

# Wireframe

LIFTING THE LID ON VIDEO GAMES

## Predestination

The power of inescapable fates

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Tips for making your first VR game

## FUZE4

Now you can make games on Switch

# NEW HORIZONS

The Outer Worlds: a stellar odyssey from the designers of Fallout

Issue 24 £3  
wfmag.cc







## JOIN THE PRO SQUAD

1ms

144Hz

Free Sync



RED EAGLE™

GB260HSU | GB270HSU | GB2760QSU



## GET IN THE GAME

1ms  
75Hz



Free Sync



BLACK HAWK™

G2288HS | G2530HSU | G2730HSU | GB2530HSU | GB2730HSU



## IMMERSE YOURSELF IN THE GAME

4K



Free Sync



GOLD PHOENIX™

GB2888UHSU



## ENTER A NEW DIMENSION

2560  
x  
1440

1ms  
75Hz

Free Sync



SILVER CROW™

GB2783QSU

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# Yes, Tetris is political, too

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**W**hen we say that all games are political, a typical flippant and dismissive response is, "What about *Tetris*?"

Clearly, *Tetris* is too abstract to really represent or symbolise events and social groups in any way, so how can it be political? We can also think about creative media in terms of the kind of ideologies they embody, not only in their narrative content or overt themes but also their forms. Games are particularly ripe for this analysis, when we consider how their aesthetics, rules, and modes of interaction interlock to create meaning.

It's often especially revealing to compare similar games, as they highlight each other's ideological blind spots. For example, in my book, *Ideology and the Virtual City*, I look at numerous games set in modern urban settings, such as *Grand Theft Auto V* and *No More Heroes*. In combination, the experiences they offer define the underlying demands of life in today's capitalist societies, their contradictions, and how we respond to them. Each game both criticises and reinforces existing political norms in a distinctive way, building a complex picture of the issues and obstacles we face.

So what do we find when we compare the different guises of *Tetris*? It's one thing to see the politics surrounding *Tetris*, such as in the infamous battle over licensing rights it inspired. But what about the game itself? For starters, it's interesting that designer Alexey Pajitnov has described *Tetris* as 'constructive', given that the aim is to survive by clearing space.

In effect, his view hides the game's destructive aspects beneath a positive surface, and we could speculate what that might signify in the context of the Soviet Union in the eighties.

Or, it's notable how early western and Japanese conversions lean into the game's Russian heritage, with backgrounds featuring the Kremlin or that famous Game Boy folk music. This whitewashed, consumable image of 'Russianness' overrides any



## JON BAILES

Jon Bailes is the author of *Ideology and the Virtual City: Videogames, Power Fantasies and Neoliberalism*. He's a freelance games critic and social theorist, with a PhD in European Studies from University College London.


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deeper cultural flavour symbolised in the original's functional presentation.

Looking at how *Tetris* has developed since then, what stands out is how bare efficiency is replaced by spectacle and performance. As the game erases its past to become a slick global brand, even the *Tetris* itself is superseded, by 'T-spins' and other flashy tricks. The difference between versions is most telling in the most recent ones – *Tetris 99* and *Tetris Effect*.

With *Tetris 99*, its free-to-play status lowers the barrier for entry. It represents a freedom, but it's always the freedom to compete, scrapping for top positions against a huge field of rivals. And as some players bring previous experience to the game or are simply more skilled, not everyone can win. As in everyday experience, formal freedom does not equate to a level playing field or make success universally accessible, regardless of effort.

*Tetris Effect* is almost the opposite. Its audio-visuals induce a trance-like state and a sensory escape that subliminally pumps words and images into the brain. Its message is about connectivity, or how different cultures, nature, and the universe itself all work to the same rhythms, while its online events ask the community to reach goals by contributing according to their abilities. In a neat twist, it really does make *Tetris* constructive.

So what does the contrast tell us? Struggling in *Tetris 99* reflects the contradictions of freedom in a hyper-competitive society, but doesn't point to any alternative. *Tetris Effect* does present an alternative (co-operating to succeed), but doesn't confront the existing realities of cultural division. These aren't design flaws in the games, or moral failings, but singular perspectives that are inevitably incomplete. And if each has ideological elements – a frustrated acceptance of endless competition, a dream-like utopia of universal harmony – it thus creates an insight into the other. Together, they hint at a general partiality of worldviews, and what that means for our political reality. 

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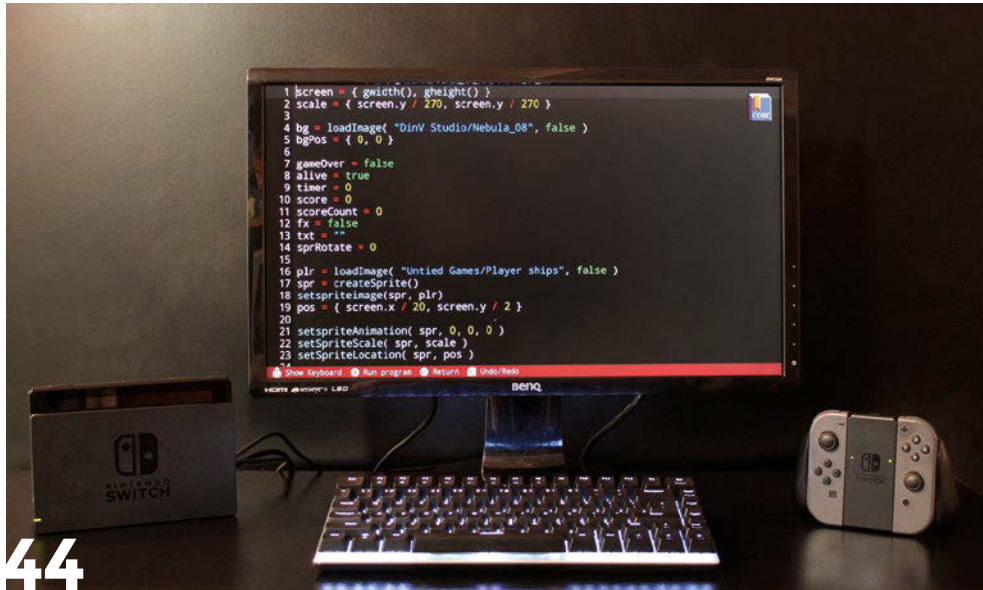
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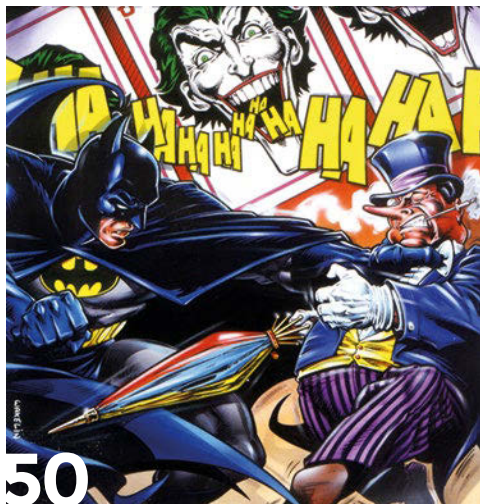
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## WELCOME

This week, I've mostly been playing *The Legend of Zelda: Link's Awakening* – developer Grezzo's adorably dinky Switch reworking of the 1993 Game Boy hit. Although it might seem like a lightweight adventure after the behemoth that was *Breath of the Wild*, *Link's Awakening* is, it turns out, a solid candidate for a modern remake. The game itself has a hint of wistful nostalgia throughout its story: the setting, a sunny, remote island named Koholint, is full of mysteries and dangers, but it's also peaceful and idyllic. Its handful of towns are populated by eccentric yet basically benign characters, and animals potter happily in lush green fields. That Link looks like a toy in the remake underlines a theme that's hinted at but never spoken outright: the game depicts childhood as an Eden-like moment in time – a state of innocence that ends as our curiosity forces us to explore and discover more about the wider world. Characters in the game warn us not to keep pushing back against the game's secrets, but as in the real world, we don't really have a choice but to press on to the end. As Sean Martin writes on page 18, inevitable endings are often the most effective ones, and *Link's Awakening* epitomises this. Its sketch of a playful, innocent world that we must inevitably leave in order to move on is, I'd argue, one of the most affecting in the entire *Zelda* series. Enjoy the new issue, readers.

Ryan Lambie  
Editor







# BRAVE NEW WORLDS

Pulpy sci-fi and digs at unfettered capitalism come to the fore in Obsidian's latest, *The Outer Worlds*

It's still too early, at the time of writing, to say *The Outer Worlds* will be great. Obsidian's latest, a planet-hopping first-person RPG with all the choice and consequence you would hope for from the team behind the likes of *Tyranny* and *Pillars of Eternity*, has a lot to it – and a lot riding on its shoulders. See, a lot of us remember *Fallout: New Vegas*, and a lot of us still rank it up there as the best of the modern *Fallout* titles. Obsidian made that, and *The Outer Worlds* riffs on it quite heavily.

The studio even has *Fallout* alumni Tim Cain and Leonard Boyarsky heading up the project, adding to that whole 'better than Bethesda' hope we have going on. After playing the game for a few hours, it's clear there's something to it – that quirky, twinkle-in-the-eye magic that those earlier post-apocalyptic role-playing games had lost by the time Bethesda took the reins.

*The Outer Worlds* is serious, dangerous, and as difficult as you want it to be – but at the same time, it's there with a cheeky wink and a handful of jokes at the expense of... well, capitalism, really.

This is a future owned by the corporations; one in which regular members of the public live under corporate-nation states, spouting rehearsed taglines and only using their company's products (and living in their housing, protecting their interests, dying and not having earned enough for a decent burial, etc. etc.). It's endgame capitalism, at the far reaches of space, in a world you don't belong to – and there's a lot to see and do beyond just giggling at the money-grabbing overlords. There was way too much to dive into for a couple of hours' play to reasonably cover, but the basics all seem to be present and correct. Quite frankly, *The Outer Worlds* could be

the best FPS-RPG since *Fallout: New Vegas*, and to those of us of a certain mindset, that's a very good thing indeed.

A bit of time with the brave new world of the future behind us – and a bit more to follow – we sat down with Carrie Patel, senior narrative designer, and Brian Heins, senior designer, to find out more about Obsidian's latest stab at the role-playing genre.

***The Outer Worlds*, then. Where's this all come from?**

**Patel:** It's in the classic Obsidian tradition... We really want players to feel that they're defining their character in this world. They're choosing the role, and they're driving the direction of the story. We obviously have a strong tradition of making games like this at Obsidian, and Tim Cain and Leonard Boyarsky are our game directors for this. A lot of our team





members have worked on *Fallout: New Vegas*, *Pillars of Eternity*, *Tyranny*. We have a lot of experience building games like this, where we're trying to give the player as many options as possible, and a very strong role in the world.

**Cain and Boyarsky are known for their involvement with the original *Fallouts*, but this is their first role as directors on an Obsidian title. What is it they've brought to the project?**

**Heins:** They're the co-directors, so basically the entire genesis of the IP was entirely from them. The number of decisions they make on a day-to-day basis that influence the game is... It'd be hard to describe exactly what they are, because it's basically the entire game they've had their hands in. Probably the strongest total thing is that dark sensibility, that dark humour, that runs throughout the game. That definitely comes from... I'd like to say it's Leonard's cynical outlook on life and

Tim's goofy sense of humour combined to make that special secret sauce that makes their games interesting.

**The narrative theme encasing the whole game, dare we say, somewhat takes the piss out of big corporations. Is this a dig at any game dev studios, perhaps?**

**Patel:** I certainly don't think that was a conscious thought in developing this game.

**Heins:** A lot of the humour we make about corporations is very relatable, because everyone's had some encounter with corporate bureaucracy in their life. Whether it's a really bad customer service call, or trying to get healthcare approved from a health care agency. All those things. It's very relatable. I think that's more the direction we were kind of going in.

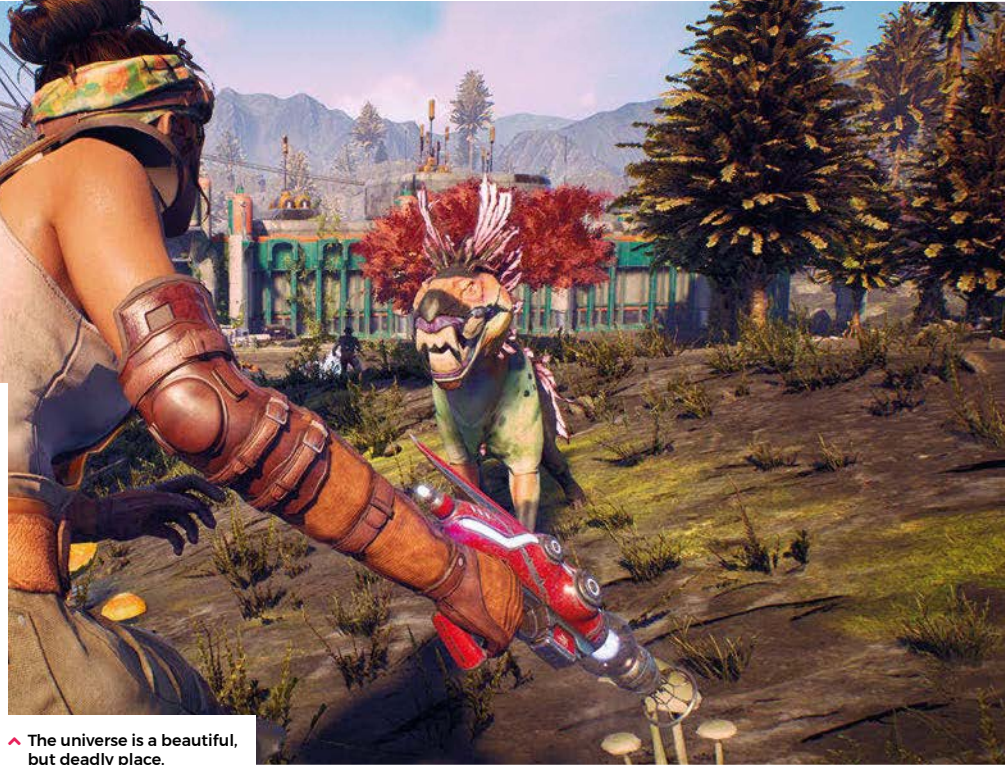
**Patel:** I would say that sense of cynicism, with the sense of humour, is pretty prevalent throughout. Halcyon is probably not a world that any of us would want to live in, but it's one that we still want the player to have a lot of fun in.

**Heins:** We try to give the player options, as an Obsidian game, and the game is not entirely anti-corporation... As a player, you have the option of working entirely with the corporate board, and helping to prop them up over the course of the game. ➔





✔ Brings a whole new meaning to *Critter Crunch*.



▲ The universe is a beautiful, but deadly place.

That's one of the bigger choices that the player has. Do they keep working with their rescuer, or do they decide to go a different route throughout the game?

**Thinking of those story permutations – how do you put it all together, successfully, without completely shattering the minds of those involved?**

**Patel:** It certainly depends. It varies a lot from one piece of content to another. At the level of quests, which is where we do most of our work, we'll have a narrative designer like myself, and an area designer like Brian, generally working together to try to integrate something that brings in the story of the area, the overall story that the player's experiencing over the course of the game.

We want to support all the different gameplay options, so that a player who's built any kind of character can have fun and be successful on one of our quests. Then just develop some fun characters around those scenarios.

We end up with some massively branching trees. We have a really good dialogue editor, fortunately, developed by our tools team. I've definitely seen some of our node counts get into the... over a thousand, including, most of the time, some that we've written and deleted. Part of it is paper design,

**“[Paper design] helps us forecast the complexity of content we're creating. We need to know for both area and narrative design how much work is going to be involved in implementing something”**

being very conscious with how we're branching upfront. Again, I think it helps that we have a lot of expertise and experience on the team for building games like this. We've learned to ask the right questions, and think a few steps ahead, as to, “Well, if the player does this, where's that going to get this content,” or, “We've got to keep in mind that we can't rely on the player doing this, because they might be able to do something else.” Building in those fail-safes, building in alternate paths for players who might have killed a quest-giver, or might've done something unexpected.

**How important is designing things on paper for a project like this?**

**Patel:** Very. For one thing, it helps us forecast the complexity of content we're creating. We need to know, for both area and narrative [design], how much work is going to be involved in implementing something. Are we allowing players of different character builds and different

play styles to complete this content? Then within a particular area, do we have too much of a focus on one kind of quest, or too much of a focus on one particular type of content? Yeah, the paper design definitely helps us understand what we're getting ourselves into, budget our resources accordingly, and then make sure that our overall areas are well-balanced.

**If they aren't, you just screw it up and throw it away...**

**Heins:** It's easy to delete text. It's not as easy to delete entire areas or assets that have been generated for things. Although that has happened on many projects.

**With all the experience in the Obsidian team these days, is making something like this more straightforward than things have been before? Is it still a challenging experience?**

**Heins:** Every game is different, because usually we're trying something new each time, or we're working with a new engine,





^ Pretty much everything made by humans is branded.

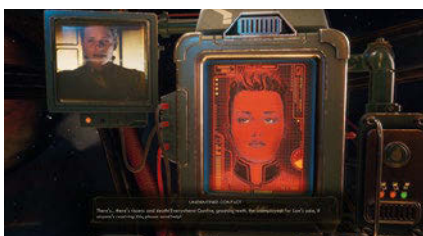
or a new gameplay system. It's all those variables that feed into the complexity. I was talking about making games is kind of like, you're making a movie, but you have to reinvent the camera every single time. You don't really have a guaranteed, stable foundation, because something is changing. Even though we have processing, and all the learning, and I can see about the types of quests we make, and how we build those things, the specifics of how those things get implemented in change from game to game. Things that, "Oh, this was easy on *Pillars [of Eternity]*." Because we have a different code base, or a different engine, on *The Outer Worlds*, I was like, "Huh, that takes a lot longer than we thought it would," so we have to go back and revise and rethink some things.

**Patel:** I think with anything, it's easier to look back at your finished product and say, "Well, yes, clearly this was the right set of design decisions. It's so obvious now." With anything, there's a lot of iteration that goes into finding that solution, and finding that balance. It's easy to forget that, but it's always there.

**The sheer logistical aspect of playtesting something that's so large and varied – how does that work out?**

**Heins:** Yeah, it's such a challenge. I think one of the issues we have, because we make very large story-based games, it's hard to drop somebody into the middle of the game, without any context for what's gone on before, then say, "OK, play," and

^ Your ship's AI is actually pretty funny, refusing to understand the death of its previous owner.



> It doesn't always have to resort to violence – you can usually talk your way through things.

then get reasonable feedback on the narrative of the story. Mechanics, it's easier, because people have more touch stuff. When you're talking about a brand new IP, like *The Outer Worlds*, like the style of humour, all that sort of thing, it is much harder to say, "OK, test the last zone of the game, that relies on all these choices you might have made over the course of it."

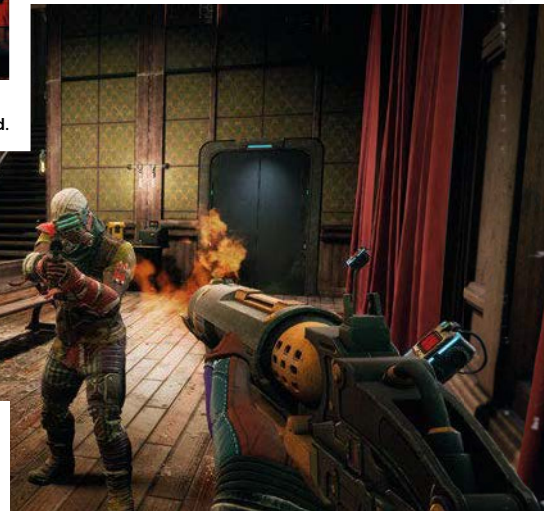
**Patel:** They can tell you if it breaks, but they can't really tell you how it feels to get there after however many hours of playing... We do set aside play time for the teams, obviously to play through particular areas of content that have just been completed. It's nice, because the team that's been working on it can playtest it, and they can sort of find the weak spots that they want to test. Then team members who have not been working on that content come to it fresh, and they'll come up with bugs and eventualities that you didn't even consider. We [also] do set aside some time for people to playtest the entire game. We usually have, like, a week here or there, and just say, "Get as far as you can. Play how you would normally play."

**Finally, for small indies looking to make a big, story-led, in-depth, maybe open-world game – do you have any advice?**

**Patel:** Don't count too much on the player doing what you expect or want them to do.

**Don't trust the player?**

**Patel:** Yeah. If you give them an option to colour outside of the lines, they will do it. If you're building a game that is supposed



to encourage, or at least allow for the player to do that, to be fairly adventurous in their play style, and how they pursue quests, then reward that. Don't punish players for it, but just expect that you're going to have to build a lot of content to support that. It will be very rewarding for a lot of players once you do.

**Heins:** I would say from my perspective, the one thing that's best to learn early on, as early as you can as developer, is don't move on until you've actually really finished something. Because I think it's very easy to think like, "Oh, this is good enough, and I can move on to the next thing."


If it's not finished to the point where you'd be OK releasing it, there's no need to move on, because there's always more work you can do. If you don't do that, you're just going to get to the end of the project, and look back and go, "Huh, there's a lot of stuff that's not done yet," and then there's this hell, this idea of hidden work. That you think you're further along than you really are, and you look back, it's like, "Well, crap. I have six more months before I can actually get something out the door." Just have the discipline to finish, as hard as that can be.

**Patel:** Yeah. The last 30% of anything takes at least as much time as the first 70%. 🗿

**The Outer Worlds releases on 25 October on PS4, Xbox One, and PC. A Switch version will follow later on.**





The night is upon me. 

# Recorded history

Changing the past to affect the present in *Across the Grooves*

## Info

**GENRE**  
Visual novel  
**FORMAT**  
PC  
**DEVELOPER**  
Nova-box  
**PUBLISHER**  
Nova-box  
**RELEASE**  
2020

**H**as there been a surge in the popularity of interactive fiction in recent years? There's definitely an argument to support it, though we don't have the hard facts

and figures to hand. Safe to say, an increasing number of people are seeing the benefits of making their way through a story in a (generally) laid-back fashion, no need for this 'git gud' nonsense and having to maintain things like reaction time. And *Across the Grooves* is another title in this arguably-not-as-niche-as-it-was genre hoping to give you some relaxing and fun times. With a lot of music to boot.

Taking control of Alice, players are presented with a rounded 30-something woman, with a past behind her and a full personality in the here and now – not a blank slate at all. But by skipping 'across the grooves' and listening to different vinyl records, Alice's past – and so her present – can be altered. As the devs tell us,

it's less about choosing who you are and more about choosing who you will become. Naturally, with this being an interactive graphic novel, to go into more detail would be ruinous to the story, so let's leave you tantalised with that for now.

But why vinyl records specifically? "I'm indeed quite passionate about music and vinyl records," Geoffroy Vincens, *Across the Grooves'* writer explains. "I started collecting them in the mid-nineties when I was a teenager, way before streaming platforms and the ubiquitous access to an unlimited catalogue of songs... So, I've been wanting to talk about this love of recorded music for a while, because I believe that musical tastes might be quite an important building block of one's personality. And because it's a setting I know and love, filled with obscure bands of yesteryear, forgotten and rediscovered, with grumpy record shop owners and dusty vinyl trays, with flea markets and pubs and jazz clubs and the invitation of nightlife in the city."

The understated visual style of *Across the Grooves* – tying in with the similar styles of Nova-box's previous outings, *Along the Edge* and *Seers Isle* – sets the scene: laid-back, little flourishes of animation used sparingly, and a gorgeous, hand-painted aesthetic to every scene. It sets a tone. "As French people working on video games, and more broadly as Europeans, we feel a bit like we're torn between American and Asian influences," Vincens says. "We wanted to go in another direction, and we took inspiration from our own cultural DNA. I, for example, love the cinema of the nouvelle vague and Spanish filmmakers such as Julio Medem or Almodóvar,

✓ Alice's musical past can – and will – change her actual present.





and I grew up reading a lot of Franco-Belgian bande dessinée [comics]. I don't think this kind of cultural baggage has often been used in video games. So, unusual references lead to an unusual art direction, I guess.

"To be honest, I think ours was quite a novel approach back in 2015 when we started working on *Along the Edge*, but it's more common nowadays. Off the top of my head, I can think of *Gris* by Nomada Studio or *Night Call*, which was penned by our friend Anthony Jauneaud, that rely on these kinds of very personal and local references. I believe it's a really good thing and a proof of maturity of our medium."

As for the choices you're making in the world, *Across the Grooves* doesn't opt for a simple branching structure, as lead artist Nicolas Fouqué explains: "The system we use is a little more complex than a pure branching tree. We work with a relatively small number of main branches, but they are all then tinged with a multitude of changes that the reader has accumulated over the course of his adventure. In addition, some choices may or may not be available, depending on Alice's personality at different times in the story.

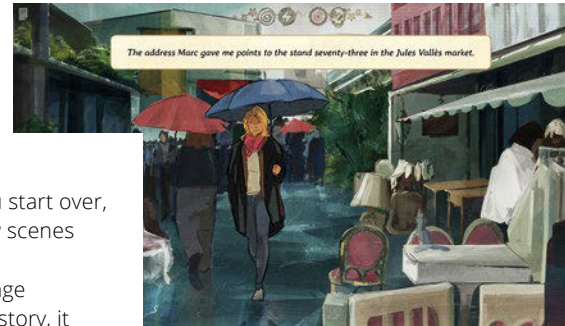
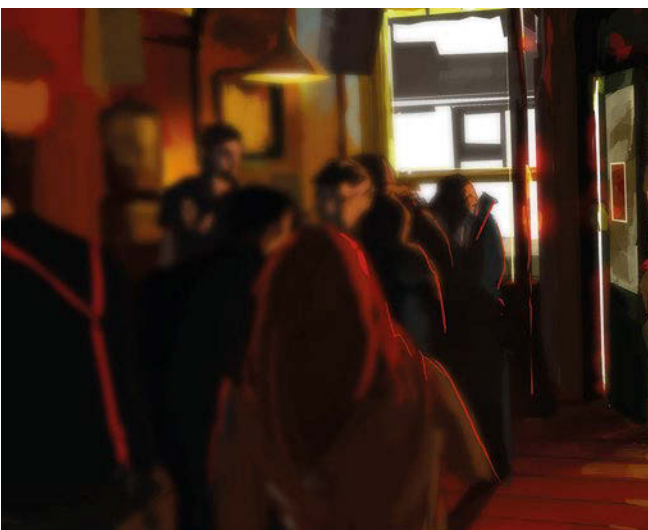
"Sometimes, the story can even take an automatic turn that is the result of a set of changes that the reader has made to Alice's personality. We do our best to make the

story seem fluid and logical, and if you start over, you may be surprised to discover new scenes and other emotions."

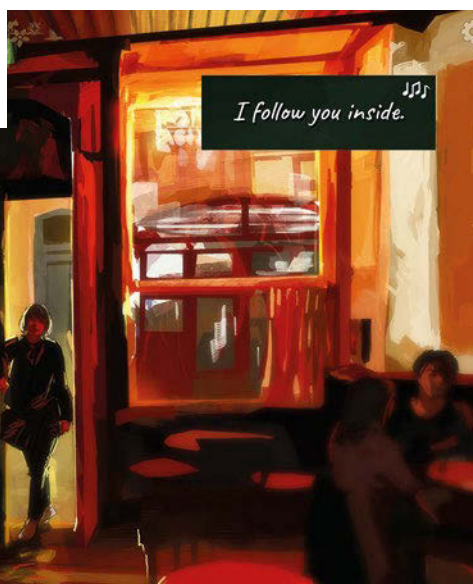
With Alice's personality able to change 'drastically' through the course of the story, it might mean that the 'non-traditional' structure makes more sense – you're not really going ahead and turning at different paths, but rather reworking and refurbishing what came before. Lots of micro-decisions cumulatively come together to lead to a very different outcome for our protagonist. "Alice may sometimes be confronted with the same situations from one playthrough to the next," Vincens says. "But the way she will react to and reflect upon them will be very different, depending on how her decisions moulded her psychologically from the start of the story."

If this all comes together in as neat a package as it's looking like it might, *Across the Grooves* has a lot of potential to help the visual (graphic) novel genre break out even more than it has. For the devs though, it's more about one thing: "Our expectations are not fundamentally different from all indie developers," Fouqué says. "That is, to receive love, of course." 🎵

### "Across the Grooves doesn't opt for a simple branching structure"



^ Scenes are presented with a limited amount of animation, resulting in a very laid-back experience.



^ Would it be surprising to point out that music – the actual soundtrack – plays a big part in *Across the Grooves*?

## (USER) EXPERIENTIAL

Nova-box's history – as well as games – is in UI/UX design. We asked how that impacts – if at all – on the studio's game design: "I think our history in application development brings us a different perspective than the video game industry," Fouqué explains. "We wanted to make interactive objects that are appreciated like books. We are indeed trying to have a refined approach with the design, quite a long way from the 'gamey' standards in the end. Sometimes players who are used to having a lot of options reproach us, but we've also noticed that some people who have never played video games are very comfortable with our productions."





# Shenmue III

Checking in on Yu Suzuki's Dreamcast time capsule

## Info

**GENRE**  
Sailor hunting sim  
**FORMAT**  
PC / PS4  
**DEVELOPER**  
Ys Net / Neilo  
**PUBLISHER**  
Deep Silver  
**RELEASE**  
19 November

Seeing *Shenmue III* actually running as a real game is a surreal experience – a dream realised yet uncanny all the same. Perhaps it was always going to be this way, given that it's a sequel that picks up right where the second game left off: with 18-year-old high school dropout Ryo Hazuki's quest for vengeance seeing him arrive in rural China. This was all before its host console, the Sega Dreamcast, came to a premature end, leaving the series suspended in time – at least until now.

In 2001, Yu Suzuki's ambitious vision was ahead of its time: the most expensive video game ever made, and paving the way for interactive open worlds with a day and night cycle, and characters going about their own schedules. But the genre has since evolved into ever more expensive and sophisticated worlds. Despite also being the most-funded Kickstarter

video game, what hope does *Shenmue III* have of measuring up to a modern audience's expectations on what is a comparatively shoestring budget?

As it turns out, none of those things matter much to Suzuki, a designer who doesn't take any influence from playing other video games anyway, and certainly hasn't paid any mind to what open-world games have been doing over the past 18 years. In that respect, despite running on Unreal Engine 4, *Shenmue III* looks and feels like a continuation of the Dreamcast series, warts and all, and with an HD sheen.

Part of that continuity is Corey Marshall as the English voice of Ryo, who remains as wooden as the apparatus you can practise your martial arts on. It may prove endearing for old-school fans (personally, I'll be switching to Japanese audio) though it's something of a stark contrast to the professional quality of the voice acting elsewhere, including leading lady Shenhua, voiced by Brianna Knickerbocker (*Catherine: Full Body*, *Astral Chain*). That's similarly reflected in the character models themselves. For all the fuss over the more stylised appearance of its characters, NPCs are more detailed and expressive than they ever were before – it's actually Ryo's dead-eyed stare and robotic walking that makes him look so jarringly different from the characters around him.

Playing as this stiff and oblivious Ryo, it's business as usual, as you go about speaking to the locals to track down a bookie with a scar on his face. He's not that hard to find though, so it's mostly an excuse for you to explore the village's wonderfully realised surroundings,



◀ Despite earlier criticisms of how characters look, NPCs really are quite expressive and detailed, especially the wrinkly old men.

At your level, Red Tiger should be a good match.



which manage to capture the intimate details of Yokosuka from the original game, as NPCs go about their day.

As in past games, that exploration involves being able to open drawers and cupboards, and examine seemingly useless objects, though in one store I also came across a shelf containing technique scrolls that you can buy and learn moves from. Highlighting objects with a red circle makes it considerably easier to know what you can interact with.

As expected, gachapon machines are in plentiful supply for you to waste your time and money on, and there's even a Lucky Hit stand, albeit with some ludicrous physics – one attempt saw my ball missing its target by bouncing over multiple gaps at the bottom. But there are also new activities, such as being able to chop wood for a shop owner. It's an extremely rudimentary minigame compared to driving a forklift or that tricky QTE-based crate-carrying job in *Shenmue II*, but it's a quick way to make money that doesn't result in you using up a good chunk of your day. (Incidentally, the game still includes an in-game clock, although it was still daytime by the end of my 45-minute session.)

Minigames aren't merely for killing time like they used to be, though. When it comes to martial arts training, they're actually more important, as *Shenmue III* has inherited some RPG mechanics. Talk to the bookie, who then challenges you to a fight, and you'll quickly find your kung fu skills no match for him. Instead, you have to train and level up your stats, which you can do by practising against other martial artists at a nearby temple or training with a



▲ Bailu Village definitely recalls the small-knit intimacy of the first game's small-town environments.



wooden puppet. Your health bar also slowly depletes over time, doubling as stamina, so you need to eat regularly to stay strong.

What I was less prepared for was the change to the combat. While the names of old moves have been retained, I was disappointed that pressing forward, forward, kick doesn't unleash Ryo's Tornado Kick – the *Virtua Fighter*-inspired mechanics have been done away with (the

animations had to be remade from scratch) and replaced with a system that, while purportedly more accessible, feels a bit

**“The Virtua Fighter-inspired mechanics have been done away with”**

too much like button-mashing, not to mention stiff and unresponsive. These are just one-on-one bouts where you're automatically strafing around your opponent, too, so I'm wondering how it will handle in fights with multiple enemies.

After all this time, seeing *Shenmue III* gearing up for release is something of a miracle. It feels in all manner of ways like *Shenmue*, both in its charming details and awkward execution, but this may also mean only old-school *Shenmue* fans will come to this time capsule of a game with realistic expectations. 🙏



▲ When you've been gone for so long they've made gachapon toys of your loved ones.



▼ There's more emphasis on fighting other martial artists in competitions, as well as training through minigames.

**GLOBAL EFFORT**

While its creator has taken the spotlight, there are other key players involved in realising *Shenmue III*. Chiefly, there's the less publicised co-developer Neilo, whose founder Takeshi Hirai, lead programmer on the original games, actually serves as the game's creative director. *Shenmue III* also features an impressive 500+ characters, which wouldn't have been possible without the outsourced work of India's Lakshya Digital. While Sega isn't involved, its frequent collaborator Deep Silver is handling worldwide publishing. Finally, extra funding was secured late in development from an exclusivity deal with Epic Games – a deal that stoked a fair bit of controversy online.



# Headlines

from the virtual front



02



03



01

## 01. Liter than expected sales

Media Create is one of the more accurate reporters of sales figures in the world, so when the Japanese company says Nintendo's Switch Lite only sold 160,000 units in its first week on sale in Japan, we listen. This is just over half what Citibank had predicted the Big N would sell, and resulted in Mario's house ("share") price dropping by just over 4%.

Citibank analyst Minami Munakata said: "Casual gamers that could be drawn to the new console are unlikely to rush to buy the console immediately after... launch. Still, it could be that the Switch Lite is attracting fewer casual gamers than we presupposed."

## 02. Ittle Dew 2 delisted

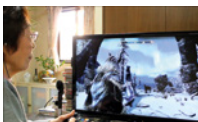
*Ittle Dew 2*, the dungeon crawler from developer Ludosity, has been delisted from console storefronts by embattled publisher Nicalis. It's certainly a Bad Thing, though Ludosity CEO Joel Nyström must see it as a small relief following over six months of public complaints about the publisher and trying to reclaim the studio's catalogue of titles from Nicalis. "I'm glad to leave Nicalis behind me," Nyström told GI.biz.

The publisher was subject of a Kotaku investigation into many allegations – ghosting, unprofessional behaviour, sexist, racist, ableist, and homophobic language from the CEO, and plenty more. It's worth a read: [wfmag.cc/nicalis](http://wfmag.cc/nicalis).

## 03. IGDB.tv

Twitch has snapped up the Internet Games Database, bringing into the fold the IGDB's massive amounts of information about video games. The move is said to be to facilitate things like search functionality on the Twitch platform, and not just so Twitch can own *everything*.

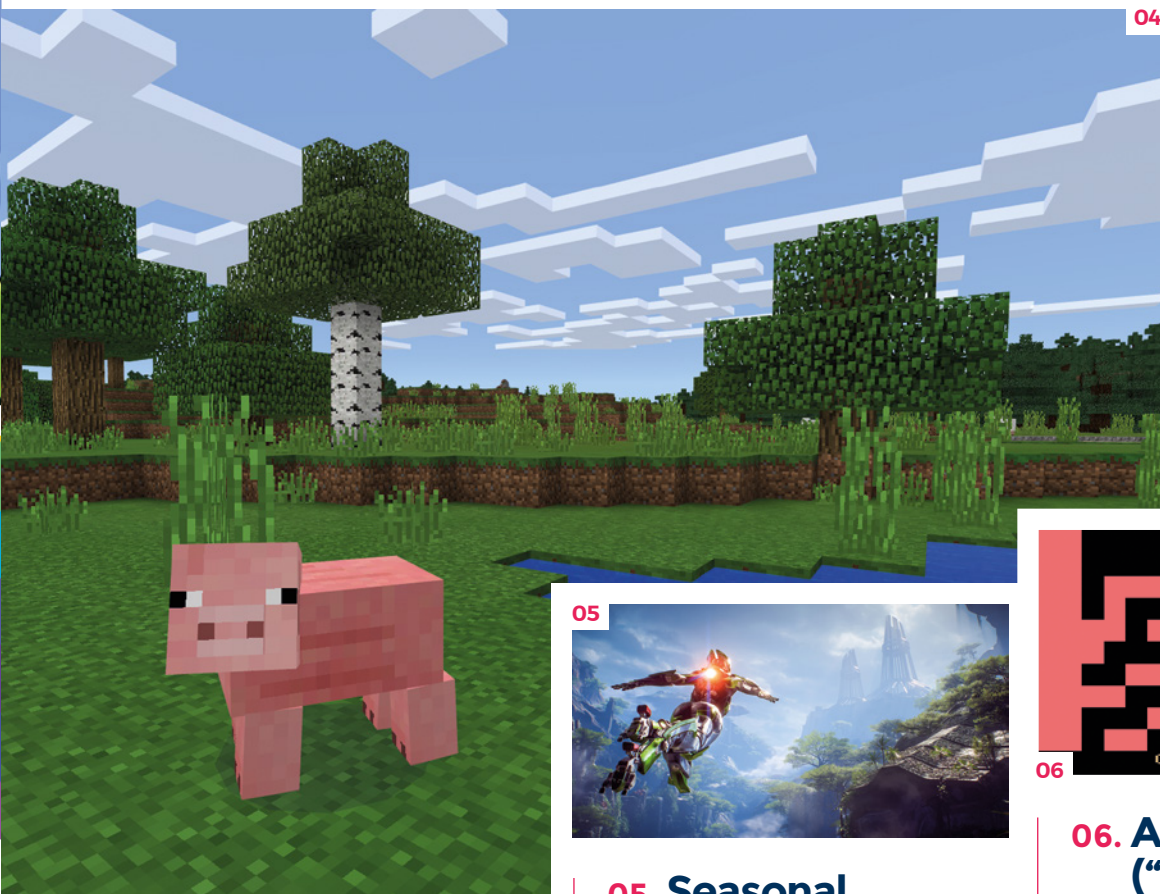
IGDB's owner, Jerome Richer De Forges, wrote on Medium: "Millions of people visit Twitch every day to connect with their favourite streamers and communities. This opportunity takes IGDB to a whole new level, giving us the opportunity to be an even bigger part of your gaming life." It feels less friendly and more intimidating when you remember Twitch itself is owned by Amazon, but what can you do.



89-year-old grandma: "If you play games, you don't get dementia"

Mario & Sonic Olympics 2020 game has hoverboarding, wahey!

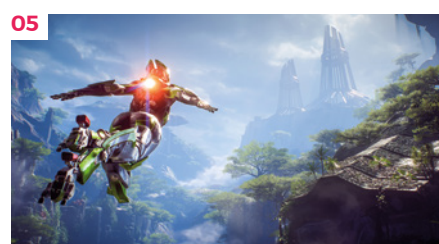




## 04. A rich vein

Remember *Minecraft*? Yep, still going. And Mojang is still pushing on, not really changing up its approach very much and managing to increase its player base by around 37 million since 2018. Last year, the figure reported was around the 75m mark, this year it's 112m. *Minecraft* will never die, and I will always continue to accidentally type it as 'Mincecraft'.

Speaking to Business Insider, *Minecraft* studio head Helen Chiang said: "What we find is that it's a game that players keep coming back to. It may not always be the one that's in the forefront, because there are a lot of great games that continue to come out, but it's one that they love to return to."



## 05. Seasonal produce

Remember *Anthem*? Yep, still going. And BioWare is still pushing on, changing up its approach so it can focus more on fixing the game's core 'lacking aspects', as we've officially coined them.

The game will be moving away from the Acts structure of updates originally implemented, instead focusing on 'seasonal updates'. If that means there'll be a Christmas special version of *Anthem* we might actually go back to playing it, but... it's not that. It's just a different way to introduce new content in an ongoing fashion, and try to lure back in lapsed players, bring in newcomers, and maintain the small number of players who have stuck with *Anthem* since its... muddled launch.



## 06. A-maze-ing ("Amazing")

Pulling apart the source code of Atari 2600 maze-puzzler *Entombed*, John Aycock and Tara Copplestone from the University of York discovered it was home to an uncrackable algorithm behind its maze-making. The two even contacted one of the game's producers to find out what was going on with the 1982 release, only to come up against another dead end.

The programmer who developed the algorithm reportedly said the code "came upon him when he was drunk and whacked out of his brain," which has since been verified by plenty of coders on Twitter as pretty much par for the course. That's either a joke or a factual statement, depending on your perspective. Read the full report, it's very good: [wfmag.cc/ent](http://wfmag.cc/ent).

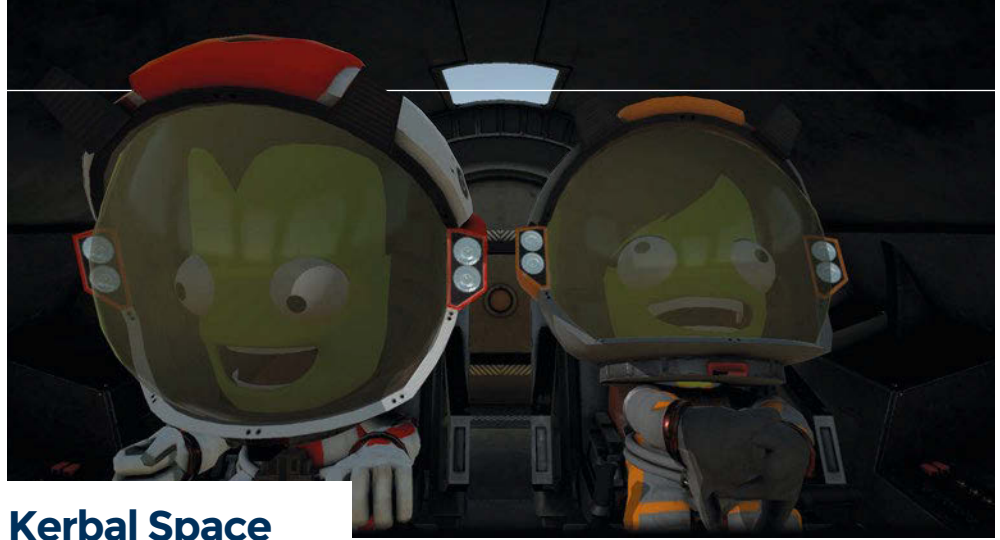
Microsoft launches Python for beginners course: [wfmag.cc/MSPy](http://wfmag.cc/MSPy)



*Death Stranding* goes gold; legitimate shock follows



# Wireframe



## Kerbal Space Program 2 ↑

Star Theory Games has taken the reins from original developer Team, with the new studio – previously known as Uber Entertainment – responsible for *Planetary Annihilation*. When publisher Private Division came a-calling with the space sim sequel, it was a ‘yes’ with a new name to boot. Renaming your studio because you’re working on a specific series? Impressive.

Anyway, *Kerbal Space Program 2* brings with it the original game’s elements – so you’re building a space program with which to explore the solar system – but adds on top... well, more solar systems, among other things. Yes, interstellar space travel is in the game, along with the likes of exoplanet and space colonies, so you really can explore more than ever before.



## Radical Rabbit Stew ↑

An unashamedly retro-styled puzzler, *Radical Rabbit Stew* stands out for its unique proposition: you are to save a bunch of space chefs by forcing these zany rabbit blighters into saucepans. Yes, you save chefs by cooking rabbits. No idea. The actual game, though, looks like it could be a fun thing to while away a few minutes with.

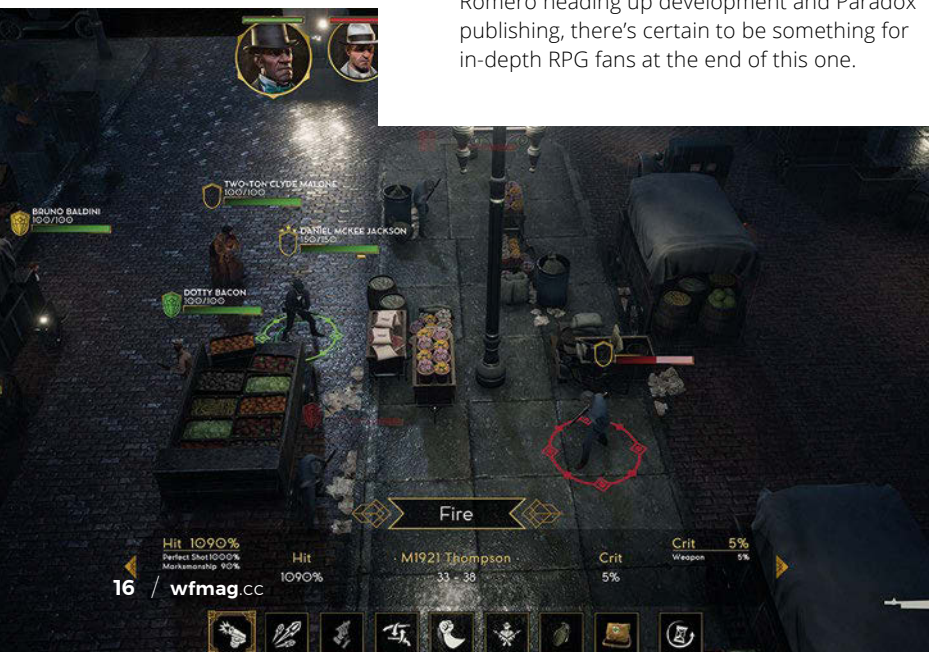
## Empire of Sin ↓

The first major, original title from Romero Games is shaping up to be a solid proposition. Mix *XCOM*-like turn-based strategy with both a real-time management element and 1920s gangsters and you’re on the right path. With Brenda Romero heading up development and Paradox publishing, there’s certain to be something for in-depth RPG fans at the end of this one.



## Best Friend Forever ↑

Another issue of Wireframe, another chat about dogs in games. *Best Friend Forever* combines dogs (brilliant) with dating sims (brilliant), to make a dog dating sim, except not in a weird and creepy way. What it actually means is while you’re wooing the local singles, your be-pawed chum will be with you – your dog, which you can train and interact with, will impact your dating abilities, as well as generally be a furry little moron as all good dogs are. It’s a nice twist on the established formula, that’s for sure.







## The Last of Us Part II ↗

See? It's not just the indies in the pages of Wireframe. We're nice to the big-hitters, too. Naughty Dog's post-apocalyptic sequel has been teasing us with bits and pieces for months (maybe years) now, but with a release date – 21 February 2020 – in mind and a few other knowledge-chunks floating our way, we thought it about time to chat the game up. Albeit in brief form.

The longest game the studio has ever made, *The Last of Us Part II* follows Ellie, promoted from sidekick duty in the first game, as she seeks revenge on a group that has wronged her in a major fashion. Our older, grittier, tattooed-ier protagonist is of course joined by an even older, beardier Joel, and from there... well, it's a lot of violent action against humans and fungal folk alike, with 'a highly emotional story with complex themes' backing it up, according to Naughty Dog.

Five-plus years of development and with all the hype in the world behind it, *The Last of Us Part II* is one of those games that's either going to hit all the high notes and go down as a legend, or just sort of let people down a bit and be all but forgotten six months later. We know which one our money's on.

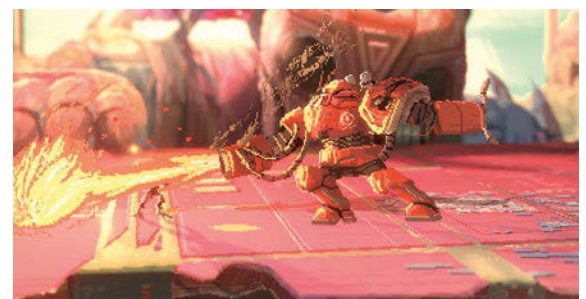
## Ori and the Will of the Wisps ↘

The original *Ori* was genuinely brilliant – beautiful and fun in equal measure, and something you should look up if you haven't already. The sequel is looking to put a Metroidvania twist on the norms established by the first game, which feels like a great fit for the series. We've few doubts Moon Studios will be able to pull this off, and we'll know by 11 February 2020, when it releases.



## Star Renegades ↘

Blending yet another fabulous pixel art style with roguelite RPG mechanics, *Star Renegades* sees you taking your squad into tactical melees during 'an endless interplanetary rebellion'. Sounds nice. Developer Massive Damage, Inc. previously worked on *Halcyon 6: Starbase Commander*, which was an overlooked gem – so we've got reasonably high hopes for this one.



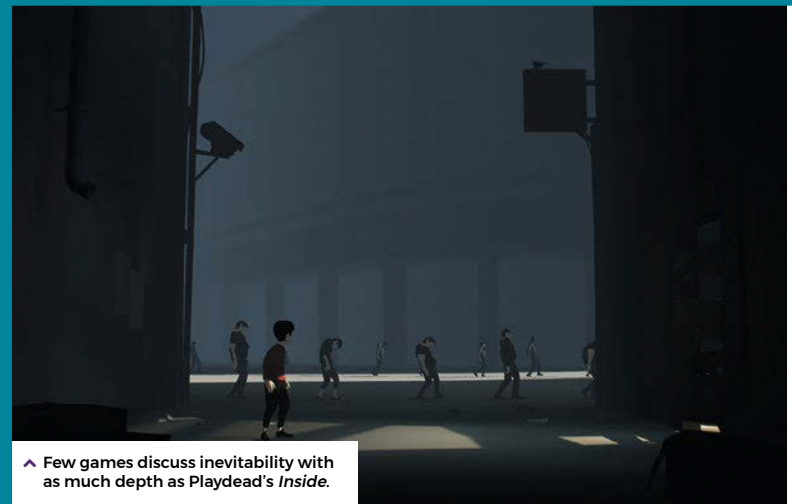


## Interface

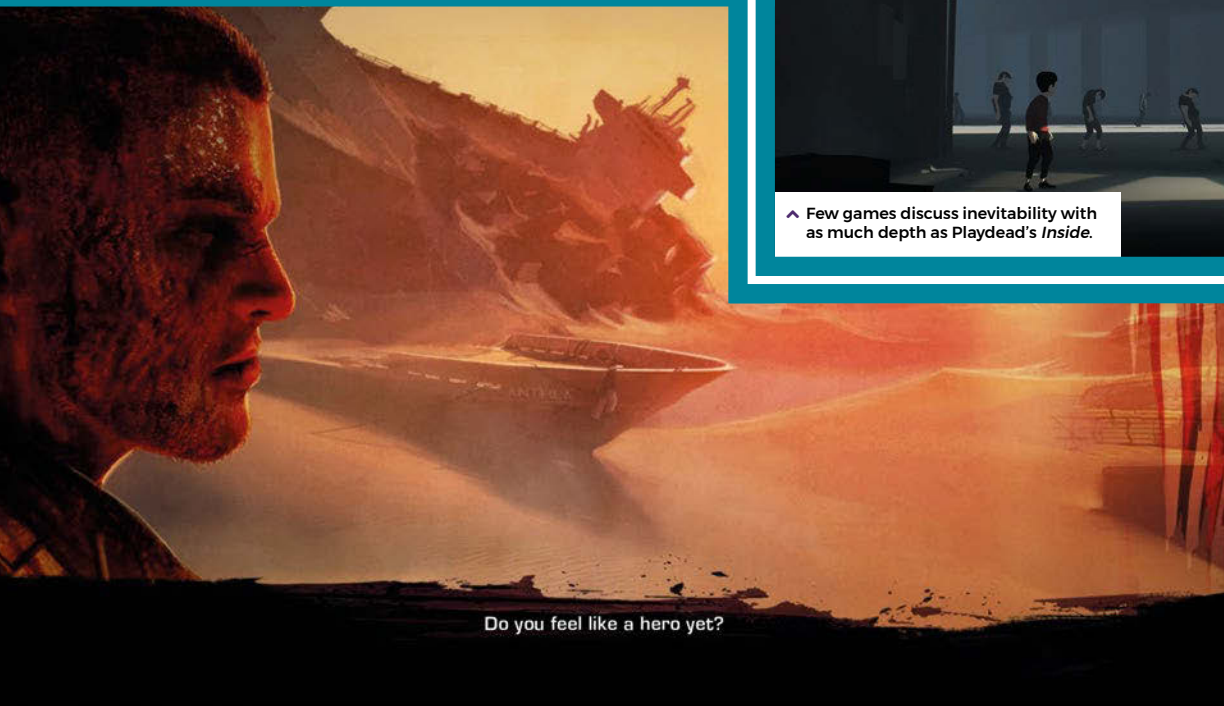
Roads not taken: player choice and inevitability



^ The Finch house contains a homely clutter which can't help but inspire nostalgia.



^ Few games discuss inevitability with as much depth as Playdead's *Inside*.



Do you feel like a hero yet?



# ROADS NOT TAKEN

## Player choice and inevitability

WRITTEN BY SEAN MARTIN

Games are often sold to us as worlds of infinite possibilities, but some of the best games deal with inevitability head-on



**Note:** the following contains spoilers for *Life is Strange*, *Spec Ops: The Line*, and *What Remains of Edith Finch*.

**R**oads are an age-old metaphor for choice, and with good reason. The intricate routes we take in life determine where we end up – but more than that, they

define who we become along the way. Choice in video games is a similar principle; a mapping of decisions, of possible routes a player can take, leading to a number of outcomes. But what happens when choices are placed within a closed circuit? In the face of inevitability, what is the value of player choice?

Every gamer has heard variations on the words, “Your choices matter,” or “This action will have consequences,” but can the value of choice only be measured in terms of its effect on the game world? Characters die, cities burn, and worlds are irrevocably changed, as a result of our decisions. In reality, though, it’s the games that limit our potential outcomes, and force us to honestly examine the value of our choices, that are often the most memorable.

### THE ONLY CHOICE

*Life is Strange* is a franchise rooted in choice. Not only are its protagonists placed in the role of decision-makers, but they’re also given literal power to change events.

Max Caulfield gains the power to rewind time, allowing her to repeat the same situations over and over – a perspective she shares with the player. “It’s just like loading a backup save,” explains the game’s co-creative director, Raoul Barbet. “Max has the same knowledge as the player and reacts to the world accordingly.”

Some guy called you a loser? Rewind time and impress him instead. Someone asks you a difficult question? Rewind time once you’ve found the answer. It doesn’t take long to realise that Max’s motivations are often childish. “Max is a character who doesn’t want to grow up,” says writer Jean-Luc Cano. “Her ability to rewind time and change her decisions is deeply linked to who she is.”

But as the game goes on, it becomes apparent that both Max’s power and her decisions are part of a larger coming-of-age narrative, one which culminates in the game’s final decision: ‘Sacrifice Arcadia Bay’ or ‘Sacrifice Chloe’.

The game ends where it began – a trail winding to a lighthouse, a cyclical path which, no matter the choices you make, leads to a final decision. In some ways this is problematic – should games about choice end with a choice? Especially a choice which, in terms of its consequences, overshadows all those that came before it? Cano says it doesn’t matter: “It’s not necessarily the choice you make that serves as the metaphor for growing up, but the fact that you have to make it at all. Throughout the ➔

✓ **Walt Williams is an award-winning game writer, as well as author of industry memoir, *Significant Zero*.**



### POSITIVE REINFORCEMENT

“Game design tends to empower players through choice, by having the game respond positively to their will,” Walt Williams says. “Choose to save someone, a game will let you save them. Choose to kill them, the game will let them die. Regardless of whether a choice is morally good, bad, or neutral, the game will allow it. That’s positive reinforcement. To make players question themselves and their choices, all we had to do was make the choices not conform to the player’s desire. Suddenly, players didn’t have a safety net of positive reinforcement, and no longer felt confident in their decisions.”

## Interface

Roads not taken: player choice and inevitability

▼ Ian Dallas is Creative Director at BAFTA-winning studio, Giant Sparrow.



### PURPOSE

"Games are an interesting simulacrum for the problem of finding meaning in life and they almost never address it," says Ian Dallas. "If you're feeling anxious because life doesn't seem to have any purpose, games can be comforting because purpose in games is almost always clear and concrete. I think that's a potentially wonderful and life-affirming answer, that if nature doesn't give us a purpose then we'll invent our own, but I think that only works when you acknowledge the absurdity and arbitrariness of the challenges you create for yourself. Otherwise it feels like delusional escapism. I think most games are playing it straight, and frankly, it's depressing."



▲ In *What Remains of Edith Finch*, every room represents a life.

game, Max is finding ways to change everything, to find a perfect ending, only to find there is no perfect ending."

The choice, therefore, represents far more than the immediate consequences of death and destruction – it defines who Max and the player have become together. "It's not just about how we make choices, good or bad, selfish or not, but more how we live with those choices," Barbet reflects. "This final choice can seem very egotistical indeed, but it is the player who does it, and will have to live with it."

The inevitability of the final decision may render the game's earlier choices meaningless, but only in terms of how they impact the world. They still have meaning for the player, as they clarify how you feel about Chloe, the people of Arcadia Bay, and Max herself. They're a set of choices to prepare you for the only choice that truly matters. Michel Koch, *Life is Strange*'s other creative director, sums it up perfectly: "Everything we had in the game, every choice and consequence, was created to lead you to

this point. For the player to make a decision based on their vision of Max and Chloe. Somehow, you need to accept the grief, accept the past, stop trying to make everything perfect, and then think about the future."

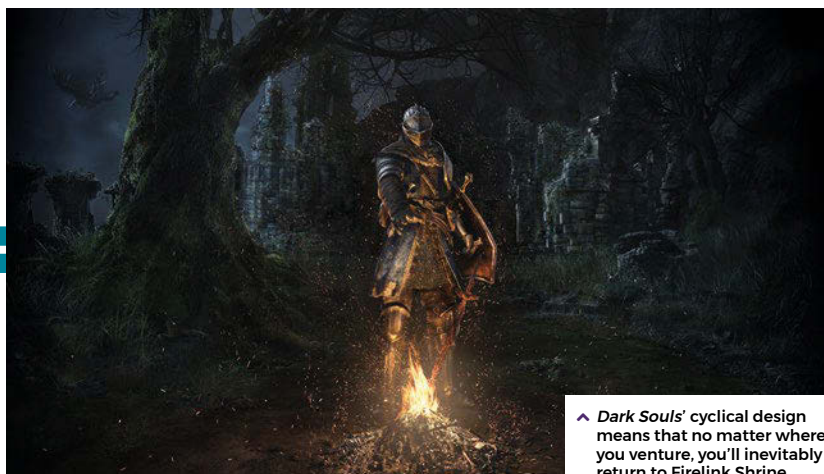
### THE WRONG CHOICE

Back in 2012, *Spec Ops: The Line* dared to defy the expectations of player choice. It follows the story of three Delta Force operatives searching for survivors in the sandstorm-ravaged city of Dubai. Instead of survivors, they find hell on earth. The narrative parallels Joseph Conrad's *Heart of Darkness* – you journey deeper and deeper into the city, searching for the enigmatic Colonel Konrad, all the while witnessing the horrors of war, and trying your best to remedy the chaos that surrounds you. But *Spec Ops*' secret? Your best isn't good enough.

"We were trying to make realistic choices," says Walt Williams, the game's narrative designer. "When games show the impact of player choice, it's to make the player feel as if they have power over the world. Their choices cause the game and other characters to change. That's a nice fantasy. We wanted choices to affect the player, so that changes would be internal, occurring within the player over the course of the game." The result of this is *Spec Ops*' profound sense of powerlessness; players are given choice, but their choices can't change the world.

Despite their best intentions, things only get worse in Dubai, but the player keeps going, engaging in what Williams describes as a "sunk cost fallacy" – a parallel they share with the game's protagonist. "Players expect that no matter what they do in a game, they will eventually be faced with a greater evil which they will defeat to ultimately have their actions justified," Williams explains. "That's Walker's emotional journey. He's in denial over his actions, and is hoping that if he just keeps going and finds Konrad, he will justify everything he's already done. But the further the player and Walker go, the more damage they cause."

*Spec Ops*' choices are like periodic psyche tests charting a decline. Each one is an expressive moment of feedback, where players can act on how the game is making them feel – perhaps anger at being unable to reach an ideal outcome, or frustration at not being given the power to change things. Whether choosing



▲ *Dark Souls*' cyclical design means that no matter where you venture, you'll inevitably return to Firelink Shrine.





^ Edouard Caplain's concept art for *Life Is Strange* depicts the lighthouse where everything begins, and ends.

to gun down civilians to avenge a comrade, or letting a man burn to death, *Spec Ops* challenges player identity through expressions of powerlessness.

"You have the choice to play the game, and you have the choice to stop playing," Williams states. "Ultimately, those are the only choices that matter. We rarely know the exact impact of our decisions in life, but we can get a sense that things are going badly, and we can change direction. We can learn, and we can change."

## NO CHOICE

From the very beginning, *What Remains of Edith Finch* shows players how the game will end. The Finch house rises into the sky as if trying to escape itself; at its peak, there's a definitive endpoint. It's an apt visual metaphor for the game's primary theme, and true inevitability. "One of the biggest goals we had was to remind people that they're going to die," says creative director, Ian Dallas. "It's not a question of conveying new information. But encouraging people to think about something they seem biologically wired not to is a *hard* challenge."

Returning to her childhood home, Edith Finch is intent on learning the stories of her family, but as she explores each room, kept preserved and shrine-like, the tragic fates of her kin unfold. "The challenge for us was encouraging players to feel like death was not a failure," Dallas explains. "It took a lot of different creative solutions from every member of the team, but what started out as a design challenge evolved into the game's signature tone: marching happily to your doom."

*What Remains of Edith Finch* constantly reminds players that death is the only ending, yet somehow keeps players choosing to explore the house in spite of it. In many ways, this proves the validity of *Edith Finch*'s central philosophy: that endings don't define stories. "Every story is

over before it begins," Dallas reflects. "And the ending is rarely the point of anything, it's just a skeleton you can hang the more interesting bits on top of."

This idea of accepting endings is also echoed in the final words of Edith herself: "I don't want you to be sad I'm gone, I want you to be amazed any of us had the chance to be here at all."

In the face of an inevitable end, Albert Camus famously proposed we have but one choice: live or die. Just as in games, we can accept our choices are meaningless and decide to stop playing, or we can choose to continue, finding meaning in the act of choosing itself. When framed as a rebellion against our powerlessness, player choice becomes so much more meaningful – it's able to better represent the nature of human existence and gain internal complexity. All the same, many games still focus on maximising player power and destructive effect.

## "EVERY GAMER HAS HEARD VARIATIONS ON THE WORDS 'YOUR CHOICES MATTER'"

"I don't know what the legacy of *Spec Ops* is," Williams reflects. "As far as I can tell, the legacy people seem to be holding onto is that it [messed] them up when they played it. Which is unfortunate. We showed them the disease, but they only get excited about the symptoms."

Player choice can't be quantified in bodies, blood, or broken worlds. The way choices make us feel, let us express ourselves, and allow us to change, is their true gift. Power is a lie, but powerlessness is the truth of our lives, and those choices, touched by inevitability, are some of the most memorable in all of gaming. 🗿



^ Michael Oberschneider's concept art depicts an earlier idea for *Spec Ops*, involving car travel.

^ Juxtaposing the lavish iconography of Dubai with the atrocities of war creates a powerful sense of horror.





# Interactive

## Guts 'N Goals

It's football with baseball bats. Developer Manuel Bolaños tells us about his frenzied sports game

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

**R**ealistic simulations of football have their place, but there'll always be room in our hearts for the stripped-down, more arcade-like renditions of the sport: the top-down delights of *Sensible Soccer*, for instance, or the snappy, cartoon styling of *Super Mario Strikers*. All of which explains why *Guts 'N Goals* immediately caught our eye: it's a multiplayer football game with the top-down perspective of *Sensible Soccer*, a touch of *Super Mario Strikers'* cartooniness, plus a big helping of violence akin to nineties sci-fi sports game, *Speedball*.

So, imagine our surprise when we confidently listed some of these games to *Guts 'N Goals* developer Manuel Bolaños, and discovered that he'd never played any of them ("I played a lot of *Red Card Soccer* for PS2 when I was a kid, though," he says). In fact, neither Bolaños nor his two collaborators – Gabriel García on graphics and Jacob García Fernández on music – are particularly into football at all.

"The game's first prototype was made in 2016, and we actually aren't the biggest football fans," Bolaños says. "We wanted to make something

like an online massive .io game, and we thought it'd be fun to experiment with a football game where you have to score goals while fighting other people."

Like Dan Marshall's wonderful *Behold The Kickmen* before it, *Guts 'N Goals* is a sports game created without the burden of sporting knowledge – which explains why the footballers here lumber onto the pitch holding baseball bats, and spend as much time beating each other up as they do scoring goals. The typical

*Guts 'N Goals* bout unfolds in a dervish of swinging bats and explosive events, with each of the game's 20-or-so characters equipped with a unique ability: there's a wrestler

named El Ganso, for example, who can grab his teammates and throw them like projectiles. It's a frantic game – and, according to Bolaños, was almost unplayably anarchic in its early stages.

"We end up discarding the 'massive .io' game idea because it was actually crazy when we first tested it with people," Bolaños says. "At some point, we had 16-ish people playing it at the same time, and it was chaos. We then cycled through three-versus-three, four-versus-four, and five-versus-five while pre-alpha testing,

**"In fact, neither Bolaños nor his two collaborators are particularly into football at all"**







✓ *Guts 'N Goals* is controlled with keyboard and mouse, but there are plans to add joypad support. "It'll be quite a challenge, being that some skills require mouse precision," says Bolaños.



▲ Matches take place in a variety of different locations, including this beach, which subtly alter how each bout will unfold.

and finally decided that three-versus-three would be the most optimal way to do it."

## LIQUID FOOTBALL

Currently residing in Cádiz, southern Spain, Bolaños got into programming when he was eleven. "I told my father I'd like to start making games," Bolaños tells us, "and he got me Maneesh Sethi's book, *Game Programming for Teens*. It taught me a lot about programming fundamentals, and I spent some time making (really bad) games in Blitz Basic 2D. I quickly moved into Game Maker – version five at the time – and I've been using it since then."

True to form, *Guts 'N Goals* is being developed in Game Maker Studio 2, with pixel art drawn in the ubiquitous Aseprite, while the sound is created in FL Studio. Bolaños and his collaborators also use Juice FX for animation – it's one of two applications that Bolaños works on in his day job. "I'm currently working on two game design apps, Pixel FX Designer and Juice FX," he says. "They require a lot of attention, mostly on the user assistance side of development, but you have to know how to handle your time around game dev, or it will literally consume you."

Now that the framework for *Guts 'N Goals* is in place, though, much of the work has focused on balance – everything from the strength of characters' abilities to the speed of the ball has to be considered in order to make the game both fair and fun to play.

"We faced a lot of challenges during development," Bolaños says, "but the biggest

that concerned both Gabriel and me was making the game feel good and juicy to play, while conserving clarity and making the gameplay as smooth as possible.

"Most of the character ideas come from Gabriel, but we always want to make sure that the character is fun to play, as we focus on the game being fun rather than being competitive."

Given how unusual *Guts 'N Goals* is – there aren't too many football games featuring super-powered athletes wielding baseball bats – testing and balancing the game has, Bolaños says, been a case of trial and error. "We keep a record of all matches, with character selections, MVPs [most valuable players], and win rates," he says. "It helps a lot to see which characters might be better or more popular."

The game has gradually become better optimised and more refined over its testing phases, too. "We had some players that could barely run the game when the beta started, and they could play it without any problem when it ended," says Bolaños.

And with *Guts 'N Goals* set to enter Early Access at some point this year, Bolaños and his small team have further plans for the game's future. "We have lots of plans for new characters, mutators, and stadiums," he reveals. "We want to support local game modes in the future, and we plan to port it to consoles, too."

Bolaños may be too young to have sampled the likes of *Sensible Soccer* or *Speedball*, but *Guts 'N Goals* is shaping up to be a modern entry in a rarefied genre – a hectic, entertaining sports game for people who don't necessarily like sports games. 🐾

## CHARACTER BUILDING

Given that *Guts 'N Goals* characters have such a big impact on the game and the outcomes of matches, how were they conceived? According to Bolaños, the abilities come before the designs themselves. "Our process is pretty simple," he tells us. "We came up with a character skill idea, I program it, and we playtest it a bit. If it looks fun to us, we then show it to our friends, play some matches, and gather some feedback. Then, if we get positive feedback about the character, Gabriel goes and makes the character's art design." Bolaños' favourite character so far? The team-mate-lobbing El Ganso. "He can use them as weapons and throw them away," Bolaños enthuses. "I mean, can it get any better than that?"



# Infinite States of Play

We chat to the tiny British studio that's spent over a decade making 2D action games

WRITTEN BY  
ANDREW FISHER



▲ The dynamic duo of Infinite State Games - Charlie Scott-Skinner (left) and Mike Daw (right).

▼ *Family Tree* eschews the claymation look of its predecessor for a simpler, hand-drawn look.

Here's an insight into the curious world of the modern indie developer: Infinite State Games, a British studio that's little more than a decade old, has already had its earliest titles vanish from a digital storefront. The team's earliest games on iOS, *Extreme Golf* and *Shepherd: Mars Needs Sheep*, are no longer available.

"Apple did a large-scale cull of the App Store," explains Charlie Scott-Skinner, the studio's CEO, designer, and programmer. "They sent out an email saying 'update it [to 64-bit] or lose it' to everyone with stuff on the store. We went in expecting our first couple of releases to be crushed under the reality of discoverability, but we carried on nonetheless."

In their own words, Infinite State Games are "Just a couple of mates from yet another studio that went 'pop', sticking together to carry on in our spare time." Founded in 2008, the outfit

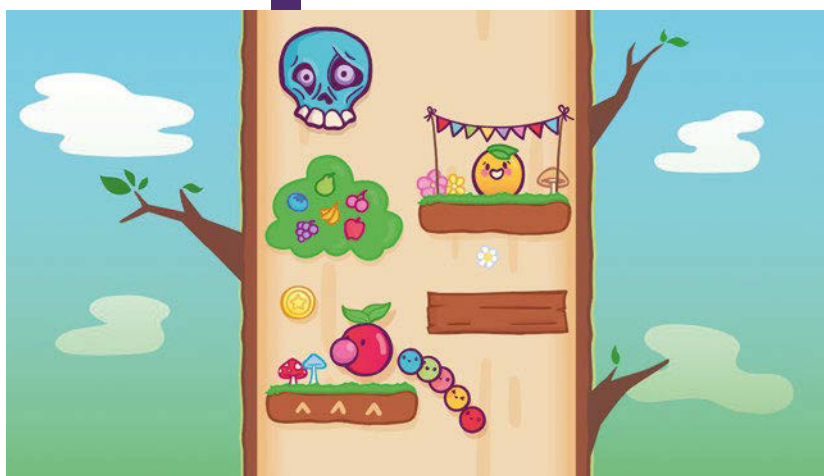
comprises Scott-Skinner and Mike Daw, who handles production, audio, graphics, and level design. The pair originally worked together on handheld – often licensed – titles earlier in the 2000s, before deciding to strike out on their own. "It's been our passion project while doing other day jobs in various industries," Daw says.

The pair's collaborations have been fruitful in more ways than one. *Frutorious*, a fruit-collecting platform puzzler originally released in 2012, had a unique, hand-crafted look, and gained TIGA award nominations in 2012 for Best Casual Game and Best Audio Design. "That was all down to Mike discovering a latent talent for crafting and sculpting plasticine," Scott-Skinner says. "It turned out really well. Those little guys with googly eyes are super cute."

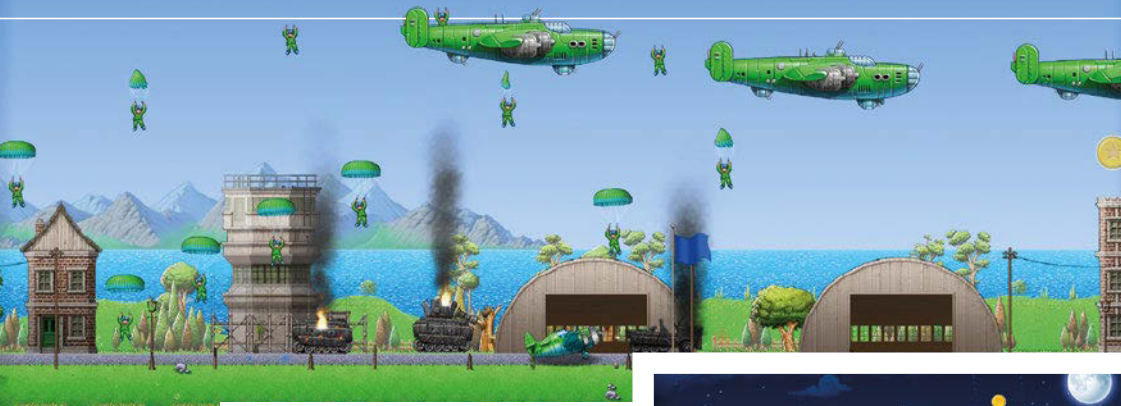
This begs the question: why do so many of their games feature fruit? "Colours, mate," says Daw. "Fruit is awesome," adds Scott-Skinner. "It's nature's way of saying, 'Here, have a yummy treat full of vitamins and sugar'. That's just too perfect not to encode into a positive digital feedback loop."

The studio's next release was 2014's *Don't Die, Mr Robot!* – originally named *Avoid Droid* – which was featured as a Best New Game on the App Store. It was an enjoyably frantic action game with tilt controls and chains of exploding fruit – but why the name change?

"At the eleventh hour we remembered 'droid' is a trademarked word, thanks to a certain popular space opera," says Scott-Skinner. "We toyed with the idea of leaving it as *Avoid Droid* because it was such a perfect name, and any publicity around a cease-and-desist letter could only have helped us gain recognition. But in the end, we chose to play it safe and change it before release."







▲ *Rogue Aces* mixes the cartoon style of *Advance Wars* with the dogfighting of *Luftrausers*.

*Don't Die, Mr. Robot!* subsequently appeared on Vita and PS4, which had the benefit of expanding its potential audience – though working with Sony wasn't always easy for the tiny developer. "Sony Europe and Sony America are very different kettles of fish to work with," Daw says. "Both had their good points, but [working with them] can make a lot of extra work for developers."

## TRANSATLANTIC

"It was hard work weaving through the minefield of forms and pricing for the EU release," Scott-Skinner agrees. "The US was much simpler, though. Luckily we had some great contacts we could rely on to set us straight in a pinch on both sides of the Atlantic."

A change of direction came with 2016's *Rogue Aces*, a dogfighting game with a novel twist – when the pilot ejects, they can hop into a nearby plane and take control. "We're both fans of old 2D plane games from back in 8- and 16-bit days," Scott-Skinner says. "So *Rogue Aces* is really something we've been wanting to do. It was great being able to take the core of what we loved but adding a lot of things we've learnt from gaming ever since."

As well as appearing on the PS4 and Vita, *Rogue Aces* was also ported to the Nintendo Switch – and like numerous other indie developers, the Infinite State Games duo have found the Switch easy to work with. But that ease-of-access is rapidly creating another problem, they point out: standing out from



## "A studio little more than a decade old has already had its early titles vanish"

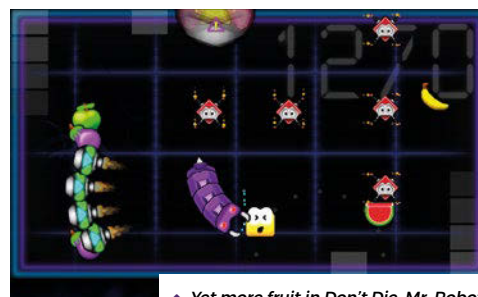
the crowd. "The hardware itself is fantastic," says Scott-Skinner. "But the store structure does nothing to alleviate the discoverability problem, and as bigger publishers start turning towards the platform, that will only get worse."

Next up is their sequel to *Frutorious*, which they're self-publishing on the Nintendo Switch. "This is the way forward for us as a company," Scott-Skinner says of the move into publishing, "and we feel really fortunate to live in a time

where this is possible on such a wide range of platforms."

As a part of their marketing push for the *Frutorious* sequel's

October 2019 launch, Infinite State Games has also decided to give the game a more straightforward name. "*Frutorious* is something even we struggle to spell, so we're rebranding it to *Family Tree*," Scott-Skinner explains. "The hope is this new name is more indicative of the player's mission to rescue their children from an array of devilishly designed puzzles, which just so happen to be situated inside trees. We also hope it's easier to remember and spell..."



▲ Yet more fruit in *Don't Die, Mr. Robot!*

◀ A day-night cycle added an interesting twist to *Rogue Aces* – it's not something we often see in 2D shooters.



▲ Mr. Fruts parachutes into an early level of the slingshot-happy platform-puzzler, *Frutorious*.

## Softography

**Extreme Golf**  
(IOS, 2010)\*

**Shepherd: Mars Needs Sheep**  
(IOS, 2010)\*

**Frutorious**  
(IOS, 2012)+

**Don't Die, Mr. Robot!**  
(PS VITA 2014, PS4 & IOS 2016)

**Rogue Aces**  
(PS4, PS VITA, SWITCH, 2018)

**Don't Die, Mr. Robot! DX**  
(SWITCH 2018)

**Family Tree: A Frutorious Adventure**  
(SWITCH, 2019)

\* No longer available on iOS

+ HD version released 2015, still available on iOS

# Branded C\*ntent: Always a dirty word?



**STEVE MCNEIL**

Steve will do anything for money. Slide into his DMs.

**“Almost all media you consume is branded content to a greater-or-lesser extent”**

**N**

ot that we need another way to divide people but, if we did, there are far worse starting points than people's reaction to 'influencers' making 'content'. Those words

either make you think of stuff online made by people you enjoy watching, or else they make you think of how dreadful the world is today, and how much better things were when we all played conkers, and how much you hate young people.

As I write this, I'm on the train back from Bolton where I've just finished filming *NEXT LEVEL*, a monthly YouTube show funded and produced by online retailer, Scan Computers. The show involved myself and BBC presenter Claire Lim going head-to-head on a number of video game challenges, ranging from the latest *Call of Duty* to *3D Pinball for Windows – Space Cadet* (yes, really). We also had a nice chat with another accomplished broadcaster, Nikki Dean, about the move we both made from traditional broadcasting to Twitch streaming, as well as games we currently enjoy, and tech we're looking forward to seeing in the future.

While the approach to production is more casual than you might find on something like Channel 5's *The Gadget Show*, the various format points wouldn't seem out of place. There's even a competition for viewers to win nearly £5000 worth of kit, and a couple of challenges that show off the potential of VR and cockpit racing for high-end users in the home.

Scan Computers wisely choose not to make the show an advertorial, instead trusting that if people like the look of things they see, they might consider visiting their store afterwards to treat themselves to some new tech. Alas, for some, the mere fact the show is sponsor-funded, rather than independent, is a deal-breaker in terms of tuning in.

As someone who created gaming content for television, this seems strange to me. My show, *Go 8-Bit*, was made for a commercial channel, Dave, which not only ran adverts but also had branded ad-break 'bumpers' which represented the show as being "Brought to you by..." whatever company wanted to have all your money that week.

The truth is, with the exception of the right/left-leaning BBC (delete whichever is the one you are for your own personalised confirmation bias), almost all media you consume is branded content to a greater-or-lesser extent. Radio stations, TV shows, gaming websites, the 25 minutes of advert guff you have to sit through at the cinema despite paying a fortune for 10p's worth of popcorn – every business delivering this stuff to you is propped up by dirty marketing moolah.

Arguably, Scan Computers making a show you can enjoy for free where they also say "By the way, if you liked this, please consider buying the things you saw in it from us" is a far more honest, and reasonable, relationship than on *Go 8-Bit*, where we all just did our best to avoid admitting we'd bought new ivory monocles with the ad revenue. And, from a purely 'entertainment' perspective, it's not as if I tried less hard to be funny on Scan Computer's show, just because the people making it also sell RAM. Whether I was successful or not, I'll leave it to you to decide. 🙄



^ It's the hit contemporary game all the big content creators are streaming!



# Toolbox

The art, theory, and production of video games

## 28. CityCraft

Hiding secrets in your virtual metropolis

## 32. Game audio part 2

Using sound to create player immersion

## 36. Virtual reality

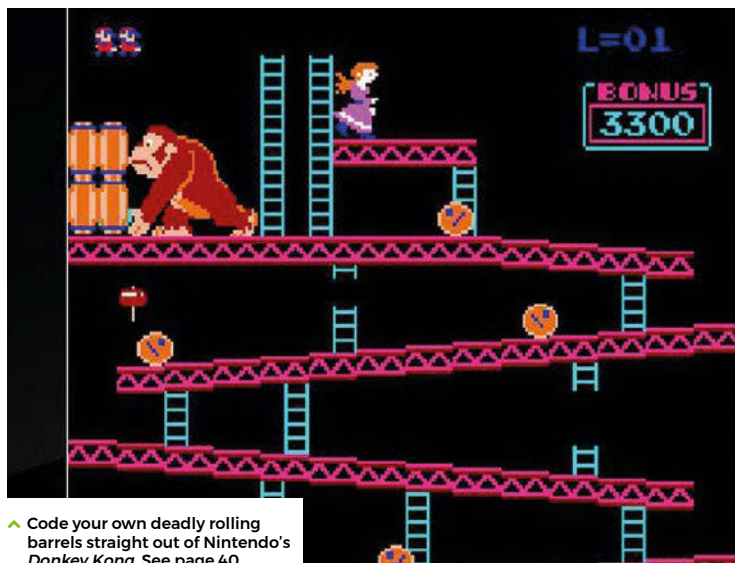
Tips for making your first VR experience

## 40. Source Code

Re-create *Donkey Kong's* deadly barrels

## 42. Directory

A pick of this autumn's game dev events



Code your own deadly rolling barrels straight out of Nintendo's *Donkey Kong*. See page 40.

Want to make a virtual reality game to rival *SUPERHOT*? Check out our handy beginner's guide on page 36.



# Cities and their countless secrets

A virtual city's most telling elements are often their most well-hidden, Konstantinos writes



**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 forthcoming *Virtual Cities* atlas, designs game cities, and consults on their creation. [game-cities.com](http://game-cities.com)

## Onion Secrets

Not unlike onions, secrets, mysteries, and devious plots are often best organised in layers of increasing complexity and oddness. A game's protagonist first hearing about an abandoned district, say, and eventually finding a way of accessing it (via a rarely operating bus line or something similar), and searching for rumours that eventually turn into information regarding the position of a hidden entrance.

**J**ust as there's joy in recognising the conscious hand of a designer when exploring a real or a virtual city, there's a pleasure to be gleaned from unearthing its secrets, too. Cities, with their ever-increasing size and complexity, are excellent places to hide things in. From fugitives and forbidden cults to ancient underground complexes, magical crypts, vast machines, and off-the-map clubs, people can plausibly expect to find absolutely anything in them. Well, almost anything.

## A MENAGERIE OF SECRETS

Every city has (or had) its fair share of secrets. Tourists commonly look for them: the obscure locations, abandoned tunnels, and old cemeteries. Populating our game cities with such elements can re-create the sense of the unexpected that is part of the real-world urban experience, and help make a city memorable. A weird statue in a shadowy alcove, a crook

glimpsed sliding across the shadows, an abandoned house deep in a forgotten cul-de-sac, or an unexpected pocket park packed with wildflowers, as well as all sorts of personal mysteries hidden behind closed doors, are all worthwhile additions – but there's still more we can hide in our video game city.

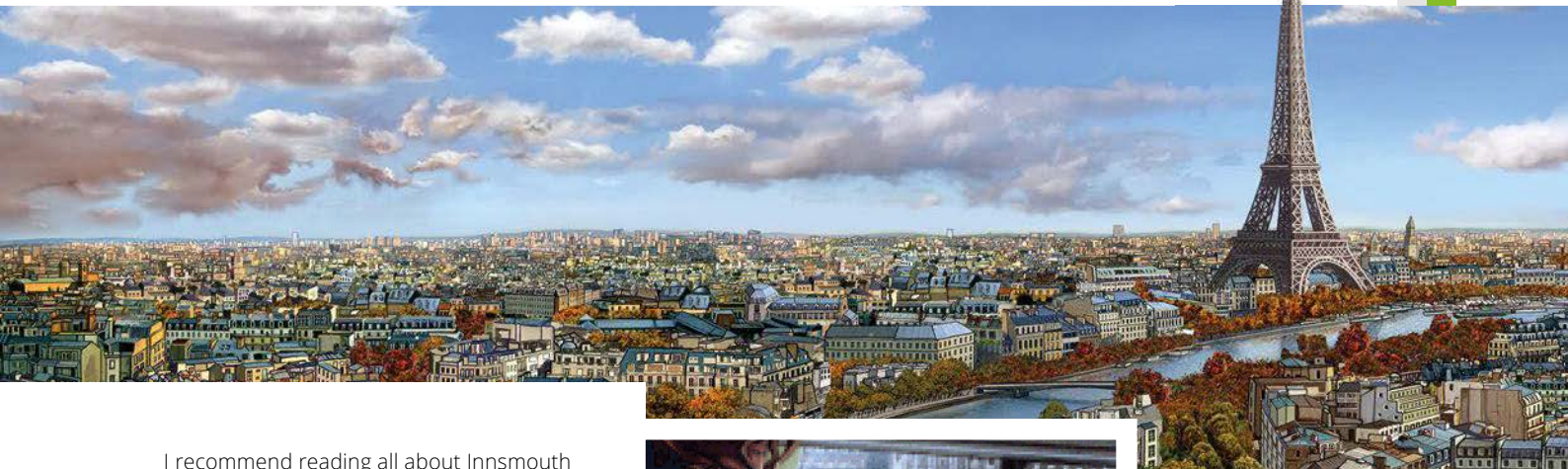
Next to everyday dramas and petty crimes, more fascinating, city-wide mysteries and grand secrets can lurk. Large groups or even whole civic societies can work together on concealing truths, organisations, and locations. Planning and architectural secrets can be built into urban spaces and hidden behind all types of façades, while a myriad speakeasies might sell bootleg alcohol downtown, despite the efforts of the police. Imaginary places like Lovecraft's Innsmouth, in particular, were actually constructed around very specific secrets and built on a hidden history. Their whole existence, organisation, and life was governed by forces and truths shrouded behind a mask of normality.

In case you haven't read Lovecraft's *The Shadow over Innsmouth* novella, imagine a secluded, 1920s New England fishing town that seems a bit too quiet, slightly run-down, and whose inhabitants are drawn to a subtly strange temple. Odd sounds are heard throughout the city; there's a working – albeit sparse – bus service, a few out-of-towners, some shops, and a hotel. Staying for a while and investigating, though, will soon reveal the monstrous reality of creatures that are half-human, half-fish, which worship eldritch gods and murder inquisitive strangers.



► Sometimes whole cities can be hidden. The Derinkuyu underground city in Turkey was a settlement that could house up to 20,000 people. Image by Viator.





I recommend reading all about Innsmouth if you're interested in creating any sort of horror city, just as I recommend playing through and exploring the original *Silent Hill*. It's an excellent example of a game that features a supernatural, cursed place masquerading as a foggy but otherwise average town. The Citadel space station in *Mass Effect*, meanwhile, is a brilliant example of a metropolis that keeps its true purpose a secret, while constantly reminding players that something strange is going on.

A city's less disturbing secrets tend to be ancient or of eras past: catacombs, underground complexes, disused military bunkers, criminal passageways, entombed rivers, and edifices hidden behind newer buildings or somehow surviving unseen inside dense urban parks.

## WEAVING SECRETS

Many secrets can exist independently of their surroundings: gameplay goals, collectables, plot points, or little surprises simply hiding in a city. They can be a murder weapon in a public library, or stolen goods in a storage facility. Greater, more intricate secrets can be woven into the urban tapestry itself. Specific buildings may have to be constructed, roads might need to be blocked, and information tightly controlled. Around certain secrets, the flows of an ordinary city simply cannot pass.

Not unlike Innsmouth, *Silent Hill*, and the Citadel, any town with a crucial secret will do whatever it needs to keep it, well, a secret. It will ensure certain places are inaccessible to strangers, warn off anyone who finds out too much, and keep most of the suspicious aspects of life indoors. It could perhaps sport whole neighbourhoods that are almost impossible




**“Many secrets can exist independently of their surroundings”**

to visit; confusing traffic signs, elliptical roads, and maze-like networks can, after all, keep people away from places without openly forbidding anything.

These details can be subtle, and they really need to be when we're rearranging real cities to fit thrilling plots. The ways in which *Gabriel Knight: Sins of the Fathers* reshaped New Orleans to accommodate a powerful, influential voodoo cult is exemplary. The game tweaked and added extra meaning to already existing, well-known aspects and landmarks of the city, hid ominous places under famous tourist spots, and made sure the majority of the local population suspected nothing.

It brilliantly mixed actual folklore and tradition with deadly horror, jazz, sinister societies, and repainted a vibrant town in threatening colours.

On the other hand, secrets don't always have to be this ominous. They can easily consist of places and facts that have simply been forgotten. The principles around which the Maya constructed their cities, for example, are far from obvious yet still there. Sometimes a city – an abandoned one, primarily – could become a riddle itself: a gigantic, almost archaeological puzzle, the secret purpose and logic of which the player has to discover for themselves. 

▲ A vast metropolis, such as *Broken Sword's* Paris, is a perfect place for conspiracies, mysteries, and elusive societies.

◀ In the *Gabriel Knight* version of New Orleans, the headquarters of a large voodoo cult lie under Jackson Square.

## Landmark Secrets

Famous urban landmarks have been subverted in many novels, movies, and games, and reimagined as places that house sinister secrets being at the very heart of vast conspiracies.

The Louvre, the Tower of London, the Statue of Liberty, the Vatican, and the Taj Mahal are all well known, laden with history, and exquisite in their own right, and can thus easily carry the extra weight of new stories about them. What's more, hiding things in plain sight is always satisfyingly ironic.

# For a shot at winning, go against the grain

Just because everyone's doing it doesn't mean you should, as Reid explains



**AUTHOR**  
**REID SCHNEIDER**

Reid is the producer of *Splinter Cell*, *Battlefield Vietnam*, *Army of Two*, *Batman: Arkham Origins*, and *Batman: Arkham Knight*. Follow him on Twitter: [@rws360](#)

## W

hen we started Typhoon Studios in 2017, the collective advice we received was that our pitch needed to include at least a few of the following features, if not all of them: games as a service; free-to-play (F2P); infinite replayability; battle royale. We knew as a group of founders that this was precisely what we did *not* want to do – rather, we wanted to make something that appealed to our values, and would stand out in an increasingly crowded market. Our bet was that since everyone was going in one direction, the best way to create a viable/sustainable business was to do the complete opposite of what was currently 'en vogue'.

We also knew that we wanted the game to reflect our values as a studio, and that this

would hopefully have the effect of helping us hire people with similar values, which would ultimately show up in the project.

## NOT THE HILL TO DIE ON

One of the very first things we identified was that our projects were *not* going to be F2P. Not that there's anything inherently wrong with that model, but the collective experience of the founders was all about premium. We had also recognised the bodies at the side of the road; developers who felt they could just 'make it work' without a deep understanding of F2P, or worse, teams that wavered between pricing models and in the process whipsawed their people. We knew this could be a death spiral for a company and were determined to avoid it.

Probably the saddest recent (public) example of this was Boss Key, Cliff Bleszinski's former studio. Cliff is obviously an incredibly talented designer, but *LawBreakers* publisher Nexon had wanted F2P, and the team had clear challenges with that design from the start. Mid-development, the game changed from F2P to a premium project, after an extensive back-and-forth. F2P monetisation must be designed in from day one – going back and forth can wreak havoc on a production.

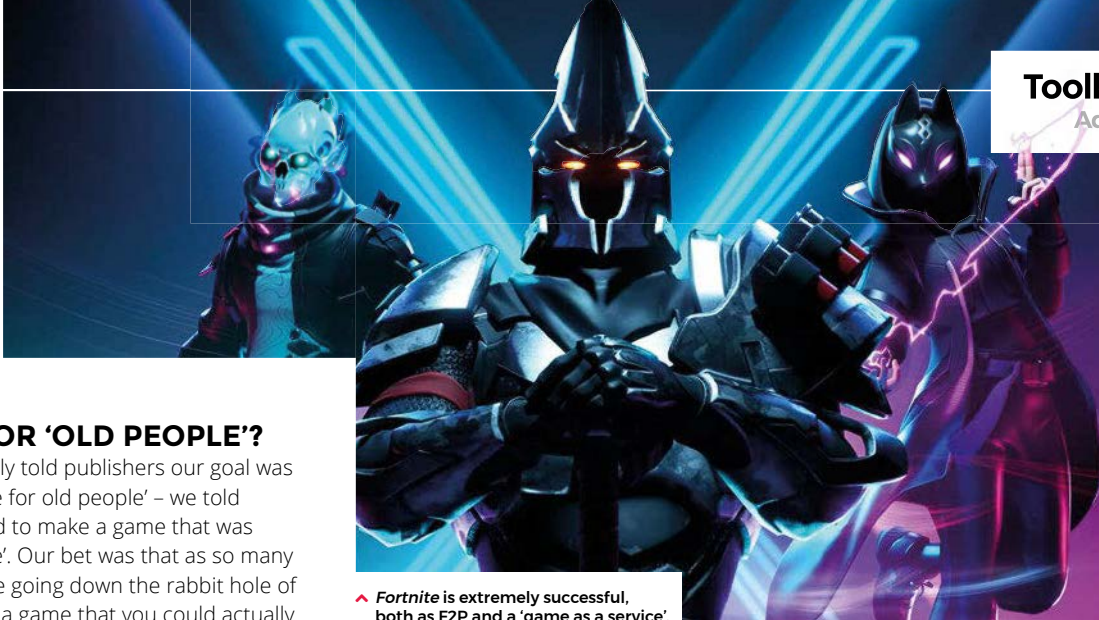
On the Typhoon side, holding this line was tough, but we were determined. At one point, we even had a meeting with the third-party people at Wargaming (who were very cool) telling us how much they loved our prototype, our game world, our concept, *and* were ready to fund it. But we would really need to go F2P. We had to say no, despite their enthusiasm. *Hold the line!*

✓ "And to think, you'll only have to play for 9000 hours to see everything!"



▲ *LawBreakers* suffered because of its identity crisis during development.





▲ *Fortnite* is extremely successful, both as F2P and a 'game as a service'.

## A GAME FOR 'OLD PEOPLE'?

We never actually told publishers our goal was to make a 'game for old people' – we told them we wanted to make a game that was 'highly finishable'. Our bet was that as so many developers were going down the rabbit hole of infinite content, a game that you could actually complete would be a welcome change. *Journey to the Savage Planet* is not going to take over your life, but rather serve as pace-breaker to the latest *Assassin's Creed* or Rockstar game requiring a few hundred hours to complete.

Another great example of this is *Fortnite*. *Fortnite* is a phenomenal game made by experts at their craft. These talented folks have the ability to consistently push out amazing content. I don't know the demographics of the player base but I would guess it skews younger, around the teen years – typically a group with more time than money. From the Typhoon perspective, we intentionally chose *not* to focus on that group, but rather older people who have dollars to spend on unique experiences.

We had another European publisher tell us similar things to Wargaming in terms of praise, but then also ask us how we could turn it into a 500-hour experience. In their words, 'unless someone can play for 100+ hours' they were not interested.

## MAKE IT FUN AND FUNNY

As we began to conceptualise our first game, something we kept coming back to was the idea that humour – especially physical – is often overlooked in games. The example our creative director consistently refers to was his experience in *Far Cry 4*, where a player could throw a Molotov cocktail at a bear, have it catch fire, then run across the screen and eat his co-op partner. This is what makes our medium so unique compared to linear experiences like TV or movies – *so embrace it*.

Another belief we hold is that games are increasingly serious – so we could carve out a niche by going against this. For *Savage Planet*, this was a hallmark element for us. That being said, it's *really hard* in the beginning when you're just trying to get something basic off the ground, and time needs to be spent on player controls/

AI/fundamentals. But if it's something important to your game, don't lose sight of it and try to find time to work on it, even in small bits. In early press coverage for the game, this aspect has – fortunately – been resonating, with journalists calling it refreshing. It's a huge relief for us as it means that the investment is paying off. Conventional wisdom, at the time, would have said 'Do something much more serious, don't invest in humour'. But that didn't feel right to us.

## VALUE-DRIVEN

We knew we wanted to create a place where people could do their best work *and* have a sense of humour. This was something we explicitly

wanted to accomplish in our game, even if it was a bit hard to use as a filter when we started – most people in an interview will tell you they have a good

sense of humour. As the project has evolved and its humour has become evident, we are now able to sit people down with the game and get their honest impression of it. Do they laugh at the jokes? Do they understand the physical comedy? Are they able to extrapolate beyond what's on-screen and ideally add to it? These have become invaluable filters in our hiring process. We even added artwork around the studio that hits these goals directly – our fake *Savage Planet* movie posters are spread around the studio, along with a huge graffiti mural. These help show we don't take ourselves so seriously.

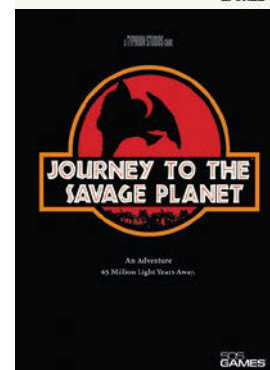
In short, try to make a game that reflects the values of the studio and the people who work there. Don't try to make something for a random market opportunity that you think *might* be there. Great games are built by super-passionate people, and if you're just trying to chase an arbitrary business goal, it runs a serious risk of feeling fake. Customers are smart and can spot that a mile away! 🙄

**"Try to make a game that reflects the values of the studio and its people"**



Typhoon Studios  
**JOURNEY TO THE SAVAGE PLANET**

EA GAMES



▲ Mock-*Savage Planet* film posters adorn the office walls at Typhoon.

# Game audio part 2: Echoes and endpoints

Last month, we heard how game audio teams mix streams of sound samples, known as voices, into groups for replay. Now Simon explains how audio gets routed to the listeners



**AUTHOR**  
**SIMON N GOODWIN**

Simon N Goodwin has been making games and audio tech professionally since 1979, including twelve years as Codemasters' Principal Audio Programmer.

**T**he camera only shows a small slice of the action, while audio is omnidirectional. The ear never blinks, and the greatest threats and opportunities are often out of sight, but still in earshot. Positional sound is nice to have but optional at the movies, where the director controls the camera, and the mix must be compromised for listeners all over a cinema. But in VR and action games – let alone AR – it's often a matter of (virtual) life and death.

A game cannot assume that it will be played in stereo, or on headphones, or via surround speakers. When players rely on accurate audio cues, their mix needs to be customised accordingly. From stereo to Ambisonics, UK engineers pioneered such developments.

With dozens of weapons and hundreds of munitions rattling across a battlefield, or 24 cars and 96 tyres variously squealing on the first corner of a Grand Prix, you can't just play everything that might be heard, even on fast platforms. Game audio runtimes work like an embedded mix engineer, picking out the most important sounds and ducking others to preserve the frame rate and to guide the player's attention. Distances and directions influence these selections.

## POLAR PATTERNS

Sometimes, especially in replays like those for waterfall-lined Japanese rally tracks, virtual

listeners are directional, favouring frontal sounds, but this is unhelpful in-game, when you need audio to know where you should be looking. **Figure 1** shows the 'polar pattern' for a directional listener, much like the polar diagrams which come with hi-fi speakers. The upper image represents a top-down view around the listener. The cardioid (heart-shaped) curve emphasises sounds in-front (above) and trims those to the sides and rear. Beneath, the equivalent graph shows how the volume fades down either side of the front axis.

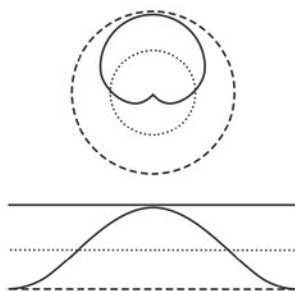
A subtler directional effect helps players keep track as they turn towards or away from sound sources, even if they're only listening in mono. Some systems derived from graphics use triangular cones for a similar effect, but those sound unnatural and can be disconcerting or misleading.

**Figure 2** shows how sounds might fade or 'roll off' with distance from the listener. These customised curves mimic the 'depth of field' effect in cinematography, and help us prioritise particular sounds.

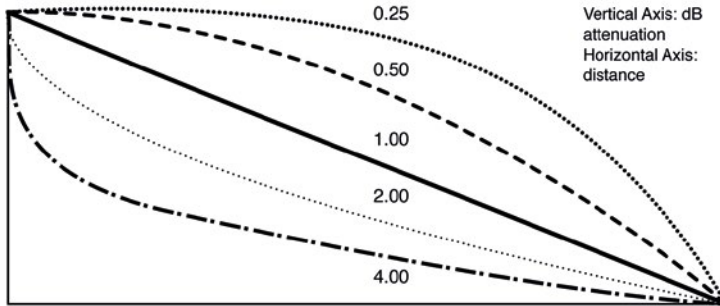
## THE WRONG HEAD

In first-person VR and AR titles, as sounds move around and especially close to the listener, the variation in tone as well as volume is vital to localisation and immersion. Oculus, HoloLens, and a plethora of plug-ins mimic a theoretical 'HRTF' (or 'head-related transfer function')

✓ **Figure 1:** Like a directional microphone, this polar pattern favours sounds from the front (top, in the top-down view, middle in the second graph).







◀ Figure 2: Circuit racers like *F1* and *GRID* use a steep roll-off of 2.0, while *DiRT* emphasised the rally environment with a slower roll-off curve of 0.5.

– the changes in binaural perception with source position. Despite universalist claims, everyone has a unique HRTF. The future is in personalisation of this setup to suit individual listeners’ ears, heads, and headphones; even hats and haircuts make a difference.

The AES69 standard for sharing such data is quite new, and we’re still working out ways to capture it without spending half an hour in some university dungeon being whistled at from all directions. We know how to measure individual

**“A game cannot assume that it will be played in stereo, or on headphones”**

HRTFs – today’s challenge is to make the process simple and fun, using readily available cameras, speakers, and microphones.

Blue Ripple Sound’s Rapture3D takes a compromise – you can pick from one of half a dozen presets, created by cluster-analysing the actual HRTF of hundreds of people and ‘dummy

heads’, or plug in your own measurements if you’ve got the data. This works fairly well out of the box – much better than one-size-fits-none defaults – but takes more processor time than fake-speaker approaches, especially when there are lots of sources.

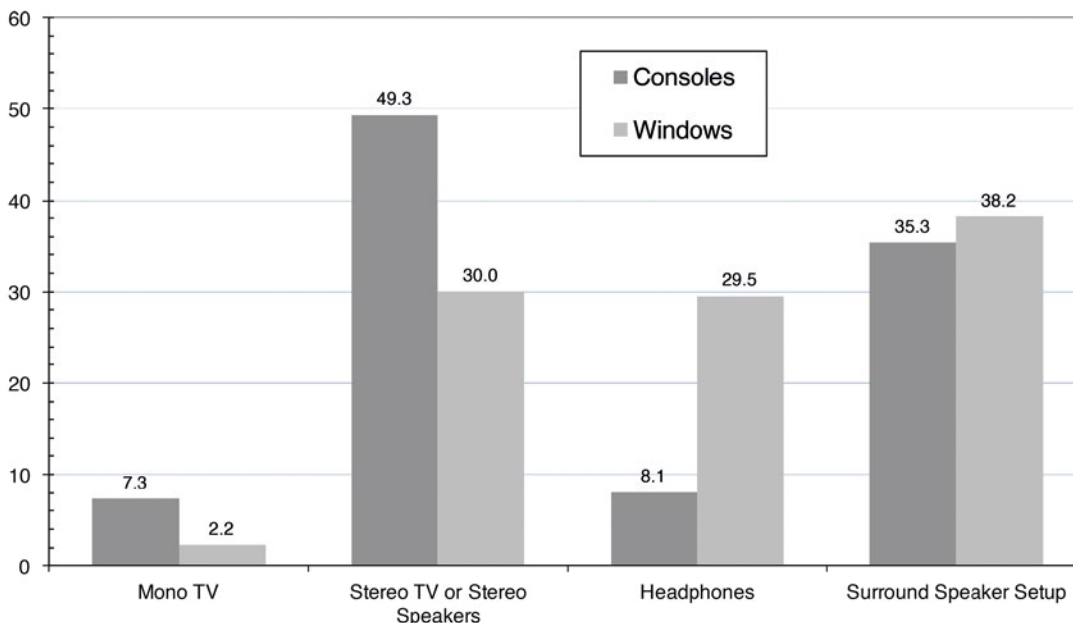
Even if only a minority of your players use headphones – it tends to be a lot more on PC than consoles or even mobile – you should not use the same stage width for 3D sounds on headphones as you do on stereo speakers,

or it’ll suddenly sound as if you’re driving a 100-foot-wide tank when you switch to the internal camera.

The quick fix for this is to introduce ‘crosstalk’, allowing part of the mix to reach both ears, even for sources either side. Of course, you need to know how the player is listening – be ➔

## ROLLING OFF

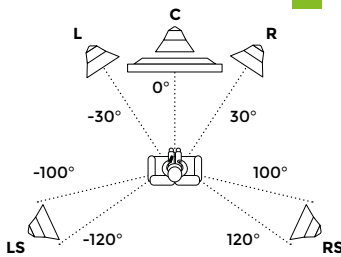
Roll-off determines how sounds decay in volume and vary in tone with distance. The rule of thumb is that they halve in volume with each doubling of distance, but ideal curves depend upon the genre and viewpoint – distant sounds are more important in replays than in-game, and ones requiring a response from the player deserve priority. So the roll-off curve should be configurable for each sound, between the ‘minimum distance’ where they’re loudest, and the maximum where they’re effectively inaudible, known as the ‘noise floor’ and affected by real-world as well as in-game background sounds.



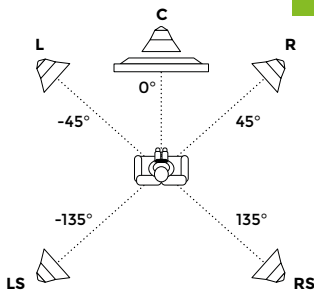
◀ Figure 3: Mobile gaming means there are more mono listeners now than a decade ago, when this survey contrasted console and PC players’ listening preferences.

## Toolbox

### Game audio part 2: Echoes and endpoints



▲ Figure 4: Dolby and THX favour this 'home cinema' setup. But put away your protractors – it's a rotten fit for gaming.



▲ Figure 5: This symmetrical speaker layout works best for 5.1 surround-sound gaming and is generally assumed by interactive audio panners.

## REVERB

Reverberation is to sound as lighting is to graphics, as BAFTA-winning sound designer Stuart Ross likes to say. Reverb is the most costly audio effect to process, as well as the loveliest when done well, and should be directional and environment-sensitive as well as related to the distance between sources, reflectors, and the listener.

it on headphones, or some array of speakers. The better you can interrogate your host configuration and tweak the mix accordingly, the better everything sounds. One of the great things about interactive audio is the opportunity – and sometimes the necessity – to tailor it for each unique listener.

## STEREO AND HEADPHONES

EMI engineer Alan Blumlein invented stereo. His 1933 patent also referred to height, but it took 75 years to work out how to render this effectively. A survey of over 700 gamers found PC player preferences evenly split between headphones, stereo, and surround speakers, while headphones were much less popular among console gamers.

Since the original Xbox and earlier PC soundcards, gamers have been able to repurpose home cinema surround-sound equipment to help locate sounds beyond the 60-degree spread of stereo speakers.

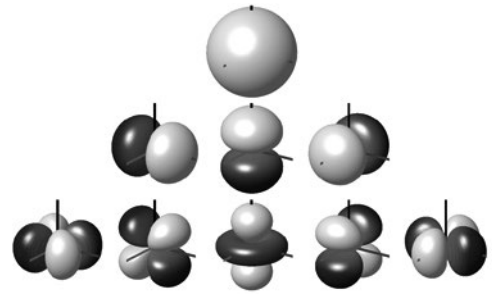
The most common '5.1' arrangement reserves the 'front centre' speaker nearest the screen for dialogue, with four around the player for spatialised content. This makes 5, plus a low-bandwidth '.1' channel for optional extra bass via an arbitrarily placed subwoofer (not shown). *Race Driver: GRID* extended this to 5.1.1, treating controller rumble as sub-sub-bass.

The ITU standard for placement of cinema speakers – allowing for emergency exits and favouring screen-centred passive content – is poorly suited to games, even for those with irregular pentagonal living rooms such as **Figure 4**. In a rare convergence, Apple, Microsoft, and Sony all supply panners presuming the square 5.1 layout of **Figure 5**.

## AMBISONIC SOUNDFIELDS

The Ambisonic approach, ideal for VR, means a soundfield can be recorded and processed scalably and independently of any speaker layout. In **Figure 6**, the top blob represents the mono, omnidirectional sound. The middle three 'first-order' – or B-format components – convey the left/right, up/down, and front/back aspects. Optional extra 'higher-order' channels add more detail. The bottom row corresponds to second-order spherical harmonics, and so on.

Ambisonic panners use all the speakers, not just adjacent pairs, to give solid directional cues for a central listener. Just picking the nearest



▲ Figure 6: Ambisonics, invented in Oxford by Michael Gerzon in 1970, splits 3D sound into spherical harmonics. The more you use, the greater the spatial resolution.

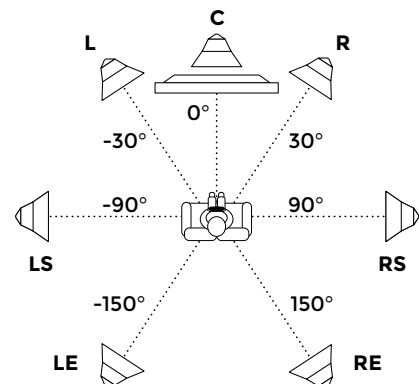
two is commonly done, but doesn't work well to the sides or rear, as Blumlein realised.

7.1 speakers give better horizontal perception, without the player having to sit right in the middle. After some lobbying, the recommended cinema layout accommodates **Figure 7**'s symmetrical hexagonal arrangement. Two channels stay dedicated to dialogue and deep bass, but now with six for positional cues, it's practical to move into true 3D.

The 3D 7.1 alternatives shown in **Figure 8** deliver true 3D in the middle of an octahedron of speakers, using the extra pair in 7.1 high at the back and low below the screen, and it's more compatible with 5.1 surround than the horizontal 7.1 rig. About 40 games support this, mostly on PC; the six corner speaker signals can be losslessly transcoded into Ambisonic B-Format, then spatialised for any number of speakers in a sphere around the listener.

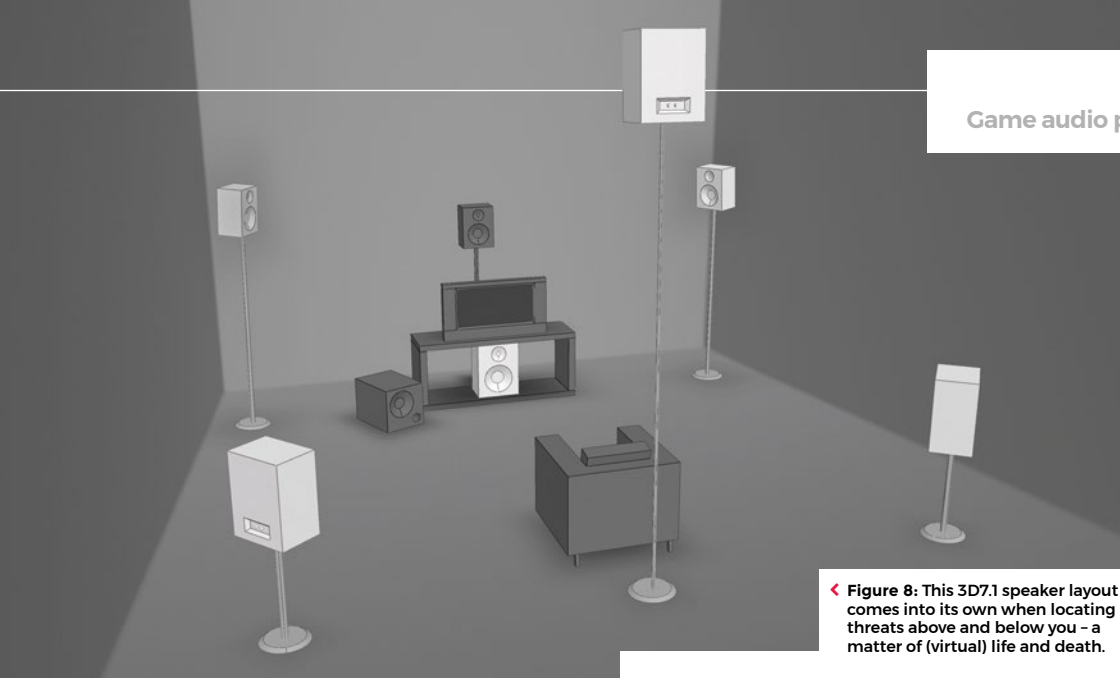
## REVERBERATION-TION

Reverb is the most expensive audio effect, and the most evocative. **Figure 9** shows some of



▲ Figure 7: This 7.1 speaker layout is recommended for flat games, and suits movie mixes, too.





◀ **Figure 8:** This 3D7.1 speaker layout comes into its own when locating threats above and below you – a matter of (virtual) life and death.

many reverb paths in a room, and **Figure 10** charts their build-up over time. Reverb can be captured by recording the pattern of echoes of a pulse in the real world, known as the impulse response, or faked by generating a few early echoes with a delay-line, and a warm mush of late reverberation with filtered feedback.

The first technique sounds most realistic – until you move away from the sampled position – whereas the second is more flexible. Make sure the controls, especially those related to timing, can be continuously adjusted without clicks, or they'll be useless in games. Sadly, a lot of reverbs designed for music studios fall over badly at this point.

Another useful cue, especially on headphones or surround speakers, relates to the 'size' of sound sources. The spread and diffusion of large sounds, known as 'volumetric emitters', should increase as they're approached. Most older game audio runtimes only support

**“Reverb is the most expensive audio effect, and the most evocative”**

point sources and recommend horrible-sounding hacks using multiple points to give some idea of the extent of a sound.

Similarly, the listener is not a pinhead and missiles should not flick from one side to another as they whistle overhead or between your legs. For a passing moment they should seem almost in your head, and transition fast but progressively around it, lest the excitement of a rocket up the bum will be wasted. It's these brief

moments that make or break the player's sense of immersion and agency.

**UNDER THE BONNET**

This has been a tour of modern game audio, from the top down. To explain more about the inner workings, including those magic six lines for the five-knob filter, and how to pan sounds in 3D so you can follow what's moving around beyond your vision, I plan to reveal all in a future article, uncovering game audio from the bottom up. 🎧

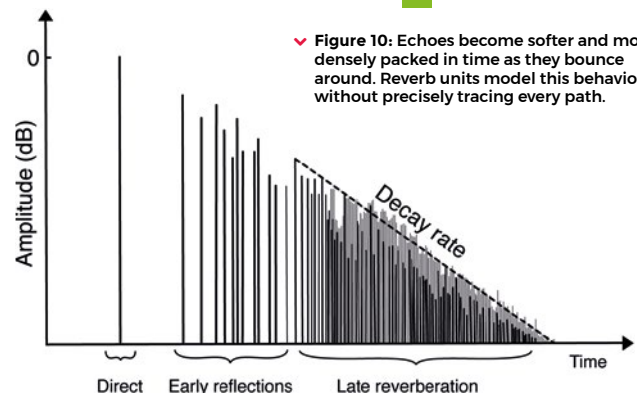
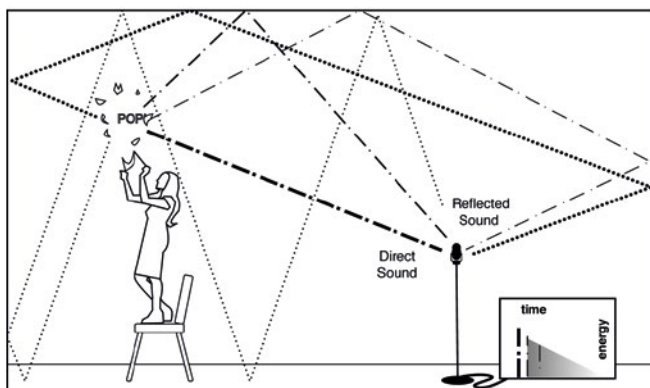


^ **Capturing the reverberant 'impulse response' of the narrow rock-pass at Troller's Gill in three dimensions, for the openairlib.net research project. Spot the mic and laptop?**

**FLEXI-AUDIO**

There's a difference in performance of a factor of about 50 between cheap phones and tablets and high-end PCs and consoles, but the most successful game franchises straddle them all, and need flexible audio systems to prevent glitching at the low end, or invidious comparisons with first-party titles at the top.

▼ **Figure 9:** Indoor sounds bounce repeatedly off the ceiling, walls, and floor as they make their way to the listener or microphone.



▼ **Figure 10:** Echoes become softer and more densely packed in time as they bounce around. Reverb units model this behaviour, without precisely tracing every path.



# Designing your first VR game

From sound to movement, here are some important things to consider before you start making your first VR experience



**AUTHOR**  
**SAM ROACH**

Sam is an XR engineer with a passion for immersion, and a love for games. Working on the bleeding edge of technology, she faces the future head-on. All opinions are her own. Follow her on Twitter: [@samroach0305](https://twitter.com/samroach0305)

# W

ith the release of the Oculus Quest headset, it's now easier than ever for players to start getting into virtual reality games. It's finally starting to feel

like we're getting a taste of what Ernest Cline envisioned when he wrote *Ready Player One*.

If you're thinking of creating your first virtual reality game, I've devised some industry design tips to bear in mind. These will focus on modern headsets supporting six degrees of freedom (6DOF) – that is, hardware which can track location in a space, such as the Oculus Rift, Oculus Quest, and HTC VIVE.

## CHOOSING AN ENGINE

There are a number of different engines on the market, but for first-time developers, I'd

recommend Unity or Unreal Engine (UE4). They use different coding languages, perform differently, and also have different costs (although both are free to get started with).

UE4 games can be developed using C++ or its own visual scripting language, called Blueprints. This allows almost anyone to get started without getting weighed down with code; for many, visual logic is easier to pick up than text-based languages. Another advantage of UE4 is that, when creating a new project, you can begin developing with starter content – this gives you the ability to teleport and grab items before having to write any code, and you'll also have access to all of the blueprints to edit and change the interactions and experience. This is a useful way to understand logic if you haven't had much prior experience.

♥ Yes, you will need some VR kit too.







▲ It's important to direct a user's attention, but remember you have 360 degrees of scrutiny. (Image credit: Virtual Umbrella/Ryan Winterbotham)

Unity, meanwhile, uses the C# coding language. There are a number of free tutorials on Unity's website – including one called 'VR Best Practice' – which could potentially take someone with no coding skills to a fairly professional level. This may incur more startup time as the user gets used to both the engine and coding as a language.

### DESIGN: KEEP IT SIMPLE

It's easy to attempt too much when you design your first game. Bear in mind, though, that you're using new technology, learning a new skill, and you don't want to get lost in the process of creating your debut VR masterpiece.

One of the ways to keep a VR game simple is by limiting the number of interactions. Just because an action isn't mapped to every one of your buttons, doesn't mean that it will be less immersive. *Beat Saber* is an excellent example of a game with minimal interactions, as the

user focuses on moving their arms and body as opposed to complex input systems and button combos.

The more complexity you add to your game, the more code logic you will have to plan and execute, and for a first game that combines art, sound, code, as well as VR, keeping your game simple will help you manage all this. Try writing your design down on paper, and then break it up into interactions and features to implement. Then, as you go, you can list bonus things you'd like to add after you've completed the core of the work.

### DIRECT THE PLAYER

Common ways of leading a player in VR include creating clear pathways for them to follow, using audio to lead them towards a location, or highlighting important objects. Generally, you'll be using at least a couple of these in unison.

Always help the player along, particularly at the start of the game. If the player doesn't understand the game from the start, their

experience will immediately become less interesting and meaningful. Remember not to assume someone has used VR before, and may not know how to use, say,

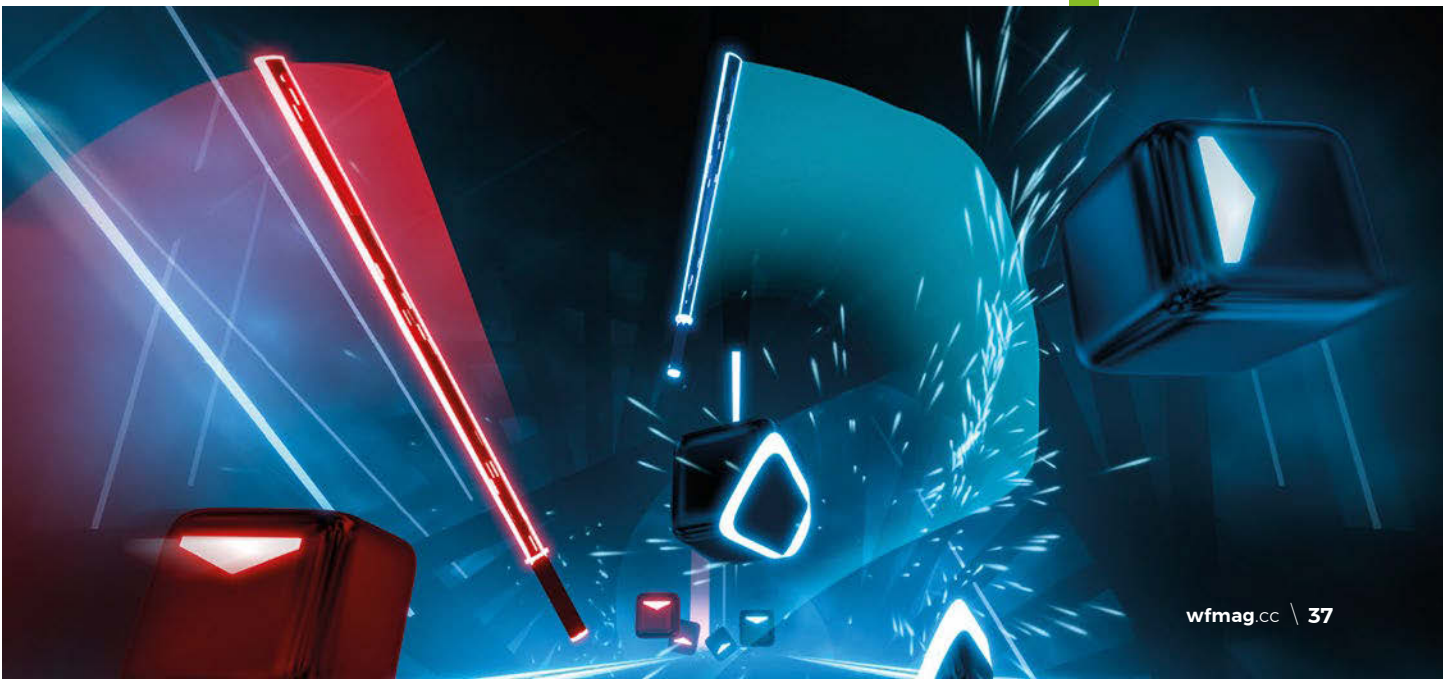
your teleport system, or which buttons to press. If a required action isn't completed within a time frame, it could be helpful to give them a prompt so they know what to do next. ➔

**“Remember not to assume someone has used VR before”**

### TAKE A LOOK AROUND

Don't assume the player will look in a specific place: just because someone can move their gaze in all directions, doesn't mean they will. For example, if an experience is seated, there's a high chance the majority of people aren't going to strain their neck to look behind them. On the flip side of this argument, it's worth thinking about what will happen if your player *does* happen to look behind them. What will they see? As ever, building an immersive world is all about attention to detail.

▼ *Beat Saber* lets players channel their inner Luke Skywalker through simple arm and body movements.

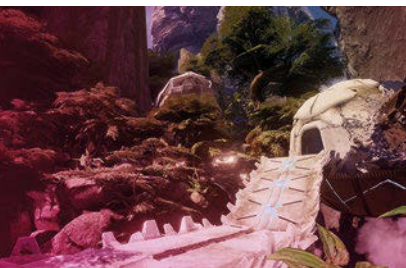


## Toolbox

Designing your first VR game



▲ The creators of *Myst* brought their brand of otherworldly adventuring into the VR realm with the gently baffling *Obduction*.



through the movement of their head, as everyone's eyes are different.

### MOVEMENT

With the development of 6DOF and improved tracking techniques, it's now less likely for a VR headset to give a player motion sickness. Nausea is more commonly due to poorly considered movement, so this is an area that can easily make or break your experience for people. With this in mind, here are some movement options to consider:

### TELEPORTATION

Teleportation allows the user to select a space within the world and then immediately move to it. This is an effective way of allowing free movement within a virtual world, and adding in short fades as the player moves between locations will make the transition feel more comfortable; without them, sudden movements between locations can feel disorienting.

When designing teleportation, try to think about ways to display which areas can and can't be accessed. These may include impassable terrains, or changing the colour of the teleportation endpoint to show that it's

selecting an inaccessible location, or preventing the endpoint from moving to areas the player can't visit.

In Cyan Worlds' adventure game *Obduction*, the user

teleports around the world, but can't move the teleport endpoint to a location they cannot access. This is made evident with clear paths, while a short section at the beginning of the game shows players where they can and can't move to.

### ON RAILS

As its name suggests, an on-rails experience typically leads the user along a preset path. This can be useful for less interactive experiences and more cinematic events, as you can lead the player to look at specific things more easily. If you're thinking of making an on-rails VR game, though, there are a couple of points to consider.

### AUDIO: MAKE IT SPATIAL

VR can engage the player's senses more naturally than traditional games, and using spatial audio can be used to create a greater sense of immersion in your virtual world.

Bear in mind, though, that information should never be conveyed through audio alone – there should always be options for visual feedback, such as subtitles. If an alarm sounds in your game, then include something visual to accompany it, such as a pulsing red warning light. The more information you can give the player, the better, particularly as this will also make your game more accessible.

### GUI

When it comes to VR, the rules are still being written when it comes to graphical user interfaces (or GUIs).

Your interface could be placed within the world itself – for example, on a computer console – attached to the player, such as on the wrist, or placed directly in the player's field of view as a head-up display.

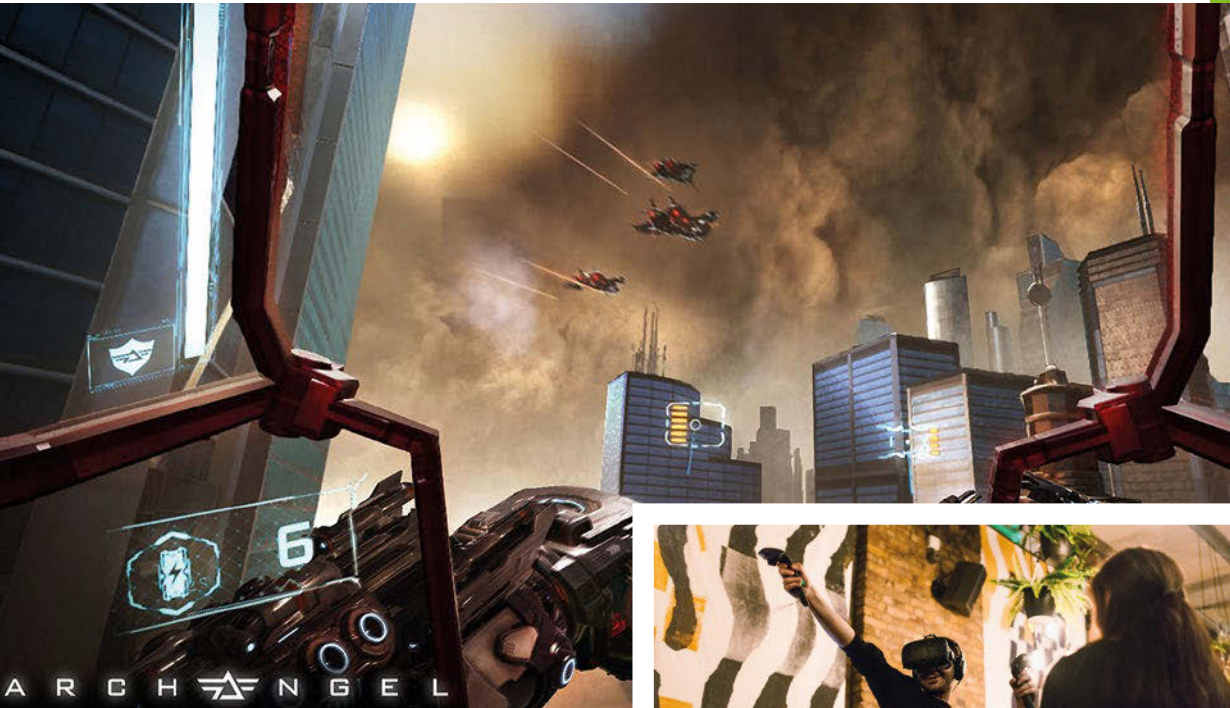
If your GUI is important to the game, you'll need to either guide the player to it, or place it in front of them so it can't be missed. Take care to position the interface at the right distance away from the player's face so that it's legible, and don't fully lock it to the head camera, as this can cause discomfort. By placing the UI in the space in front of the head camera and allowing some movement around it, you're ensuring that it's easily observed, while also helping the player focus on the text or graphics

**“It's also advisable to avoid changing movement speeds”**

### FAIR WARNING

If you have even the slightest suspicion that your game could trigger someone's agoraphobia, claustrophobia, or epilepsy, do the right thing and give them a warning. Failing to do so will not only ensure you'll receive bad reviews because you've made a player ill, but you also run the risk of ruining someone's first-ever VR experience. Let's be honest: if you're making a VR game, then you want to spread your love of the technology.





◀ Released in 2017, *Archangel* is a solid example of a VR rail shooter; its 2018 update, *Hellfire*, was even better.



◀ Use VR's ability to track the player's hands to create immersive games like *SUPERHOT*. (Image Credit: Virtual Umbrella/Ryan Winterbotham)

First, speed is key. Incorrect speed is one of the quickest ways you can make a player take their headset off. If the game moves too quickly, it can be hard for the player to keep track of what's happening, or worse, they'll start to feel ill. If you're expecting the player to interact with the world – if you're making a rail shooter, for example – setting the right speed will take some adjustment.

It's also advisable to avoid changing movement speeds: it's OK to use acceleration in a seated experience, but if a player's standing up, sudden acceleration or deceleration may cause them to counter the movement with their legs. If changing speeds are something you want to implement, try making your game a seated experience.

## JOYSTICK MOVEMENT

If you're using a regular controller for movement, then you have the added advantage of having all the other buttons to use in your game. This kind of setup is widely used with PSVR experiences.

Again, speed is key here. Movement in a VR game will never feel like walking in the real world due to the lack of haptic feedback – that is, the natural bob and gait of human motion. Try not to add extreme speed to the player's movement, at least not without letting them get used to it.

Similarly, ensure the user feels in control of their movements: for example, pressing forward

on the joystick moves the player, but if they let go, it stops. It's almost immediate to a user if the feedback loop within a game is correct, and this loop will help prevent users from feeling out of control or nauseated.

## NO MOVEMENT

Your game could also keep the player still and let events come to them, or allow them to move within the boundaries of their own space. This works extremely effectively in games such as *SUPERHOT VR* and *Loco Dojo*. *SUPERHOT* allows players to move within their space and take advantage of their hand- and head-tracking, while *Loco Dojo* brings the action to the player. This is easily the simplest implementation of movement, as all that's required is the physical tracking of the user.

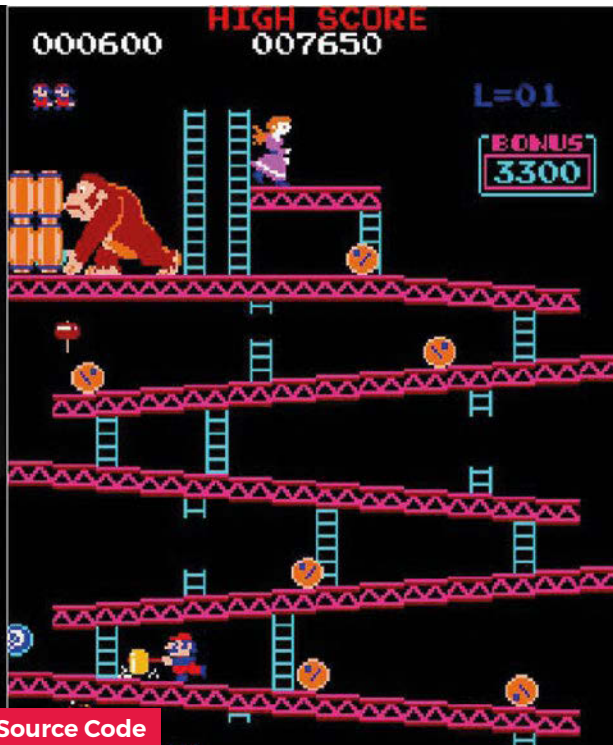
In summary, remember that different people have different levels of comfort, and that a first-time VR user will perceive your game differently from a seasoned one. Wherever possible, try to give power to the gamer in your comfort settings – particularly if these can affect their speed of movement. If your virtual world feels pleasant and inviting to interact with, then players are more likely to lose themselves in your game. 🎮



▲ With action that alters speed according to the player's movements, *SUPERHOT* offers a unique blend of strategy and action.

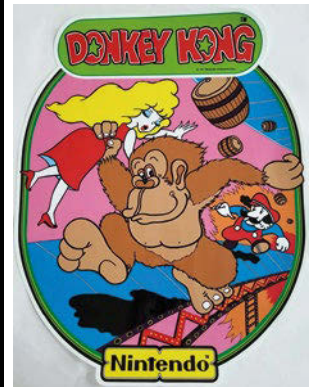
▼ *Loco Dojo* showcases a range of interactions, without the player needing to move at any point in the game.





Source Code

- ◀ Released in 1981, *Donkey Kong* was one of the most important games in Nintendo's history.
- ▼ It's fair to say Mario's changed quite a bit since this outing.



# Code your own Donkey Kong barrels



AUTHOR  
MARK VANSTONE

Replicate the physics of barrel rolling – straight out of the classic Donkey Kong

**D**onkey Kong first appeared in arcades in 1981, and starred not only the titular angry ape, but also a bouncing, climbing character called Jumpman – who later went on to star in Nintendo's little-known series of *Super Mario* games. *Donkey Kong* featured four screens per level, and the goal in each was to avoid obstacles and guide Mario (sorry, Jumpman) to the top of the screen to rescue the hapless Pauline. Partly because the game was so ferociously difficult from the beginning, *Donkey Kong's*

first screen is arguably the most recognisable today: Kong lobbs an endless stream of barrels, which roll down a network of crooked girders and threaten to knock Jumpman flat.

*Donkey Kong* may have been a relentlessly tough game, but we can recreate

one of its most recognisable elements with relative ease. We can get a bit of code running with Pygame Zero – and a couple of functions borrowed from Pygame – to make barrels react to the platforms they're on, roll down in the direction of a slope, and fall off the end onto the next platform. It's a very

**“It's a very simple physics simulation using an invisible bitmap”**

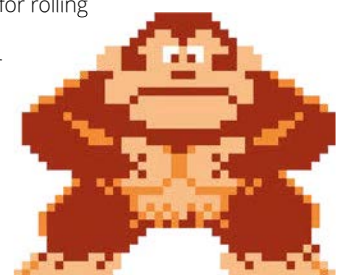
simple physics simulation using an invisible bitmap to test where the platforms are and which way they're sloping. We also have some ladders which the barrels randomly either roll past or sometimes use to descend to the next platform below.

Once we've created a barrel as an Actor, the code does three tests for its platform position on each update: one to the bottom-left of the barrel, one bottom-centre, and

one bottom-right. It samples three pixels and calculates how much red is in those pixels. That tells us how much platform is under the barrel in each position. If the platform is tilted right, the number will be higher on the left, and the barrel must move to the right. If tilted left, the number will be higher on the right, and the barrel must move left. If there is no red under the centre point, the barrel is in the air and must fall downward.

There are just three frames of animation for the barrel rolling (you could add more for a smoother look): for rolling

right, we increase the frame number stored with the barrel Actor; for rolling to the left, we decrease the frame number; and if the barrel's going down





## Rolling barrels in Python

Here's Mark's code snippet, which recreates *Donkey Kong's* rolling barrels in Python. To get it running on your system, you'll first need to install Pygame Zero – you can find full instructions at [wfmag.cc/pgzero](http://wfmag.cc/pgzero)

Download  
the code  
from GitHub:  
[wfmag.cc/  
wfmag24](http://wfmag.cc/wfmag24)

```
# Donkey Kong Barrels
from random import randint
from pygame import image, Color
import math

barrels = []
platformMap = image.load('images/map.png')
spacer = 0

def draw():
    screen.blit("background", (0, 0))
    for b in range(len(barrels)):
        if onScreen(barrels[b].x, barrels[b].y):
            barrels[b].draw()

def update():
    global spacer
    if randint(0,100) == 1 and spacer < 0:
        makeBarrel()
        spacer = 100
    spacer -= 1
    for b in range(len(barrels)):
        x = int(barrels[b].x)
        y = int(barrels[b].y)
        if onScreen(x,y):
            testcol1 = testPlatform(x-16,y+16,0)
            testcol2 = testPlatform(x,y+16,0)
            testcol3 = testPlatform(x+16,y+16,0)
            move = 0
            if testcol1 > testcol3: move = 1
```

```
            if testcol3 > testcol1: move = -1
            barrels[b].x += move
            if move != 0: barrels[b].frame += move * 0.1
            else: barrels[b].frame += 0.1
            if barrels[b].frame >= 4: barrels[b].frame = 1
            if barrels[b].frame < 1: barrels[b].frame = 3.9
            testladder = platformMap.get_at((x,y+32))
            if testladder[2] == 255:
                if randint(0,150) == 1:
                    barrels[b].y += 20
            if testcol2 == 0: barrels[b].y += 1
            frame = str(math.floor(barrels[b].frame))
            if testPlatform(x,y+16,2) > 0:
                barrels[b].image = "bfrfront" + frame
            else:
                barrels[b].image = "bfrside" + frame

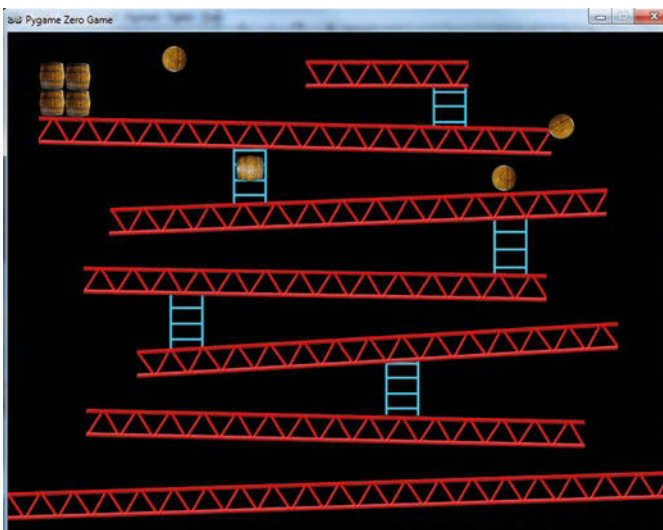
def onScreen(x,y):
    return x in range(16,784) and y in range(16,584)

def makeBarrel():
    barrels.append(Actor('bfrfront1', center=(200, 30)))
    barrels[len(barrels)-1].frame = 1

def testPlatform(x,y,col):
    c = 0
    for z in range(3):
        rgb = platformMap.get_at((x,y+z))
        c += rgb[col]
    return c
```

a ladder, we use the front-facing images for the animation. The movement down a ladder is triggered by another test for the blue component of a pixel below the barrel. The code then chooses randomly whether to send the barrel down the ladder.

The whole routine will keep producing more barrels and moving them down the platforms until they reach the bottom. Again, this is a very simple physics system, but it demonstrates how those rolling barrels can be recreated in just a few lines of code. All we need now is a jumping player character (which could use the same invisible map to navigate up the screen) and a big ape to sit at the top throwing barrels, then you'll have the makings of your own fully featured *Donkey Kong* tribute. 🐼



◀ Our *Donkey Kong* tribute up and running in Pygame Zero. The barrels roll down the platforms and sometimes the ladders.

# Upcoming events for game developers

Courtesy of Ukie, here's a selection of game dev events coming up this autumn

## GET INVOLVED

Do you have an online tutorial you'd like to share with readers? Have you created an online resource that other game developers might find useful? Maybe you have a local code club you're keen to promote? If you have something you'd like to see featured in the Directory, get in touch with us at [wfmag.cc/hello](http://wfmag.cc/hello)

➤ **18–20 October**  
**Autistica Play: Relax Mode**  
An online fundraising event where gamers come together to play their favourite relaxing games – all in the name of raising awareness of autism.  
[wfmag.cc/relax-mode](http://wfmag.cc/relax-mode)

➤ **29–30 October**  
**Ukie Student Game Jam**  
Teams of Ukie students from institutions all across the UK aim to create the best game in 30 hours.  
[wfmag.cc/student-game-jam](http://wfmag.cc/student-game-jam)

➤ **2–3 November**  
**Pocket Gamer Connects: Jordan**  
Indie developer and Vlambeer founder Rami Ismail is one of the key speakers at this November's mobile games industry conference in Jordan.  
[wfmag.cc/pg-jordan](http://wfmag.cc/pg-jordan)

➤ **12 November**  
**Realised Realities Masterclass**  
Find out more about storytelling – and how it's being affected by AR and VR – in Jed Ashforth's one-day course.  
[wfmag.cc/realities](http://wfmag.cc/realities)

➤ **13 November and 27 November**  
**Ukie Student Conference**  
A day of inspiring talks, workshops, and an expo area, to be held at Staffordshire University on 13 November and at Abertay University on 27 November.  
[wfmag.cc/student-conf](http://wfmag.cc/student-conf)

➤ **21–22 November**  
**Slush Helsinki**  
A Nordic event aimed at startup companies and indie developers looking for investors, customers, talent, media, or advisors. They also have saunas.  
[wfmag.cc/slush](http://wfmag.cc/slush)



➤ Described as "like Cirque du Soleil and Burning Man", Slush Helsinki is designed to connect startup tech companies with investors.





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## Interface

FUZE4: Bringing BASIC to the Switch



# FUZE4

## Bringing BASIC to the Switch

FUZE Technologies tell us all about the benefits - and challenges - of bringing BASIC to the Nintendo Switch

WRITTEN BY DAVID CROOKES





**F**

or a certain generation, our introduction to coding came via BASIC. Even if you don't consider yourself a talented programmer, you may recall

typing something along the lines of the following:

```
10 PRINT "You smell!"
20 GOTO 10
```

Invented by John G. Kemeny and Thomas E. Kurtz for Dartmouth College's General Electric computer system in 1964, BASIC was the go-to programming language for millions of users for decades. It gave people the confidence to dabble and, in some cases, lay the foundations for a glittering coding career.

**“BASIC was  
the go-to  
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What made BASIC (or Beginner's All-Purpose Symbolic Instruction Code) extra-special was that it was built into most 8-bit computers. It was there, ready to use at the flashing cursor prompt, almost begging the user to type something. Today, that may appear rather quaint, but here we are in 2019 with an updated version of BBC BASIC making an appearance on the Nintendo Switch.

Introducing FUZE, then, which has long been available to download for Windows, Linux, and Raspberry Pi. The latest version – FUZE4 Nintendo Switch, or F4NS as it's also known – aims to provide an accessible coding environment on the console, and invoke some ➔

Released in 1984, Family BASIC brought the language into the living rooms of Japanese NES owners.



### FAMILY BASIC

Although consoles are generally thought of as closed systems, Nintendo once made a concerted effort to get its customers into coding. Family BASIC, a combination of keyboard, peripheral, and cartridge-based software, came out on the Japanese Family Computer in 1984. The software was developed by Hudson Soft, and allowed users to draw sprites, create sound, and then save their programs to an audio cassette. Sadly, Nintendo never got around to releasing a version for the NES in the US and Europe.

of the magic seemingly lost during the transition from 8-bit to 16-bit computers all those years ago.

"The text-based screens and flashing cursors on 8-bit computers were replaced with graphical user interfaces when 16-bit machines were introduced," explains Philip Oliver, who, along with his brother Andrew, cut his coding teeth using BASIC on the ZX81, Dragon 32, BBC Micro Model B, and Amstrad CPC. "This removed the ability for the curious to start playing around with programming, and it had a real negative impact."

During this generational shift, BASIC became something that needed to be booted from a floppy disc on more advanced machines such as the Amiga or Atari ST. "But BASIC was designed to be easy and accessible for first-time users, and it encouraged people to tinker and learn the fundamentals of coding," Oliver continues. F4NS aims to get people tinkering once more.

### CODING BACK THE YEARS

Once F4NS is installed it'll be available to users with a tap – not quite as quickly as it was on, say,

the ZX Spectrum, but not far off. "It's possible to turn on your Nintendo Switch, load F4NS, and have it auto-start in the text editor with your current project," says Jon Silvera, managing director of FUZE. "It takes about five seconds from selecting the F icon on the Switch's home screen, and you can then type some code and enter 'run', just like the good old days."

It's taken the developers two years to get to this point, having been given Nintendo's approval for the project in May 2017. From the start, they wanted a system where you could jump right in, and Switch's portability made it the perfect candidate. "It's an ideal platform because of the 'play anywhere' accessibility factor," Silvera says.

Ironically, F4NS also opens up the possibility of direct coding on consoles – the machines that originally removed any programming ability. "With the NES and the Sega Master System, programming at the BASIC level pretty much disappeared," Silvera

affirms. "It was a shame, because back in the 1980s, when the language was widely adopted for the education channel, we had more coders than we knew what to do with after just two or three years. BASIC also transitions to advanced languages perfectly, allowing people to learn about loops, variables, and 'if-then' statements – concepts that can be transferred to any other language."

With that in mind, F4NS focuses on text-based coding rather than a block-based environment like Scratch. But like Python, it isn't trying to be a simplified, high-level language, either.

Online documentation and asset packs should make F4NS more approachable for beginners.



**"Sourcing, testing, and implementation takes time"**



```

1 // The Dizzy name and graphics are copyright
2 // The Oliver Twins and Codemasters
3 // Demo code by Jon Silvera
4 sky = loadimage("The Oliver Twins/Dizzy_background", 1)
5 dizzy = [.img = 0, .sprite = 0, .x = 0, .y = 0, .anim = [0], .frame = 0, .check = 0]
6 cam = [.x = 3200, .y = 2200]
7 setup()
8 loop
9   clear()
10  control()
11  updateDisplay()
12  drawMap()
13  updatesprites()
14  drawSprites()
15  debug()
16  update()
17  repeat
18
19  function updateDisplay()
20    drawimage(sky, {0, 0, imagesize(sky).x, imagesize(sky).y}, {0, 0, imagesize(sky).x * 3, imagesize(sky).y * 3})
21    setspritelocation(dizzy.sprite, dizzy.x, dizzy.y)
22  return void
23
24  function control()
25    joy = controls(0)
26    setspritecollisionshape(dizzy.sprite, shape_circle, 30,66, 0)
27    if joy.lx <= -0.1 then
28      if dizzy.x > cam.x then
29        dizzy.x += joy.lx * 4
30      else
31        dizzy.x += joy.lx * 4
32        if cam.x > 1000 then
33          cam.x += joy.lx * 4
34        endif
35      endif
36    endif
37

```

◀ A demo version of *Dizzy*, made in just 80 lines of code. It includes multi-layered moving backgrounds, an animated, walking and jumping character, and platform collision mapping.



"Computers don't think in blocks, libraries or ready-made windows and dialogue boxes," Silvera says. "Computers think in on and off switches, or ones and zeros and, for me, it's a case of 'deal with it.'"

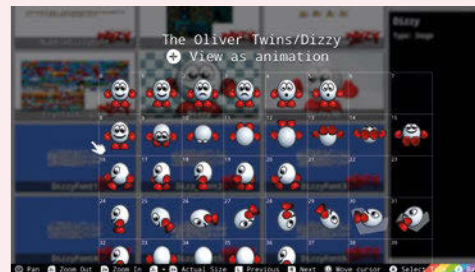
Even so, he insists F4NS can be taught to seven-year-olds. "We have managed to retain the simple-to-grasp syntax of BASIC but allow advanced coding techniques for maximum flexibility and versatility," Silvera argues.

### SWITCHED ON

F4NS makes good use of the Switch's power, with updated commands and built-in functions to allow for fast 2D and 3D graphics. There's a sprite editor that includes scaling, rotation, animation, velocity, and collision detection, while the language also supports tiles and sprite sheets, ambient lighting and shadows, dynamic 3D terrain, a pick of 1600 shapes, and a 3D camera, among a range of other features.

An important part of F4NS's offering is its library of assets, and so far, 31 artists have contributed to the various packs that allow coders with little artistic prowess of their own to produce some solid results. There's an array of vehicles, buildings, backgrounds, and characters available to choose from, and Silvera says more asset packs will be available to download over time. The Oliver Twins have contributed assets from their past hits, as have scores of other developers. "We've even thrown in an animated 3D Dizzy for good measure," Silvera says, referring to the Olivers' most famous character. "But it's also possible to draw your own artwork."

The decision to make use of 3D has, however, caused some issues. "Users need to be able



to choose from thousands of game characters and scenes and to be able to mix them up, edit them, and so on," Silvera explains. "But 3D adds an entirely new problem, which is why there have been some delays in developing F4NS. It's clear that 2D graphics are already in a usable format and are easy to convert, whereas 3D models can be from a variety of different base formats and then bone, animation, and even materials can suffer through conversion. The sourcing, testing, and implementation takes an enormous amount of time."

The developers have put a similar amount of thought into programmable audio. "We wanted the ability to create sounds and to program ▶

## OPENING THE GATES

BASIC ruled the home computer scene for many years. Microsoft produced multiple versions of the language, starting with Altair BASIC, its first product, in 1975. They were subsequently licensed to run on machines such as the Commodore 64, Atari 8-bit, and even the Apple II (on which it was known as Applesoft BASIC).

- ✓ With its on-screen keyboard, F4NS offers the ability to code on-the-go, running the games in an instant on the touchscreen.



## Interface

FUZE4: Bringing BASIC to the Switch



### TO INFINITY AND BEYOND

While living in South Africa, future SpaceX founder Elon Musk used a programming book to teach himself BASIC. In 1984, when Musk was 12 years old, he developed a space-themed PC game called *Blastar* which he sold to PC and Office Technology magazine for \$500. You can play a version of his game online at [blastar-1984.appspot.com](http://blastar-1984.appspot.com).

▼ Will Tice, an established pixel artist and talented programmer, has produced the retro-inspired game *Super Mega Arena Blaster*.



▼ The FUSE4 map editor in action. Collision areas can be placed, sized, and labelled, and there's support for multiple layers.



them in real-time. It's probably a homage to the Commodore 64 more than anything, but we also think it's better if you learn how sounds are made up – although we've included thousands of sound files from bellowing orcs to a landlord with a Brummie accent."

### LEVELLING UP

If it's going to take off, however, F4NS needs to hook in fledgling coders quickly. Despite the Joy-Con and touchscreen support, as well as the option to program via a USB keyboard ("Sitting in front of a monitor is very reminiscent of the original home computer environment," Silvera says), if the learning curve is too steep, F4NS will still put newcomers off.

Thankfully, a video promoting the language shows would-be users a couple of commands that some readers will immediately recognise:

- 1 loop
- 2 print ("hello world")
- 3 update ()
- 4 repeat

Such a simple program with instant results was the best method of encouragement back

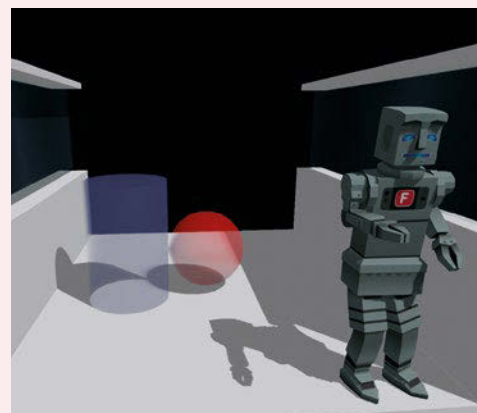
then, and it could be argued that its impact remains high today. Vincent Baillet, who worked for Loricel in France between 1984 and 1994, certainly thinks so. "Unity is good for making games, but you need to spend some time with tutorials in order to start doing anything," he says. "I suppose F4NS simplifies the first steps. If you can have rewarding results within minutes, then you will have the motivation to continue coding. Only the most motivated people can spend 20 hours learning without results."

Despite all this, reviving a programming environment from the past isn't going to be easy. Tech expert Sean McManus, author of the book *Mission Python*, began coding on an Amstrad CPC, and his encouragement came from the strong ecosystem which surrounded the computer. His BASIC programmes would be printed in magazines such as Amstrad Action, and that would earn him money and feedback.

"The main difference between the 1980s and now is that, back then, the bedroom coders were the ones making the commercial games and selling type-in titles to magazines," he says. "There was a strong shareware and public domain community too, so you could be confident you could get your programs out there to other users.

"It's not clear how shareable the programs from F4NS will be, so that might be one limitation on how much impact people can have coding on the platform, and how motivated they will be to stick with it in the long run. People will enjoy coding and sharing their work with their friends and family, though, and this could be an important first step in someone's coding career."

▼ F4NS is also capable of displaying transparent objects.





## CON-FUZE-ION?

In order to establish FUZE, the company has been delivering coding workshops to schools, STEM events, and holiday clubs across the country, chalking up more than 600 so far. Tens of thousands of children have been taught as a result, but others can benefit from an assortment of online tutorials, reference guides, and example programs.

"I was lucky enough to be exposed to a small amount of programming in college and again in grad school," says American programmer Dona Bailey. "It sounds fun and amazing to me that kids and young people – and anyone else too, I imagine – can take up coding as an extension of playing games on a console."

Bailey knows a thing or two about programming – on joining Atari's coin-op division in 1980, she created the hit arcade game, *Centipede*. "Anything that leads someone into coding seems good to me, and it seems like the ultimate prosumer move, in that consumers of an art form such as video games are moving on as a producer of the same art form," she says.

But are we in danger of being exposed to too many programming languages, ultimately making it more difficult to know which ones are best suited? Not according to some of the people we've spoken to.

"Programming languages mostly share a common ground, and it's not so difficult to switch from one to another," argues Baillet. "It's much more difficult to switch from one operating system to another, because differences can be huge between environments: switching from JavaScript to Swift is easier than switching from HTML4 to iOS, for example."

Oliver agrees. He says the National Curriculum suggests students learn two or more programming languages to encourage variety, and he believes a focus on gaming will spark interest, suggesting motivation is an area where standard studies are "failing miserably." "Kids love playing games, and F4NS taps into that enthusiasm," he argues. "They need a programming language that delivers the tools that allow them to make their own games, and so learn important technical skills."

Oliver also says there's a huge void between Scratch and Blockly, taught at Key Stages 1 and 2 in schools, and C++, C#, Java, Lua, and Python, taught at degree level. "It's important that Key Stage 3 and 4 students have an easy and fun



▲ F4NS's built-in functions mean it's possible to make 3D games that move at a decent pace.

text-based language to migrate to, and F4NS can bridge that gap," he says.

He points to his own past as proof that learning different languages can pave the way to a bright future. "My brother and I progressed from using BASIC to learning 6502 and Z80 Assembly, which resulted in us making more

**"This could be an important first step in someone's coding career"**

than 50 critically and commercially successful games," he concludes. "We also learned 68000 Assembly and finally C with the advent of PlayStation and, in the process, set up Blitz Games. Learning a language like BASIC was far from counter-productive for us, and many IT and software engineers today trace their roots back to the language. We feel F4NS will have the same positive effect." 🗨

▼ By hooking a USB keyboard to the Switch running F4NS, the set-up starts to resemble a traditional computer.



## Developer Profile

# Special FX

For five years, the Liverpool-based studio brought a welcome sense of joy to the British games industry

It's one thing for a developer to gain a reputation for making games that are technically immaculate or pretty to look at.

For a studio to have a proper house style – where you can recognise their games within a second or two of them loading up – is comparatively unusual. But Special FX, founded in Liverpool in 1987, had style to spare: their games had flashes of humour, technical brilliance, and

contained some of the best graphics ever seen on the ZX Spectrum.

What's all the more remarkable is that a large proportion of Special FX's games were of the licensed variety: either conversions of Japanese arcade machines or tie-ins for blockbuster movies. Even in the studio's lesser games, though, there were bursts of imagination among the rough edges.

Special FX's yen for licensed games was written into its DNA from the beginning. The studio was co-founded by Paul Finnegan and Jonathan 'Joffa' Smith, both former employees of Ocean Software – a Manchester-based company that, earlier in the eighties, had struck gold by making licensed games. Joffa Smith made a name for himself as an expert programmer and graphic artist behind some of those licenses: he delivered a technically impressive conversion of Konami's *Green Beret* on the ZX Spectrum, and created one of the most surreal movie tie-ins of all time with *Cobra* – very loosely based on the Sylvester Stallone action flick – both released in 1986.

## GROWING THE RANKS

The following year, Smith and Finnegan decided to break away and form their own studio – though the two companies would retain close links, as Ocean used Special FX as an external developer on many of its largest licensed games, and published almost all of its output over its five-year existence. From their offices in central Liverpool, Special FX quickly amassed an impressive team of artists and coders, among them Jim Bagley (who'd cut his teeth on the likes of Mike Singleton's *Throne of Fire*) and artist Karen Davies, who'd previously worked on the cult classic *Frankie Goes To Hollywood* at Ocean Software.



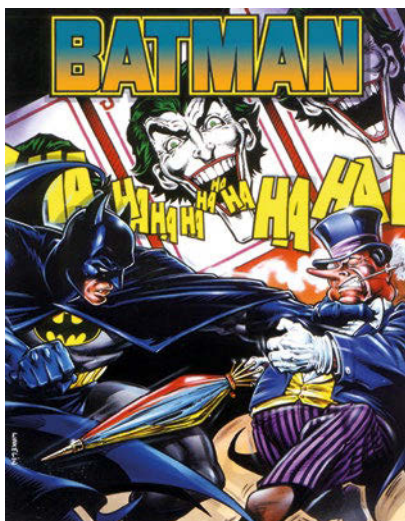


^ With pixel artists like Charles and Karen Davies in the fold, Special FX also had some of the best ZX Spectrum loading screens ever produced.



^ One fascinating bit of Special FX trivia: co-founder Joffa Smith created the computer displays for the cult BBC series, *Red Dwarf*, on an Atari ST.

What was impressive about the studio was how, as their ranks of artists and programmers grew, their games retained a distinct and immediately recognisable flavour. This was partly thanks to Karen and Charles Davies' pixel art – its chunky, bold quality was evident right from *Hysteria*, Special FX's first offering, an action game that involved rushing along and punching enemies across three periods in history. Although not the studio's best title, it was still fast-paced and filled with Special FX strangeness, from the luxuriant hair of its hero to its curious enemies (skeletons, horses, giant two-headed beasts). Better was still to come: there was *Firefly*, a free-roaming, top-down shooter and a technical marvel programmed by Smith. There was *Gutz*, an action-adventure



^ Thanks to artist Bob Wakelin, Special FX's covers were frequently stunning. Wakelin also designed the studio's logo.

that, brilliantly, took place in the maze-like innards of a giant monster.

Then there were all those licensed games mentioned earlier. Unusually, Special FX appeared to put just as much care into these as it did into its original projects – 1988's *Batman: The Caped Crusader* was packed with detail and charming flourishes. An action-adventure that emphasised solving puzzles over

### “Special FX appeared to put just as much care into licensed games as it did into its original projects”

busting heads, it unfolded as a series of comic book panels that overlaid each other as the Caped Crusader trudged from location to location. *Cabal*, released in 1989, showed a different side to the studio's talents: an adaptation of an obscure coin-op, it was a military shooting game where the player gunned down enemies by catching them in a roving crosshair, while at the same time moving their on-screen character to avoid incoming bullets and grenades.

The ZX Spectrum version of *Cabal* was not only one of the computer's best action games, but also – thanks to some charming pixel art by Charles Davies – packed with far more character than the original coin-op. The same was true of another of the studio's arcade conversions, *Midnight Resistance*, released in 1990. Like *Cabal*, it was created by people who were smart enough to work with the ZX Spectrum's limitations than against them. And so, rather than try to re-create the same

macho graphics of the arcade originals, Special FX turned all the soldiers and tanks into chunky, cartoon caricatures of themselves. The results still look appealing to this day.

### RAGE-INDUCING

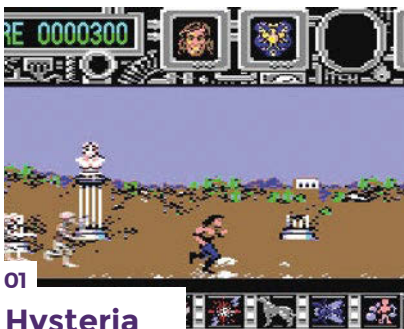
Not that Special FX's work was solely confined to the ZX Spectrum. They also ported those same games to the Amiga and Atari ST to impressive effect, and their 16-bit take on hit movie *The Untouchables* was one of the most enjoyable and polished tie-ins of its era, and featured some terrific music by resident composer, Keith Tinman. Even *Red Heat*, arguably Special FX's worst game, had moments of greatness. Cobbled together in a matter of weeks – its characters are viewed from the waist up to save time on animating walk cycles – the otherwise plodding beat-'em-up still had some neat background details, like snowmen on the first stage and cameos from Special FX developers in a hospital.

Ultimately, Special FX's existence was comparatively short-lived. By 1992, it had been rebranded as Rage Software, which had a major success with the *Striker* series of games – and was even floated on the stock exchange – before eventually going bust in 2003. Co-founder Joffa Smith stopped making games in the mid-1990s, and died in 2010 at the tragically young age of 43. For those five glorious years, though, Special FX lit up the British games industry – with their cartoon soldiers and staff cameos, the studio's games were both technically assured and full of fun. 🌐

# The Specials

## 10 of Special FX's studio highlights

Action, adventure, and proof that licensed games can be great



01

### Hysteria

Commodore 64 / ZX Spectrum – 1987

A side-scrolling action game that involved jumping and killing things, *Hysteria* was the studio's first game, and there's already a sense that they didn't take themselves too seriously: get to the end, and a slab of text informed the player that, due to a malfunction, the mission was a failure and they'd have to carry it out all over again.



02

### Firefly

ZX Spectrum – 1988

It's a testament to how rapid game development was in the eighties that Special FX managed to release four games in 1988 – and despite the pace of output, all were well worth playing. This top-down shooter, masterfully programmed by Joffa Smith, was an instant 8-bit classic, offering fluid action and a surprisingly long-lasting challenge.

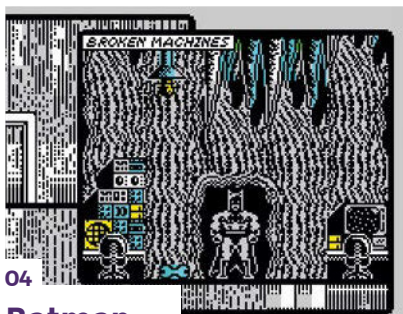


03

### Gutz

ZX Spectrum – 1988

Not quite as brilliant as *Firefly*, but still very much worth playing, *Gutz* was an action-adventure enlivened by its brilliant – if really rather icky – premise: you were a soldier stuck inside the body of a colossal alien, and each level saw you attempting to destroy one of its vital organs. We'd quite like to see a modern remake of this one.



04

### Batman: The Caped Crusader

ZX Spectrum / Various – 1988

More cerebral than most Batman games that came afterwards, Special FX's take on the hero was steeped in its comic book roots. Its graphics were bold and expressive, with each location popped up on the screen like a comic book panel, while its sometimes obtuse puzzles could keep you engrossed for hours.



05

### Hyper Active

ZX Spectrum – 1988

The confidence felt throughout Special FX was such that, early in the studio's life, it sold one of its games to classic magazine Sinclair User to be given away on a cover tape. A space-based action game vaguely akin to *Defender*, it was a solid advertisement for Special FX's development skills, and the sort of move that really does take guts.



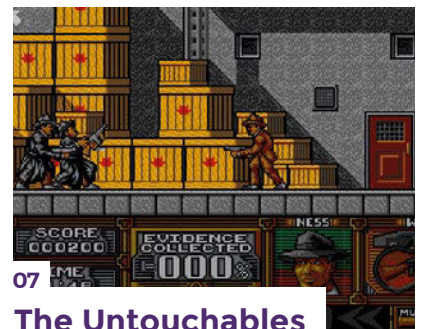


06

### Cabal

ZX Spectrum / Various – 1989

A shooter that has you controlling a soldier and his roaming crosshair at the same time, *Cabal* was one of Special FX's finest coin-op conversions: it retained much of the frantic action of the arcade original, while its graphics (which couldn't compete with the coin-op) gave it an identity of its own. Shame the bullets were so hard to see on the ZX Spectrum version.



07

### The Untouchables

Amiga / Various – 1989

This one caused a bit of controversy at the time, thanks to its occasional bursts of violence – some choice selections being a baby in a pram vulnerable to enemy bullets and a gangster's head bursting in a shower of gore from the player's dead aim. Inevitably, these moments helped make this movie tie-in one of the most memorable – and best – of its era.



08

### Midnight Resistance

ZX Spectrum / Various – 1990

The arcade game was Data East's answer to *Contra*, and while the home versions couldn't hope to replicate the original's rotary joystick set-up, Special FX's handling of it was still hugely impressive – particularly the ZX Spectrum port, with its frantic action and typically chunky graphics. The 16-bit ports were nicely handled, too.



09

### RoboCop 2

Amiga / Various – 1990

Like Ocean's original, this sequel was essentially a side-scrolling shooter starring the eighties' finest cyborg law enforcer. Special FX added its own flourishes, though, including faster action and surprisingly taxing puzzle segments. One shooting minigame also contained some delightful pixel monochrome targets – a homage, it seems, to its own 8-bit roots.



10

### Hudson Hawk

Amiga / Various – 1991

Adapted from an ill-fated Bruce Willis action vehicle, *Hudson Hawk* was perfect fodder for Special FX, largely because they just had fun with it. An overblown film becomes a shrunk-down platformer, with a tiny Bruce Willis pushing crates and disabling security guards and their dogs by throwing bouncing balls. Delightfully odd.



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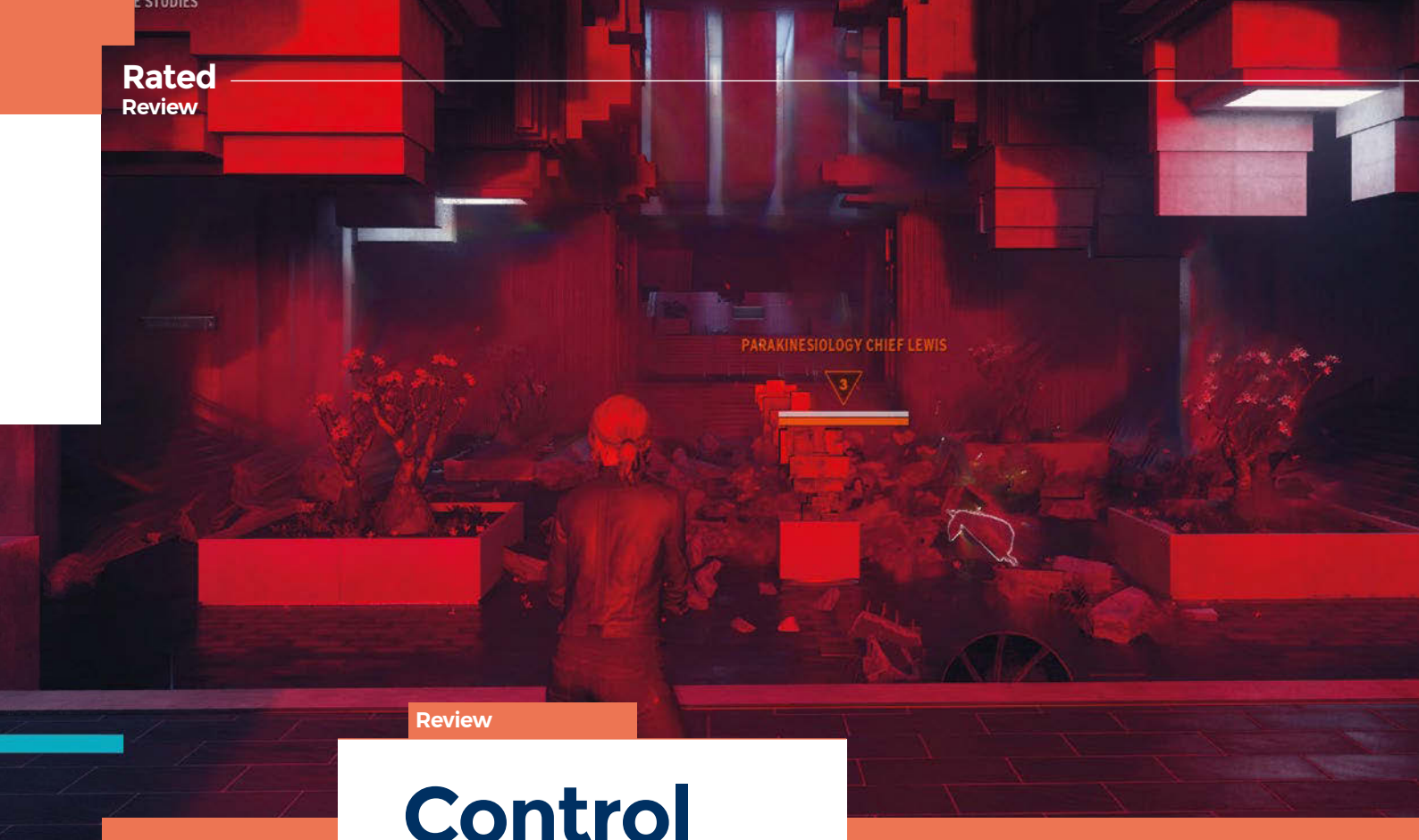
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Rated  
Review



Review

# Control

Just the right kind of insane

## Info

**GENRE**  
Action-adventure

**FORMAT**  
PS4 (tested) / XBO / PC

**DEVELOPER**  
Remedy

**PUBLISHER**  
505 Games

**PRICE**  
£49.99

**RELEASE**  
Out now

REVIEWED BY  
Alan Wen



▲ Objects of Power range from the mundane to the bizarre. Either way, interacting with one will basically grant you a new ability.

**H**alfway through *Control*, protagonist Jesse Faden aptly describes the game with the following thought: “I am in an infinite building leading to different dimensions, and I never want to leave.” That building is The Oldest House, which is home to secret government organisation, the Federal Bureau of Control. It’s a formidable, Brutalist Manhattan skyscraper, though in reality (or rather beyond reality), its interiors defy space and logic.

There’s a great atmosphere and abundance to *Control*’s world-building, as its seemingly ordinary offices introduce ever-stranger mysteries, and Remedy have fun indulging in *Control*’s New Weird literary influences. It may do so in one of the most rote ways possible, ensuring there’s an endless trail of memos and correspondence to stop, pick up, and read (though why wouldn’t you find tons of paperwork in an office?), but the writing is also as funny as it is intriguing, and avid readers of the online SCP Foundation will enjoy gobbling all this up.

But as fascinating as The Oldest House is, bolstered by incredibly strong and creepy sound design that makes using headphones a must, once you peel back the mystery on the surface, it’s all in the service of a rather straightforward and underwhelming plot. Jesse’s trying to find her brother Dylan, who was taken away by

the Bureau when the two were just children. But on arriving at the Bureau, and unwittingly becoming its new director, you find that your obstacle to finding Dylan isn’t the FBC but rather a malevolent paranatural force dubbed the Hiss that’s suddenly invaded the Oldest House – naturally, you’ll be spending a good deal of your time putting them down.

With the shape-shifting gun you wield referred to as the Service Weapon, *Control* would like to pretend that it isn’t a third-person shooter, though it still mostly is. As well as shooting, though, you also unlock telekinetic powers – for flinging anything from office furniture to fragments of concrete from the walls – as well as the ability to dash, evade, raise debris as a shield, and even levitate. (The latter suffers from being just a bit too, well, floaty for traversal.)

*Control* isn’t a cover shooter, even though at times you’ll want to make sure you’re behind something as certain enemies have a knack of unexpectedly one-shotting you. Rather, the swarming movements of the Hiss, sometimes spawning from all sides, mean that you need to keep moving at all times. When things click, it can be a thrill clearing a room, and there’s a comic novelty to pulling a distant object towards you and knocking out a nearby enemy; as you upgrade your skill tree, you’ll be able to not only fling back enemy grenades and rockets,





but even turn weakened enemies into so much hurling fodder.

Yet combat doesn't really evolve so much as set into a routine rhythm of unloading your Service Weapon's ammo, before switching back to your psychic powers while you wait for the former to recharge, and then back to the Service Weapon as you wait for your psychic energy gauge to recharge – and expect to do that a fair bit when some encounters outstay their welcome. Perhaps the most irritating part of this loop is that as you're mostly fighting at a distance, the only way to regain health is from collecting blue crystals dropped by defeated Hiss, which then means rushing into harm's way.

Then there's the Hiss themselves. Although varied in weapons and skills, they aren't particularly distinct from a visual standpoint. When taking longer than a second to identify your threat can often be fatal, you're more likely to resort to instinctively firing or flinging whatever you've got and hoping for the best.

**“There's a comic novelty to pulling a distant object towards you and knocking out a nearby enemy”**

With much of the optional side stuff involving facing tougher Hiss – some which you're clearly not meant to take on before you've upgraded your skills or reached the post-game – their presence ultimately determines how much of The Oldest House you want to explore. The randomly triggered, time-limited events

that involve traipsing back to an earlier area are perhaps the most off-putting. Not only are these encounters tougher than usual, but if you mess up and die, you instantly fail the mission and don't

get another shot until another one randomly triggers, which can feel like you've wasted your time getting sidetracked with nothing to show for it.

There were also reports of performance issues at launch, specifically on base PS4 and Xbox units, but even on a PS4 Pro, I ran into frame rate dips. It's more egregious in the latter half when you're dealing with more enemies and effects, though the game also has a habit of freezing just after you load up a checkpoint.

*Control's* a conflicting result for Remedy. It's undoubtedly their most confidently striking work for some time, yet I can't help but think of The Board, the mysterious entity you encounter early in the game, and the strange and often baffling way it communicates with Jesse. Ultimately, you're likely to come away from *Control* with similarly contradictory messages. 🗨

▲ Remedy still can't resist dropping in some live action, though fortunately the cross-media is more successful here than in *Quantum Break*.

## HIGHLIGHT

The more you explore The Oldest House, the further it veers from Brutalist office architecture to more unusual and impossible environments such as the enormous Black Rock Quarry, which looks like the place where the monoliths from *2001: A Space Odyssey* were made. By far the standout is the Ashtray Maze. No spoilers, but you'll want to crank the volume up.

## VERDICT

*Control* surprisingly makes the ordinary weird, only to make the fascinating mundane.

70%

▼ FBC researcher Emily is just one of the interesting personalities you'll meet at The Oldest House – she's especially expressive when it comes to laying out exposition.



**Rated**  
Review

Next day

Current task

**Dairy products manufacture**

Hello!

My name is Sam, I own a dairy products factory.

My dream is to make the very best goods on th...

Continue

## HIGHLIGHT

You'll find some of the most interesting challenges the game has to offer in the side missions. These are far tougher than the regular levels, but they also offer more freedom for experimentation. There's a playfulness to everything the game does, and the optional quests are where it shines through the strongest.

Review

# while True: learn()

A primer on machine learning – with cats

^ Your cluttered workspace serves as the game's menu. It's touches like these that make *while True: learn()* stand out.

## Info

### GENRE

Puzzle

### FORMAT

iOS (tested)

/ PC

### DEVELOPER

Luden.io

### PUBLISHER

Luden.io

### PRICE

£4.99

### RELEASE

Out Now

### REVIEWED BY

Harry Slater

## VERDICT

Niggles aside, this is a sophisticated and engaging puzzler with more to it than most.

# 79%

**P**uzzle games on mobile aren't exactly renowned for their complexity. A glance at the top-grossing games in the genre reveals a slew of experiences that are little more than sophisticated dopamine triggers. *while True: learn()* is the opposite: an intelligent game that educates you, instead of pushing you towards in-app purchases and preordained failures.

That's not to say this is a dusty bore that prefers lectures to fun. Look past the confusing and hard-to-search-for name and you'll find a warm and welcoming experience filled with humour, super-intelligent cats, and challenges designed to get your grey matter working.

The game starts as your cat fixes some coding problems for you. Unfortunately, because your cat is a cat, it can't speak, which means it can't point out where your programming has gone wrong. And so it falls to you to create a machine that will translate your fuzzy pal's miaows into a language you can understand.

From there, you're discovering how to play around with machine learning, using tweaked versions of real-life programs. That's where the educational aspect of the game comes in. There are optional videos and articles that go deeper into what you're creating, and for the curious, these are a massive boon.

Essentially, the game's about moving things from one side of the screen to the other,

connecting them along the way with snippets of code. You might need to send green items to one node, and red to another, so you'll drag and drop a process from the choices at the side of the screen, then tweak it to fit the parameters you need to meet.

Things get more complex as you play, with shapes, colours, and more needing to be sorted and deposited in the correct places. You can go back to earn money from earlier programs by tweaking them with new code that you've learned, and there are side-missions that add even more complex routines.

If all of this sounds a bit overwhelming,

don't worry too much. The game explains every step you take, although there are some spelling and grammar mistakes in those explanations that sometimes leave you more confused than anything. The game

adds new things on a regular-enough basis to keep things fresh, though, and expands into different territory by letting you start businesses and leave them when the money dries up.

*while True: learn()* is a rich and well put-together experience. Sometimes it's a little fiddly on smaller screens, but thanks to its slow pace, that's never too much of a problem. In a world of sugary puzzlers, *while True: learn()* feels like something much more substantial. Other games leave you wondering why you put so much time in; here, you're going to be counting down the seconds to your next go. 🐾

**“It falls to you to create a machine that will translate your fuzzy pal's miaows”**



## HIGHLIGHT

The boss battles at the end of each section are regular high points. With you stranded on a square platform at the centre of the room, the creature's arms protrude from below and manipulate the machinery against you in a series of tricky challenges. Such tight focus would have been welcome throughout.

▲ From the hub, you can recharge, upgrade your core, and speak to the few remaining residents.

Review

# Creature in the Well

The answer to climate crisis? Pinball playing robots, of course

**T**here's a beautiful sparseness to *Creature in the Well*. The patches of high-contrast colour, grainy textures, and quiet, intermittent soundtrack efficiently convey a dead world coated in desert sands. As your rusting android activates after centuries lying dormant, and makes its way to a huge abandoned machine embedded within a mountain, your task is established with minimal fuss. Bring all the machine's systems back online and make it function, against the wishes of a sinister creature that dwells below. It's a journey into stark industrial functionality, punctuated only by invading plant life and the eyes of the monster in the darkness.

Your means of interaction with the machine are also simple. Rooms are dotted with energy ball dispensers and pinball-like bumpers. You hold a button to attract and charge up balls in your vicinity, direct them with an analogue stick, then whack them away. Every contact between ball and bumper racks up energy, which you use to open doors to further rooms. Advance deep into each of the machine's systems, and you'll find the switch to turn it on again. Then return to the hub to access another.

In practice, it's not exactly the pinball action game you might expect, since keeping balls in play is rarely a priority, but you'll need a tight, fast aim and decent dodging skills. Hazards electrify portions of the floor, forcing you to watch where you stand and what you hit. You may have to

destroy a series of targets under strict time limits to clear a room, or fight off cannon fire while lining up a pinpoint shot. Each area introduces a new feature and a new charging or striking tool that helps you overcome it, then puts you through an encounter with the creature to test all you've learned.

At times, it's intense and satisfying, but it fits together too loosely. As you wander through each map of linked, branching nodes, a new screen is as likely to be a non-event as a decent challenge. Some rooms offer targets to wipe out at leisure to boost your energy supply, or minor

inconveniences that yield with a few well-timed swipes, while others quickly box you in with lasers, demanding swift, decisive action. Put together, it lacks momentum, as you

meander around repeating scenery, occasionally stumbling on a genuinely captivating task.

It's indicative of an overall roughness of design that saps confidence. You might feel you've cleared a screen by accident, or find an unintended safe spot that makes its dangers redundant. Conversely, an attempt at a difficult section might be spoiled as slow homing projectiles follow you from a previous screen, and being dumped back at the hub after each death ensures such misadventures fail to amuse.

It's easy to appreciate *Creature in the Well's* core idea – it's original, clear, and stylishly presented – but it feels undernourished and comes to life only sporadically. Perhaps it's just a little too sparse after all. 🗨

**“Intense, satisfying, but fits together too loosely”**

## Info

## GENRE

Action pinball

## FORMAT

Switch (tested) / XBO  
/ PC

## DEVELOPER

Flight School Studio

## PUBLISHER

Flight School Studio

## PRICE

£13.49

## RELEASE

Out now

## REVIEWED BY

Jon Bailes

## VERDICT

A smart concept that never quite pulls together into a convincing whole.

54%

Info

**GENRE**  
FMV

**FORMAT**  
PC (tested) / Mac  
/ iOS

**DEVELOPER**  
Sam Barlow,  
Furious Bee

**PUBLISHER**  
Annapurna  
Interactive

**PRICE**  
£15.49

**RELEASE**  
Out now

**REVIEWED BY**  
Andrew King

HIGHLIGHT

Upon completion, *Telling Lies* informed me that I had seen more than two-thirds of the database, which means I may have as much as one-third left to discover. Given the game's tendency to throw twists at the player, I'm excited to dive back in and have my world upended again.

► Each video is accompanied by subtitles, and each individual word or phrase can be highlighted to search the video database.

# Telling Lies

I cannot tell a lie, *Telling Lies* is truly great

In *Telling Lies*, your only weapon is a search bar. Writer/director Sam Barlow's follow-up to *Her Story* casts the player as a rogue government agent with a stolen NSA hard drive full of secretly recorded video conversations. Each clip is one-sided – like you're listening to an actor have a phone conversation in a stage play – and every video provides plenty of key words to fuel subsequent searches. Through this process, you'll uncover a sticky, intriguing story, memorably brought to life by a central cast of four characters played by Logan Marshall-Green, Alexandra Shipp, Kerry Bishé, and Angela Sarafyan.

Your primary verb here is googling. The act of playing the game largely means typing a word or phrase, watching a series of videos that include that word or phrase, and then searching for videos containing a different word or phrase. As I played, I was reminded of a 2017 episode

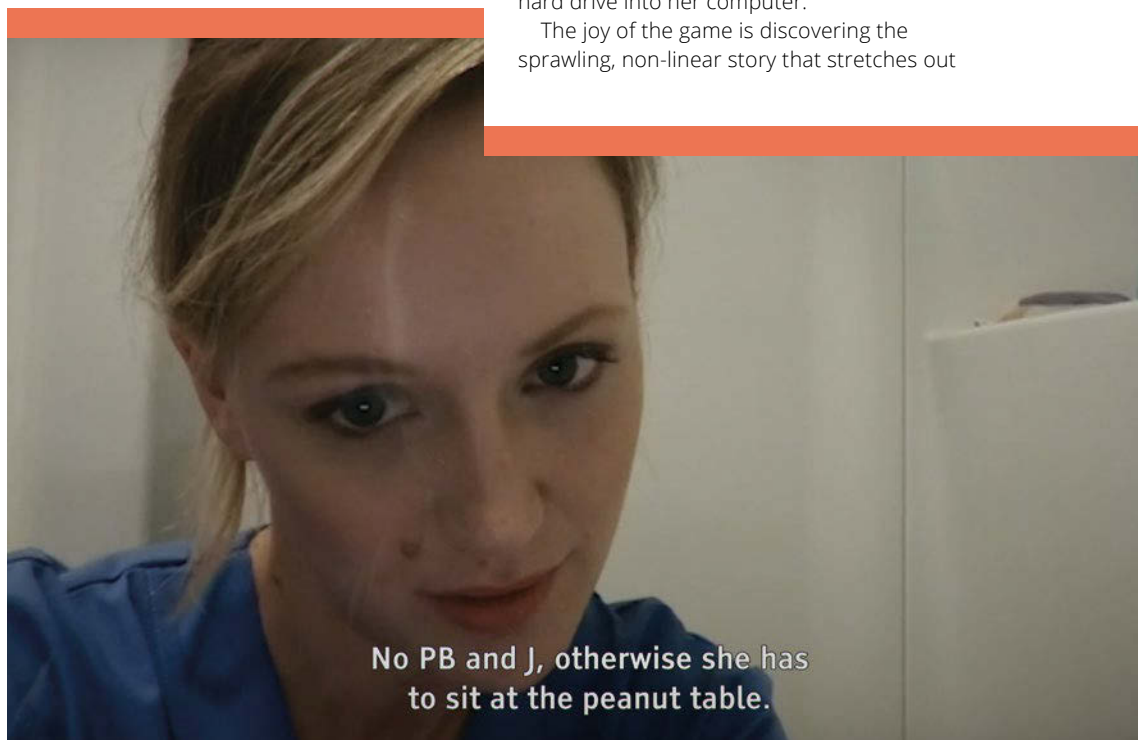
of *The Nerdist* podcast in which *South Park* co-creator, Trey Parker, derided *The Witcher 3: Wild Hunt* as a "cutscene hunter."

"There's a cutscene, and then you walk over here, and then another cutscene starts... 'Do not let this become cutscene hunter,'" he said, as if speaking to the devs at Ubisoft who'd just finished work on *South Park: The Fractured But Whole*. "It's supposed to be a game."

And yet, and yet. The best game I've played so far this year can most accurately be described as a "cutscene hunter."

I told you the actors' names up top – and not the characters they play – because even revealing their roles feels like a spoiler. Giving more information than what I've already disclosed would mean ruining a huge chunk of the investigative work that *Telling Lies* invites players into. All you know as the game begins is what the opening cutscene shows you: that your character just hurried home, locked her apartment door behind her, and plugged the hard drive into her computer.

The joy of the game is discovering the sprawling, non-linear story that stretches out



No PB and J, otherwise she has to sit at the peanut table.





▲ *Westworld's* Angela Sarafyan plays a key role in *Telling Lies*.

from that moment. *Her Story* was a psychological portrait of a young woman, limited to the breadth of her experience and the scope of an interrogation room. *Telling Lies* feels like a season of excellent, impeccably acted TV, chopped up into dozens of tantalising pieces. Barlow and his co-developers at Furious Bee have reaped creative dividends from the decision to include footage captured on cell phones, laptops, hidden cameras, and more. Where *Her Story* took place in a single room, *Telling Lies* broadens its vision, inviting players to follow the narrative to places both new and familiar.

As in *Her Story*, key words are your ticket on that journey. A selection of videos are queued up as the game begins, and each clip contains words and clues that inspire more searches. The moment of hearing a new, important-sounding word, entering it into the search bar, and turning up five results never stops being an electric thrill. This is the same core loop that animated *Her Story*, but in *Telling Lies*, the process has been improved. Now, each word of the subtitles that accompany a video can be underlined and searched. Clips can be fast-forwarded and rewind at various speeds. There's a notepad on your agent's desktop for keeping track of search terms. There's even solitaire for the rare moments when you might get bored.

All of this makes the process easier and more intuitive, but it isn't the only thing that makes *Telling Lies* a better game. *Her Story's* commitment to showing a single actress telling a single story in a single room made for a highly focused game, but it also limited the excitement and sense of wonder that I felt as I played.

*Her Story's* police interrogation setup ensured that it could never put me at the heart of the action. Going into *Telling Lies*, I knew nothing. Then, right away, the game whisked me away to disparate locations. A New York apartment. A civic centre. A boat. An arcade. *Telling Lies* stokes curiosity in a way that *Her Story* never

could, because, from the first, it indicates that its story could take you anywhere. *Her Story* told. *Telling Lies* shows.

After dabbling for a few short play sessions, I found the time to completely devote myself to this game on a Friday night. I was rapt. I sat on my couch for six hours, typing and watching, typing and watching. There were moments when I thought I had seen everything *Telling Lies* had to show, and then a twist would recontextualise everything

I had learned so far.

Barlow's idiosyncratic approach to storytelling has reached a new high here. The game's refusal to tell you anything at

the beginning makes each discovery feel important and earned. Discovering a new thread to follow feels like discovering a new area in a Metroidvania.

It's that sense of possibility that kept me riveted. The magic of it, though, was that – to borrow a term – I was only hunting cutscenes. 🗨



▲ *X-Men: Apocalypse's* Alexandra Shipp rounds out a sterling ensemble cast.

**“Each discovery feels important and earned”**

## VERDICT

Sam Barlow's latest expands and improves on everything that made *Her Story* great.

**92%**



▲ Logan Marshall-Green tells an awful lot of lies in *Telling Lies*.



Review

# Gears 5

Oh, it has multiplayer too, apparently

## Info

**GENRE**  
Cover-'em-up

**FORMAT**  
XBO (tested)  
/ PC

**DEVELOPER**  
The Coalition

**PUBLISHER**  
Microsoft  
Game Studios

**PRICE**  
£49.99

**RELEASE**  
Out now

REVIEWED BY  
Ian Dransfield



Everyone should Roadie Run everywhere, all the time, forever.

The men are walking walls with bean-sized heads, the women far more realistically proportioned (relatively speaking), for some reason – but everyone has massive feet. Seriously, this lot wouldn't be able to pop into Clarks and pick up their loafers off the rack; we're talking at the very least a special order placed in the shop, maybe even some boots made for them bespoke. They're some big feet. Which masterfully segues into the fact that *Gears 5* – we've dropped 'of War' – has some huge shoes to fill, literally and metaphorically.

The Coalition has been in charge of the series for a few years now, remaking the original game for the Xbox One, then getting a crack at a proper series entry with 2016's *Gears of War 4*. But it feels like this time around *Gears 5* is where we're seeing Rod Fergusson and co hit a more comfortable pace. The last game was the furtive poke, testing the waters and seeing what the appetite was like – this time, it's the bold new move into reinventing an Xbox legend for an audience that may not have even been born when the first game came out. Just don't tell PEGI that.

It all starts out as you'd expect – the bean-head crew stomping their massive feet around on a mission to destroy anything that moves, gruffly barking that they've seen nude drones on

the horizon as said drone itself barks something in half-English and it all ends up with a big, semi-static firefight. You hide behind a lot of waist-high cover, engage in some responsive, satisfying gunplay, and quips litter the battlefield almost as much as the quite ludicrous amounts of gore. It's *Gears of War* as you know it, and it's not long before the prosaic feeling washes over – we're doing the same activity we've been doing for 13 years now. It's not that it's *bad*, it's just not evolved as much as those hybrid-beast enemies you've been fighting for over a decade now have.

But then *Gears 5* throws you a curveball: it opens up. You retrieve a skiff and begin sail-skiing around a contained-but-large open-world region, on your way to your next objective. Along the way, you encounter side missions; things you don't actually have to do, but if you do, you'll get some extra treats and bits of narrative. There are random caches and battles in the few large, open maps to discover. It's... different. And it works.

It's hard to say there's actual innovation at play here, but adding a bit of myopia to things and ignoring all other games, it's a bold step for a series that's been set in its A-to-B ways for many a year, and shows The Coalition is willing to experiment with an established format. Even so, it still ends up treading the same worn path for the most part, with this opening up of





things taking a backseat to hiding behind walls and shooting the big bads.

Every now and then, an encounter is mixed up, usually by offering a stealth option. Sometimes it's actually quite satisfying, like when it presents your way through almost as a puzzle, or maze, with a definite correct route available to get through, ripping batteries out of corrupted robots and without raising the alarm. Most of the time it's just a bit messy, though, with wilfully blind enemies allowing you to work around the clunky mechanics that simply aren't suited for graceful stealth manoeuvres. Well, wilfully blind at least until one of them sees you behind something that's served as impenetrable cover for the last five minutes, just because the game's decided it's time for another firefight. It's... mixed.

Another way *Gears 5* feels mixed – actually, more surprising than 'mixed' – is in its story. I'd struggle to say I liked it, but it does have its moments. By now, we actually expect chunks of pathos to worm their way through the mindless action, and some of that witty

**“By now, we expect chunks of pathos to worm their way through the mindless action”**

banter is, dare I say it, on the wittier side of the banter spectrum. References to the COG – the authoritarian governmental entity of the series – being 'fascists' is touched on, though doesn't really go anywhere, but you can't have everything, can you? Maybe *Gears 6* or whatever they end up calling it will just be a bundle of

anarchist propaganda, with the bean-heads going around smashing up space McDonald's with their massive boots.

There's a lot to say for the steps The Coalition has

taken with *Gears 5*, especially when compared with another of the core Xbox franchises and its shift in tone since moving to a new developer. While 343i has opted for a bewilderingly safe approach, making *Halo* a dull slog through meandering, unmemorable setpieces, The Coalition has stamped its own brand on Epic's original series, and that is to be applauded. But as brave – in its own way – as it might be to push and develop a major franchise beyond its original mechanical boundaries, the simple fact is even with some tweaks and tucks to the formula, *Gears 5* is still essentially more of the same. It's good fun – great, even, with a friend or two in tow – but there's nothing of any real consequence to keep you playing, and those looking for real depth... well, they won't find it. For all the new directions *Gears 5* hints at going in, it still ends up as predictable as the outcome of a chainsaw running through a barking, nude drone. 

^ The skiff sections are a welcome step in a new direction, even if it is limited.

## HIGHLIGHT

It may seem a bit rich to criticise the game for being samey then praising this element, but the fact of the matter is the active reload system is absolute perfection. It makes a microgame of the simple act of reloading your weapon, and is still as captivating as it ever was.

## VERDICT

Takes a bold step forward, then safely retreats to waist-high cover. *Gears 5* is a fun, brain-off shooter. Par for the series, then.

**68%**

▼ What's this? A mounted gun section? The more things don't change, the more they... don't change.



Each of *RGO*'s nine ships can be individually outfitted with a variety of deadly weaponry.



Review

HIGHLIGHT

At the risk of outing myself as a terrible pilot, the Autopursuit feature is a fantastic bit of design that adds accessible, cinematic flair to chaotic dogfights without sacrificing tension. The option to taunt opponents over the radio is a great touch, too.

Taunting an opponent on the ropes before unleashing a volley of missiles towards their hull never gets old.

# Rebel Galaxy Outlaw

Kessel Run the Jewels

Info

**GENRE**  
Space sim  
**FORMAT**  
PC (tested)  
**DEVELOPER**  
Double Damage Games  
**PUBLISHER**  
Double Damage Games  
**PRICE**  
£23.99  
**RELEASE**  
Out now

REVIEWED BY  
Nic Reuben

## VERDICT

Adrenaline-fueled and pulpy. Juno Markev makes Han Solo look like whatever Bill Pullman was called in *Spaceballs*. Crap Han Solo. That one.

76%

**R**ebel *Galaxy Outlaw* plays like the folks from *Double Damage* snuck into my bedroom at night and recorded me jabbering excitedly in my sleep about the perfect modern *Wing Commander* reimagining. In the interest of fairness, it's important I get that out of the way first, because this oil-stained, beer-fuelled, pulpy space sim is so specifically my personal jam that you probably shouldn't trust a single word I have to say about it.

That said, it's an absolute winner. Streamlined and accessible without sacrificing tactical dogfights and customisation. Less space opera than plasma-seared pulp fiction. A southern-fried scoundrel's brag, half-slurred through the smoke and sweat from a battered barstool. Every detail embellished, every victory heady with whiskey bravado, and every mechanic unapologetically tuned to massage your ego. Yes, *RGO* says, you are 100% the effortlessly cool space mercenary you fantasise about being sometimes. Here's a ship, here's 20 hours of hard rock radio, now go blow something up and steal its cargo.

You'll be climbing into the cockpit of nine different, fully customisable ships as ex-gang member Juno Markev, as she hunts down the man that killed her husband, all while hustling side jobs to buy bigger and better fighters. Most missions are bookended by short cutscene conversation, and while character animations can be a little stiff, the dialogue is involving and snarkily entertaining enough to keep you going through the 30–50

hour story, depending on how much time you spend bounty hunting and trading for extra cash. Although *RGO* pays homage to the classics, it's also set up for first-timers to the genre. You can go full veteran, turning off all the assists for a more rugged simulation, or opt for the well-implemented 'Autopursuit' option. By locking on to an enemy craft and holding down the left trigger, you'll automatically chase down your opponent. It's a feature that could easily remove challenge in a game with less savvy AI, but here it provides a breakneck sense of arcade-like immediacy. It helps that, once you step into the cockpit, any concerns about the visuals disappear, and *RGO* morphs into a pyrotechnic display of fragmented hulls, searing plasma, and comically satisfying explosions.

All this immediacy does come at the cost of the more elaborate simulation aspects veteran pilots might be used to. There's no need to manually dock at stations, for example, and once in a firefight, you can divert power to shields or guns, but that's about it. It's a quick and dirty shot of moonshine, rather than a complicated cocktail, but you'll taste the care that's gone into brewing it before it knocks you off your barstool.

The only other major issue I had with *RGO* is how big the galaxy is. Getting to some mission locations can sometimes mean being sat warp drive-jumping between navigation points. Slow as this can be, it does provide a sense of distance and scale which adds to the fantasy, and it's still rare to be out of the action for more than a few minutes. Plus, it's still space, and space is cool. 🌌





# I don't like your girlfriend

Why yes, Burnout Paradise's soundtrack does show its age

**M**ost racing games have the same effect on me – and I preface this by saying I mean it in an entirely positive way: they wash over me in a prosaic fashion. I fall into a waking coma, I slump, I go through the motions, it passes some time, I leave feeling satisfied, though I'm not entirely sure why. *Burnout Paradise* – and its *Remastered* edition, which I've been playing a lot of recently – does exactly that. At least for a while.

Then I crash. Criterion's series never did shy away from showing you every non-gory detail of a fender bender, but in Paradise City, it always feels like it's ratcheted up a notch. These aren't small, separate race circuits: this is a large, living, breathing city. Your flouting of the local traffic laws has resulted in a three-car pile-up at a busy junction, and you've made dozens of people late for (virtual) work. Also, you might have killed someone, but the game never really dwells on that aspect.

It snaps me out of things – as a good crash should – but it's also intensely satisfying. A crash is a failure on your part as a driver, sure, but it feels natural after experiencing it so many times

(I am bad at racing games) that the result of missing a corner or hitting a poor rube on the wrong side of the road should result in a genuinely satisfying outcome. The slow-motion crunch of metal, your once-gorgeous musclemobile crumpling like so many accordions before it, your race all but lost now. Someone at Criterion always did get how much of the fun crashing is when it comes to racing.

Like all of the true greats, *Burnout Paradise* was both ahead of its time on its original release, and holds up spectacularly well on its *Remastered* re-release. The city is still excitingly large, inviting you to explore its regions in and out of the urban sprawl. Races are varied and numerous, almost always asking different things, so never leaving you bored of what's

**“Burnout Paradise was ahead of its time at release”**

coming next. Rewards are doled out regularly, so while you can get attached to a single vehicle, you're rarely forced to stick with it. It is, not to put too fine a point on it, just a *really good* game. Which is why I'm still playing it now.

It was never a part of the EA Sports Big label – and even if said label existed on its release, its debatable a car racing/wrecking game would feature anyway – but there's a real feel tying *Burnout Paradise* to EA's experiment in ridiculous over-the-top-ness. *Paradise* looked phenomenal and could very easily present itself as a respectable, straightlaced racing game. But it wasn't. It was something all the more amazing and brilliant and fun and daft. Turns out even now, a million years (or thereabouts) since the original's release and not too long since the remastered version hit, *Burnout Paradise* is still utterly superb. And Avril Lavigne's *Girlfriend* is a banger of a track. Don't @ me. 🙄



## Wireframe Recommends



### NBA Street Vol. 2

PS2, GC, XBOX

EA Sports Big was brilliant, so here are three games you should play from the label. The first, a street basketball title, is the spiritual successor to *NBA Jam* and thoroughly satisfying to this day.



### SSX 3

PS2, GC, XBOX, MULTI

*Tricky* was great, but *SSX 3* perfected the formula. One single mountain made up all of the game's tracks, so there was a sense of continuity you wouldn't expect from a racing game.



### Def Jam Vendetta

PS2, GC

In which DMX can batter Ghostface Killah using AKI's legendary wrestling engine. Seriously, why this isn't in every gaming hall of fame ever, we will never know.

## Killer Feature

Divinity: Original Sin 2 – Definitive Edition



# Divinity: Original Sin 2

## DEFINITIVE EDITION

Cross-save on Switch is actually revelatory

LARIAN STUDIOS / 2019 / SWITCH, PC

**C**ross-save functionality isn't new at all – from its nascent days of swapping discs and cassettes to share about our own save files (mainly that excellent team I'd cobbled together in *Championship Manager '93* on the Amiga), through Kojima Productions' not-quite-there efforts with the *Metal Gear Solid HD Collection's* 'transferring' system, we've always had people pushing the ability to pass on our efforts (and saves) to others, and to pick up where we left off on different formats.

The cross-save system on *Divinity: Original Sin 2 – Definitive Edition* for Switch, though, is fantastic. Why? Because it's so bloody easy.

It allows you to maintain a pool of saves from your Steam account, the storefront/system on which the game was originally released. You link up your Switch to the Steam account – so, some account detail entry – accept the usual gumph, and... that's it. You're good to go. Saves you made on the *Definitive Edition* on PC can be played on the Switch version, and saves you make on the Switch are automatically uploaded to the Steam pile-o-saves, so you can pick up where you left off on the PC again. Honestly, it's amazing, and all games that can do this should do this in future.

It's that added step we've been hankering for over the years – the PSP promised to offer us a system where we

could play our PS3 games remotely, so we'd never be away from the action. It sort of did, but it wasn't great. The Vita took it a step further and implemented some genuinely good remote play, but the online/streaming requirement rendered it a limited way of carrying on the play wherever you were. The Switch, then, took Sony's aborted attempts and made them into something special – a console where it was all there on the machine, played on the TV, literally lifted up and carried on with somewhere – anywhere – else in the world.

And cross-saves like in *Original Sin 2* take that whole evolution a huge step further, accepting and acknowledging that not only do we want to make our games portable or home-based as we choose, but that when we are at home, we might not want to be tethered to

**“It acknowledges that when we're at home, we might not want to be tethered to a single machine”**

a single machine. My PC is – like many of yours, I'm sure – far more powerful than the Switch could ever hope to be. *Original Sin 2* runs brilliantly on it. So, at home, why would I want to play it on Switch? The TV argument doesn't come into it – I have HDMI cables and a wireless controller. Allowing cross-save functionality between formats like this shows a sign of respect to the player that's all too lacking in a lot of big-budget, mainstream titles. I can honestly say if it weren't implemented, I wouldn't be playing *Original Sin 2* on Switch as much as I am (more on that in a future issue, I'm sure) – and that's the very definition of a killer feature. Even if it is a boring screenshot. 🗿



# Next Issue

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### Editorial

#### Editor

Ryan Lambie

Email [ryan.lambie@raspberrypi.org](mailto:ryan.lambie@raspberrypi.org)

#### Features Editor

Ian Dransfield

Email [ian.dransfield@raspberrypi.org](mailto:ian.dransfield@raspberrypi.org)

#### Sub Editors

David Higgs & Vel Ilic

### Design

[criticalmedia.co.uk](http://criticalmedia.co.uk)

#### Head of Design

Lee Allen

#### Designer

Harriet Knight

### Contributors

Jon Bailes, David Crookes, Konstantinos Dimopoulos, Andrew Fisher, Simon Goodwin, Andrew King, Sean Martin, Steve McNeil, Aaron Potter, Nic Reuben, Samantha Roach, Reid Schneider, Harry Slater, Alan Wen

### Publishing

#### Publishing Director

Russell Barnes

Email [russell@raspberrypi.org](mailto:russell@raspberrypi.org)

#### Director of Communications

Liz Upton

#### CEO

Eben Upton

### Advertising

#### Commercial Manager

Charlie Milligan

Email [charlotte.milligan@raspberrypi.org](mailto:charlotte.milligan@raspberrypi.org)

Tel +44 (0)7725 368887

### Distribution

Seymour Distribution Ltd

2 East Poultry Ave, London EC1A 9PT

Tel +44 (0)207 429 4000

### Subscriptions

Unit 6, The Enterprise Centre, Kelvin Lane,  
Manor Royal, Crawley, West Sussex, RH10 9PE

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#### Subscription queries

[wireframe@subscriptionhelpline.co.uk](mailto:wireframe@subscriptionhelpline.co.uk)



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