreamcast by modder of note chriz2600: it's a PCB with the connections you need to link the Dreamcast up to a proper, wonderful, efficient, and safe picoPSU. I now feel like I've hit the ultimate power supply for that console, and will be doing my damndest to find similar things for other machines. At the time of writing, I've actually got one on the way for the Saturn, which makes me more excited than I probably should be, but nerds gonna nerd.

▲ Look! Exciting pictures of some hardware I own! That's a DC-IN jack above, and a 3D-printed shroud with a Noctua fan to the right. Meanwhile, above-right you get the PicoDreamcast in all its glory.

Make it again IX

It's 25 years since the first *Die Hard Trilogy* blew up in everyone's faces (in a good way), and it feels about the right time to revisit the franchise. I mean, if they can do one sequel, why not another? After all, we've had two phenomenally good *Die Hard* movies in the intervening years that could easily form the basis of a series of smaller games of differing genres, just like the *DHT*s of the nineties. We could go traditional, with third-person shooter, lightgun shooter, and driving, or we could mix it up a bit – go full FPS, or a *Prison Architect*-style hostage management system from the perspective of the baddies. Whatever it was that came out the other side, so long as we had some solid riffs on the adventures of Channing Tatum and Gerard Butler, it'd fulfil a yearning I have. Oh, yeah – probably should point out I'm talking about *White House Down* and *Olympus Has Fallen*. As far as I'm aware there hasn't been a single film with the name *Die Hard* released since 1995. *Not a single one.*

Old games consoles don't all have another thing, but those released from about 1998-on did: a fan. If you've been paying attention, you know where I'm going with this. I'm sat there on a call with friends, chatting away while playing some *Just Cause* on PS2 (yes, really), when one asks what that loud whine is. "It's Rich!" I say, hilariously. It's not though, it's the PS2's fan, which sounds like a never-ending nasal groan on the launch model I have under my desk. Turns out, with a bit of squeezing and compressing – and leaving out one screw when reassembling it – it's easy to put a newer model PS2 fan in the original console, and now it runs both cool and quiet.

I opted for a similar mod – this one using a fan by manufacturer Noctua – for my Dreamcast and GameCube, so both run silent. And cool. Silence is more important to me. But the one I never expected to do and, honestly, I feel a bit daft about doing, is adding a fan to my original model PSone. On picking up a new PSU (there's another one!) from Will's Console Modifications, it came with the option of adding a fan mount. So I did. And now I have a tiny, quiet fan inside my console from 1995 that doesn't *really* need it, but because of the PS1Digital HDMI mod I have in there, it *might* get a bit hotter than it originally did.

This is an extremely long-winded way of saying: I spend my spare money on daft things. Thing is, if you're into retro consoles too, the original hardware I mean, you might well find something of interest here. Refitting these core elements of a console with newer, safer, and more efficient parts gives them all a much longer lifespan and, really, makes all those ageing electricals that bit safer. So long as you don't fit the PS2 fan incorrectly and give yourself a shock as some of us did. Thanks, quick-trigger breaker circuits fitted directly into the plug wire!

Backwards compatible

WRITTEN BY **RYAN LAMBIE**

Tickled Pink

Inspired by Tito's in-depth guide on page 50, I thought I'd try my hand at modding a Game Boy Advance myself this month. The kit you see here was supplied by the fine folks at RetroSix (**retrosix.co.uk**), who you may recall also do a line of Game Gear mods we've covered in previous editions. If you're looking for a UK-based seller of GBA mods and spares, they're a handy port of call.

First, though, I had to get my hands on a donor GBA – a trickier proposition than I'd originally expected. There are plenty of Nintendo handhelds available on eBay, sure, but the sheer popularity of the retro modding scene has, it seems, forced the prices up somewhat: even relatively tatty GBAs can go for a surprising amount these days, so I had to be a bit patient and wait for a candidate to show up at a reasonable price. The GBA I finally got my hands on was worn, grubby, and clearly had lots of use – in other words, the perfect candidate for a new screen, shell, and buttons.

My tired GBA also came with a quaint blast from the past: a Logic3 front light, designed to compensate for the console's dim and distinctly un-backlit screen. Assuming I don't mess the modding

▲ **My backlit GBA with a quiet, understated custom case and buttons. Minish Cap has never looked better.**

process up, I shouldn't need this Heath Robinson-esque little device anymore.

If you've read previous editions of *Backwards compatible*, you may remember just how involved adding a modern screen to a Game Gear was: fitting an LCD or IPS panel to Sega's handheld isn't the hardest mod in the world, but it's still time-consuming, fiddly, and requires the removal of quite a few tiny components. These GBA screens, on the other hand, are a relative breeze: it's simply a process of removing the motherboard from the handheld's shell, uninstalling the old screen, and clipping in the new one. As Tito points out, there are a number of these mods available for the GBA now, and they're pretty much 'drop-in' solutions: the kit RetroSix sells is no

exception. The hardware that drives the modern IPS panel is simple to plug into the GBA's motherboard, and the only bit of soldering required is for the two wires that allow you to adjust the brightness by holding Select and the left and right triggers.

If you're planning to keep your existing GBA shell, there's some cutting required to accommodate the new screen; I've plumped for one of RetroSix's new shells, though, which already have the right sized aperture for the replacement display. (As you can see, I've gone for a Kirby-themed shell – one of several custom designs you'll find on RetroSix's site.)

Ultimately, the trickiest part of the whole build was putting the thing back together again: the GBA is a much smaller device than the hulking Game Gear, so getting all the buttons in the right place took a bit of patience and just a little bit of swearing. (At one stage, the tiny on/off switch pinged out of the shell, and because it was clear, required a lengthy fingertip search to find.)

With everything put back together, my last job was to add a CleanJuice battery pack to the back of the handheld. This slots neatly into the battery compartment, and means I can now charge the device via
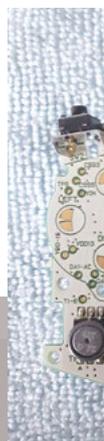
The grubby and rather tired donor Game Boy. It's easy to forget how hard to see these un-backlit screens are.

USB-C – and no more scrambling around in drawers for spare AA batteries.

With that, I have a modern, backlit GBA that really shows off how pretty some of the handheld's graphics were – *The Legend of Zelda: Minish Cap*, for example, positively sparkles. In short: if you're intrigued by the idea of modifying a retro system but feel a bit nervous about picking up a soldering iron, then the GBA is a perfect place to start.

Next month, I'll be trying out a few other mods: a couple of LEDs that will light up when the left and right triggers are pressed, and some other bits of tech that should improve the GBA's sound. Nothing could possibly go wrong...

The GBA stripped down to its bare essentials – all we basically need is the motherboard.

Flashing Back

Early May brought with it the surprise announcement that the classic 1990s cinematic platformer *Flashback* is getting a sequel. French publisher Microids broke the news via Twitter, though there's not much more to go on at the time of writing other than a name (*Flashback 2*), a vague idea of platforms (PC and consoles) and a loose release window (2022). Still, the news was enough to prompt me to revisit the original game for the first time in almost 30 years – I used to have it on the Amiga, a machine I sadly no longer own, so I tracked down a copy for the Mega Drive. Interestingly, the Mega Drive was *Flashback*'s target platform when it was in development, but the Amiga version wound up coming out first – which surprises me, because *Flashback* feels much more like a computer game than a console title. Or maybe that's just because I've gotten too used to the Amiga version's controls: with the Mega Drive's joypad, amnesiac protagonist Conrad B. Hart feels far more skittish than I remembered. All that aside, *Flashback*'s aged pretty well: its pace is slow and deaths are sudden, but then that all fits with its *Total Recall*-like thriller scenario. Combat sequences are rare, at least in the early going, but that just gives them more heft when they do happen: there's a pleasing snap to the gunplay, and the way enemies fly back, arms flailing, when they're shot is still as satisfying ever. It's fair to say, then, that revisiting *Flashback* hasn't dampened my enthusiasm for a sequel. Here's hoping original creator Paul Cuisset will be back in some capacity.

85:41

22 M. LAVERNIA

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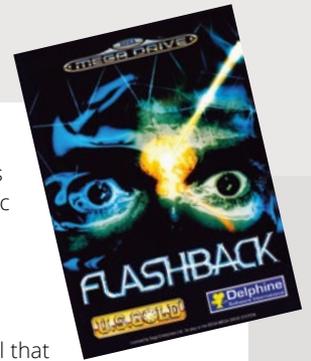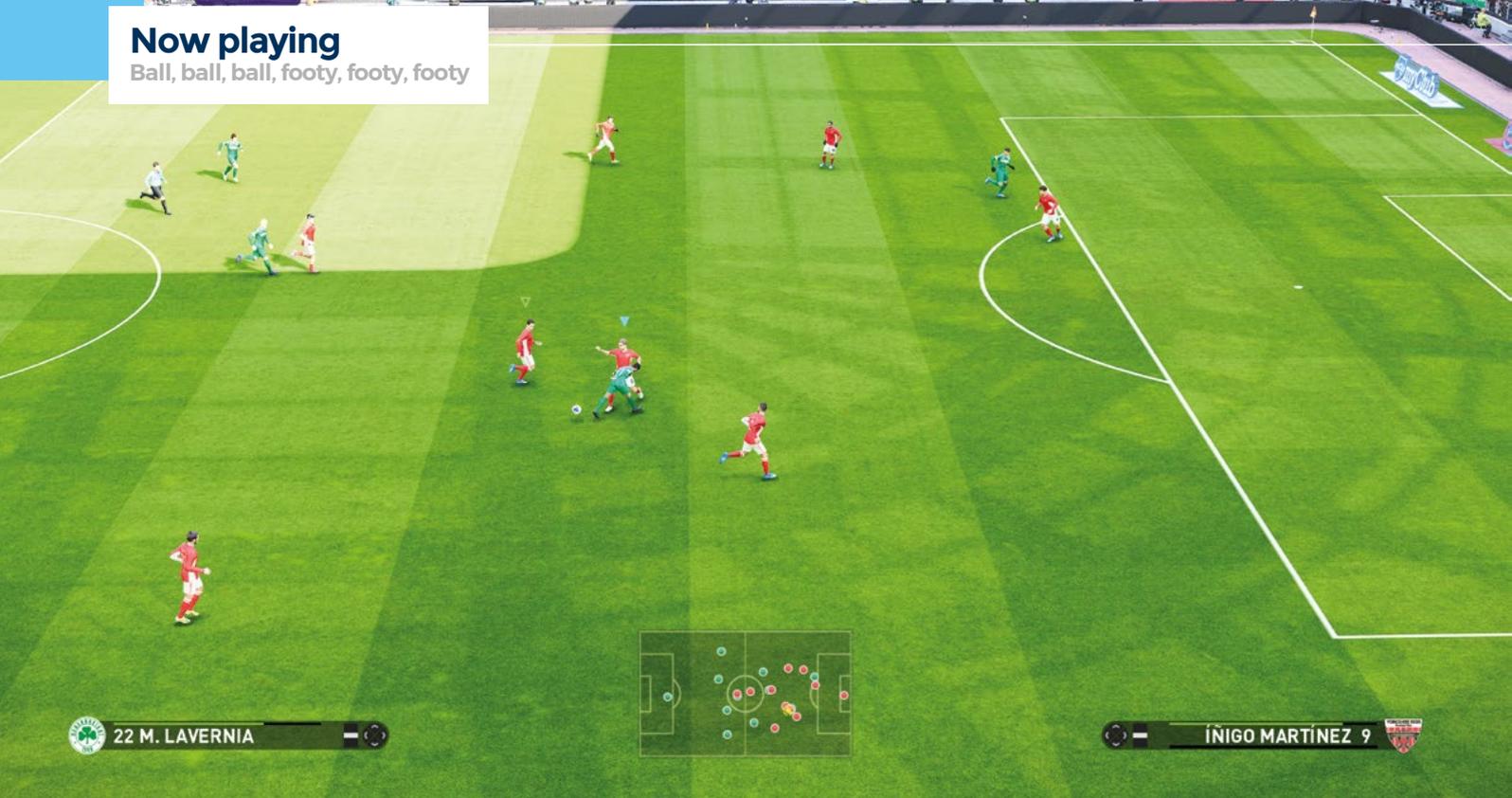
And once you're done tournamenting, there's a whole other game(s) to play. Huzzah!

The plan: give it to Gylfi, let him shoot, hope for the best. Worked out OK, actually.

Replay

Skip   Replay Control

Ball, ball, ball, footy, footy, footy

Every kick massively mattering to someone, presumably: it's eFootball PES 2021

hanks to the magic of time, Euro 2020 will be all but finished when you read this, the final being held on 11 July as it will be/has been (delete as appropriate). But that won't stop me from remembering that a) football games exist, and b) I quite like some of them. And so we're here, recreating the glory of the European Championship from the comfort of my stiflingly hot living room in *eFootball PES 2021* – it's just like the real thing but with less shirtless racists using the word 'bottle' as a verb and an England team that doesn't disappoint. I am comfortable leaving that statement in there, by the way, because I am 100% confident England will do an England.

Anyway: *PES 2021* isn't a full game in its own right. Instead, Konami went down the path that – frankly – sports games should have been going down for at least a decade. It's an update that slots on top of *PES 2020*, updating the squads and upgrading other bits and pieces under the bonnet. *PES* has been a good-to-great footy game for a few years, following the doldrums of the PS3 era, so there isn't much that needed to be done from a mechanical perspective. I am, therefore, completely OK with this system – to the point that I paid actual money from my own pocket to get the game months ago.

Enough of that waffle, though, and onto the actual playing of said game. I set up the UEFA Euro 2020 tournament with the intention of just… playing it. Simple. A challenge of sorts, I guess, but nothing particularly fancy. Play the tournament, try to win it even though I've never

▲ Video games: where ice-cold dreams can come to life. Unless this actually happened in real life, who knows?

been too great at *PES* as a series. And to make it a bit more fun, I opted to play as everyone's favourite friendly Vikings, Iceland. The Frosty Warriors. The Chilled-Out (foot)Ballers. The team with Gylfi Sigurðsson, the man with the world's most satisfying name to say. Such rhythm.

Safe to say, it didn't start too well. It didn't start poorly either, mind, but it didn't start in a way that would impress any twelve-year-old football fanatics who are Really Good at football games. A couple of 0-0 draws, so points on the board, but nothing special at all to write home to the Viking kids about. Suitably enraged with these poor performances on my part, I opted to switch things around for the third and deciding group game against Sweden. Yes, this intense battle for Nordic superiority would see me *sitting up instead of laying horizontally* while playing. A bold strategy, but one that showed my seriousness.

And it worked, with a 64th-minute strike by someone whose name ended with 'son' bagging Frosty Jack's Squad Of Frozen Hobos their first actual victory in Euro 2020, and sealing qualification to the second round, and first knockout stage. From here, draws would lead to extra time, maybe penalties, so it would become ever-more important to actually score goals. Something my fine-touch-lacking Icelanders weren't doing too well with. And so it was the real game began: get the ball to Gylfi, have him open up a bit of space for himself, and use his uncanny ability to place the ball wherever the heck he so pleases to score some goals.

Would you be surprised to hear that this worked? No, of course not. It's a video game

"The surprise came in the semi-final's 4-0 trouncing of Italy"

set to 'regular' difficulty, being played against an AI that can be cheesed and learned quicker than you'd expect. What was surprising wasn't the successive 1-0 victories against the Czech Republic and Germany, nor the final's 87th-minute winner – a Gylfi special, of course – making the game against Ukraine also end 1-0. No, the surprise came in the semi-final's 4-0 trouncing of Italy. Again, it's not that I expect to lose games here, or that I expect it to be *particularly* hard. Beating a world-class team thoroughly isn't the surprise. The surprise arrived in the form of genuine pangs of joy and delight with each shot going in. A scramble and a poke for one-up; a fist-pump in the living room. A glancing header deflected past the 'keeper; an audible 'Yes!' surprising the dog. A Gylfi side-footed… can it be called a 'shot' if it was stroked in with the grace and calm of a new parent laying their child to bed for the first time? Anyway… that got another surprised yell. The fourth goal? A blur. Italy embarrassed, the Icelanders dominant, and a sweaty man in his too-hot living room remembering how *great* football games can be. Oh, and the tournament win, shouldn't forget that bit.

What did we learn from this endeavour? That *PES* is always better played with other people, mainly those in the same room as you. We also learned that I should have done this themed feature using *Football Manager 2021*, but there's only so much time a person has in their life (and I don't want to succumb to the addiction of *FM* once more). Ball, ball, ball, footy, footy, footy… Ⓦ

Lost in the Big Apple

Ryan loses himself in the non–Euclidean labyrinth that is Superliminal

▲ Battering down a wall with a gargantuan chunk of Edam is a truly special moment.

▼ I won't spoil what you have to do to solve this puzzle, but the solution made me laugh and coo at the same time.

t's difficult to recall another game that has made me think about different works of art quite as often as *Superliminal*. There are tricks of the eye where you have to stand in a specific spot and look up at a particular angle for a picture to emerge from the landscape – it's a bit like Holbein's famous painting, *The Ambassadors*, where crouching down and peeking up at the canvas from one corner will reveal a hidden skull. Other puzzles recall the perspective-distorting japery of M.C. Escher. Still others remind me of the way René Magritte would play

with our understanding of everyday objects (there's even a reference to one of his paintings, *The Son of Man*), or how Salvador Dalí could use surrealism to unsettling effect.

Superliminal also has a tendency to make me feel really, really nauseous. Developer Pillow Castle's 3D puzzler owes a clear debt to *Portal*, both in its puzzle design and its use of voice-overs and confined spaces to create the feeling that you're an overgrown lab rat trapped in a maze. What separates *Superliminal* from *Portal*, though, is the way it constantly messes around with your spatial perception: what looks like a 3D object from a distance is revealed to be flat when you view it from a different angle. What appears to be a normal corridor turns out, on closer inspection, to be a tunnel with a tiny aperture at the end. It's all thrilling stuff, but quite dizzying if you're prone to that sort of thing – the developer even warns of potential side effects as the game begins.

I've therefore been playing *Superliminal* with a mixture of awe, fascination, and bouts of queasiness – that I've persisted through the more stomach-churning segments is testament to just how absorbing the game actually is. Some of the puzzles are difficult to put into words, since they exist – appropriately, given the title – in a dream space beyond everyday logic. Objects will change size depending on your spatial relationship with them – pick up a large block,

▲ After only a few minutes, sights like this start to feel perfectly normal.

▲ This is one of the sections where the nausea really kicked in for me. Just so you know.

place it far away from you, and then approach it, and it'll have shrunk in size. In the same way, clicking on a distant object and placing it near you will blow it up to elephantine proportions. By manipulating and rotating objects, you can solve time-honoured puzzles: activate pressure switches, create makeshift platforms to reach doors and out-of-reach levels, and so forth. The sheer ingenuity in the way these puzzles are designed and mounted, however, is frequently gobsmacking – there are moments in *Superliminal* that made me exclaim 'A-ha!', and almost as many that simply made me gasp at their imaginative leaps. An elongated painting of a chess piece has to be viewed from the just-right spot to be seen in its correct proportions; once it's snapped into focus, it becomes a physical object. Picking it up reveals a doorway hidden behind.

For all the artistic ingenuity on display, *Superliminal* is far from serious – it's playful, even goofy at times. There's something wonderful about picking up a piece of cheese, using your spatial manipulation powers to turn it into a gigantic wedge, and then using it to smash down a wall. The humour extends to tiny details in the sound design: retrieve a can of soda from a vending machine, and it'll land on the floor with a tinny clink. Increase its size, drop it again, and it'll make a bassy thud like a falling anvil.

There are moments, too, where *Superliminal* succeeds in matching *Portal* in terms of eeriness. The game's fixation on messing with your head means the rules you normally take for granted in a video game can be pulled out from under

"I'm reminded again that I'm just a rat in a maze"

you; those switch puzzles almost feel like a sly means of orienting you in what seems to be just another first-person puzzler, before something unexpected happens and you're left plummeting into the unknown. There are also moments where you're not sure whether you've truly solved a puzzle or whether you're about to break the entire game. At one stage, I thought my attempt to create a platform from an exit sign had caused me to glitch over a bit of scenery and into a dead bit of space behind the level itself; but then I realised this was exactly what I was meant to do – the designer was simply one step ahead of me the entire time.

It's this latter point, in particular, that makes *Superliminal* so special: it's the product of someone smart enough to know just how far to push the boundaries of logic. Only in certain spots does the game tip over into trial-and-error frustration. For the most part, it's a mind-altering, thought-provoking work of genius. Playing through the later stages of *Superliminal*, I'm reminded again that I'm just a rat in a maze, and that maze was designed by someone at least ten times more intelligent than I am. It really is enough to make me sick. ⓦ

Ico

In Fumito Ueda's 2001 adventure, 20 this year, it's the palpable
sense of place that makes it an enduring classic

JAPAN STUDIO, TEAM ICO / **2001** / **PLAYSTATION 2**

R evisiting a much-loved old game can often be like going back to a real-world place you haven't explored since you were a child: it's the same, yet somehow smaller. Recognisable, yet the magic's gone. Certainly, *Ico* – the 2001 game designed for the PlayStation 2 by the eminent Fumito Ueda – is beginning to look and feel its age in some areas. The one-button combat – never its strong suit to begin with – is still repetitive and not exactly brimming with reward. Once you've beaten one nebulous smoke creature to death with a stick, you've really beaten them all. The camera system, as it often was in earlier 3D games, is stubbornly wayward at times. The loop of guiding (and occasionally dragging) your ethereal sidekick, Yorda, from place to place, pushing blocks and unlocking doors, can sometimes feel a bit repetitive.

Nevertheless, *Ico* still has it where it counts: its story, of a young boy left to die in a mysterious castle, his attempts to escape its spooky environs, and his growing friendship with the daughter of an evil queen, remains captivating. But what really soars, from a gameplay perspective, is the location itself: Ueda and his team, working with simple polygons and textures, managed to create the illusion of a vast, unfathomably ancient structure. Built atop a network of tiny islands, it's a place of echoing hallways and huge, lonely atriums. There are narrow bridges

that stretch far out across the sea. There's evidence of an advanced society that has long since fled for reasons that are never made clear. The castle still feels like a real place worth exploring even today – partly because so many of its architectural details feel logical and cleverly thought-through. One set-piece takes place on and around a windmill located on a cliff where it can catch the sea breeze. As you're exploring it, you can imagine its function: this is where the community that once lived here might have milled flour, perhaps.

Ico wasn't a huge hit for Sony when it emerged in September 2001, and to this day, it remains one of those games that's probably more written about by excitable games journalists than actually played. But *Ico* was, and remains, an enormously important game for two reasons: first, it laid the groundwork for Ueda's much better-known *Shadow of the Colossus*, which is itself one of the most influential games to have emerged from Japan in the past 20 years. Second, *Ico* raised the bar for environment design: here was a game that used its setting not just as a backdrop, but to get across specific emotions without resorting to endless cutscenes or explanatory text. The vastness of *Ico*'s castle serves to underline the smallness and frailty of its two young leads; its emptiness and sense of decay wordlessly communicates the loneliness and despair Yorda must feel as she's trapped in its walls with her wraith-like mother.

> **"Here was a game that used its setting to get across specific emotions without endless cutscenes"**

In a 2013 article, WIRED journalist Chris Kohler pointed out just how influential *Ico*'s design has quietly become: developers as diverse as *Halo 4*'s creative director Josh Holmes and *Rime* designer Raúl Rubio Munárriz profess their affection for the game. *Uncharted 3*'s developers reportedly used *Ico* as a creative touchstone during their game's production. Phil Fish's perspective-shifting platformer *Fez* and Josef Fares' heartfelt adventure *Brothers: A Tale of Two Sons* also draw on *Ico*'s quiet, desolate tone to one degree or another. The most dramatic story of inspiration, however, comes from designer Hidetaka Miyazaki. In a 2015 Guardian interview with Simon Parkin, Miyazaki described himself as unambitious and lacking in direction, at least until he got his hands on *Ico*. "That game awoke me to the possibilities of the medium," Miyazaki said. "I wanted to make one myself."

Miyazaki would, of course, go on to design *Dark Souls* – another of Japan's pivotal releases from the past decade or so. That *Ico*'s dark fairy tale has left such a mark on Miyazaki and other designers, and coaxed them into making games of their own, is a testament to the power of what Ueda and his squad of artists created. Even 20 years on, the magical power that haunts *Ico*'s lonely castle remains undiminished. Ⓦ

Maps and Legends

The official guides, printed around the time of *Ico*'s original release, seemed oddly reluctant to map out its castle in any detail. The Japanese guide, published by SoftBank Creative, contains little more than a couple of pencil sketches, scanned in at an alarmingly low resolution (you'll still see these floating around on various internet Wikis today).

Still, some fans have created their own maps: in 2014, YouTuber Nomad Colossus spent a month using screen captures to build up a top-down view of the castle in Photoshop – you can see the fruits of his labour in detail at **wfmag.cc/ico-map**. If you want to go a step further and freely explore the *Ico* castle, though, here's the perfect solution: in 2013, a French genius by the name of funkyboy managed to hack *Ico*'s code apart, extract the castle's various assets, and import them into Unity. The Unity files are available to download at **wfmag.cc/ico-unity**.
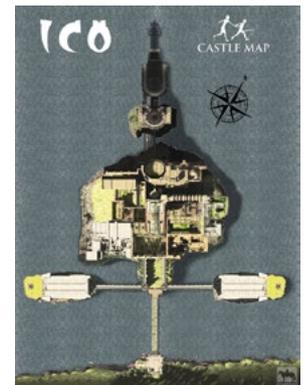
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