Wireframe

LIFTING THE LID ON VIDEO GAMES

Cyberpunk 2077

Adapting tabletop RPGs to video games

Mega Man

The changing face of a console icon

Solid Snake

Metal Gear creator Hideo Kojima profiled

THE BLACKOUTCLUB

CO-OP HORROR FROM THE DIRECTOR OF BIOSHOCK 2

The changing shape of video games

The thing about game development is that it's new. Every other art form has had centuries to assemble best practices, approaches, and techniques that are agreed upon. Even film, our youngest sister, has had a hundred years to define whatever the hell a 'best boy' is.

That newness means that we can all see change of monumental scale happening rapidly around us. As I write this, I think back to my first job in the games industry twelve years ago. I was a junior designer whose main job was making navmeshes – the low-poly maps which define where AIs can move, and how they navigate that space. It was not glamorous work. I remember I could do about one encounter space a morning if I put some good music on. I wasn't very fast.

Level designers reading this may know the punchline. A few years after I moved on from that job, processes improved for the production of navmeshes: parts of the job could be automated, making the task that took me a morning now take an hour for a skilled designer. The best, most expensive engines began to allow for full scale experimental automation of the task, with a human only required to come in at the end and do a touch of clean-up. The task went down to minutes.

Today, in Unity, there is a button that says 'generate navmesh'. If I click it, a few milliseconds later, the little junior Mike Bithell that lives in my laptop has done the job that used to take me a morning, and better than I could. My first job in games is now a button. And not even that pretty or exciting a button.

The development of games is an exciting process that is forever changing. Experts of course exist, but to remain experts, they must constantly innovate and build on the shoulders of their peers. There is no right answer, or more accurately, today's right answer will be foolish tomorrow.

An unprecedented sharing of lessons learned and battles won takes place, as companies throw open the doors to their techniques, and NDA-stretching Twitter threads reveal the inner workings of our industry's greatest magic tricks.

If you're an old hand at game development, I'm sure you have your own stories like that of my navmesh obsolescence. It can be scary to know that our medium is subject to such change – that the skills we know now will be outdated by tomorrow.
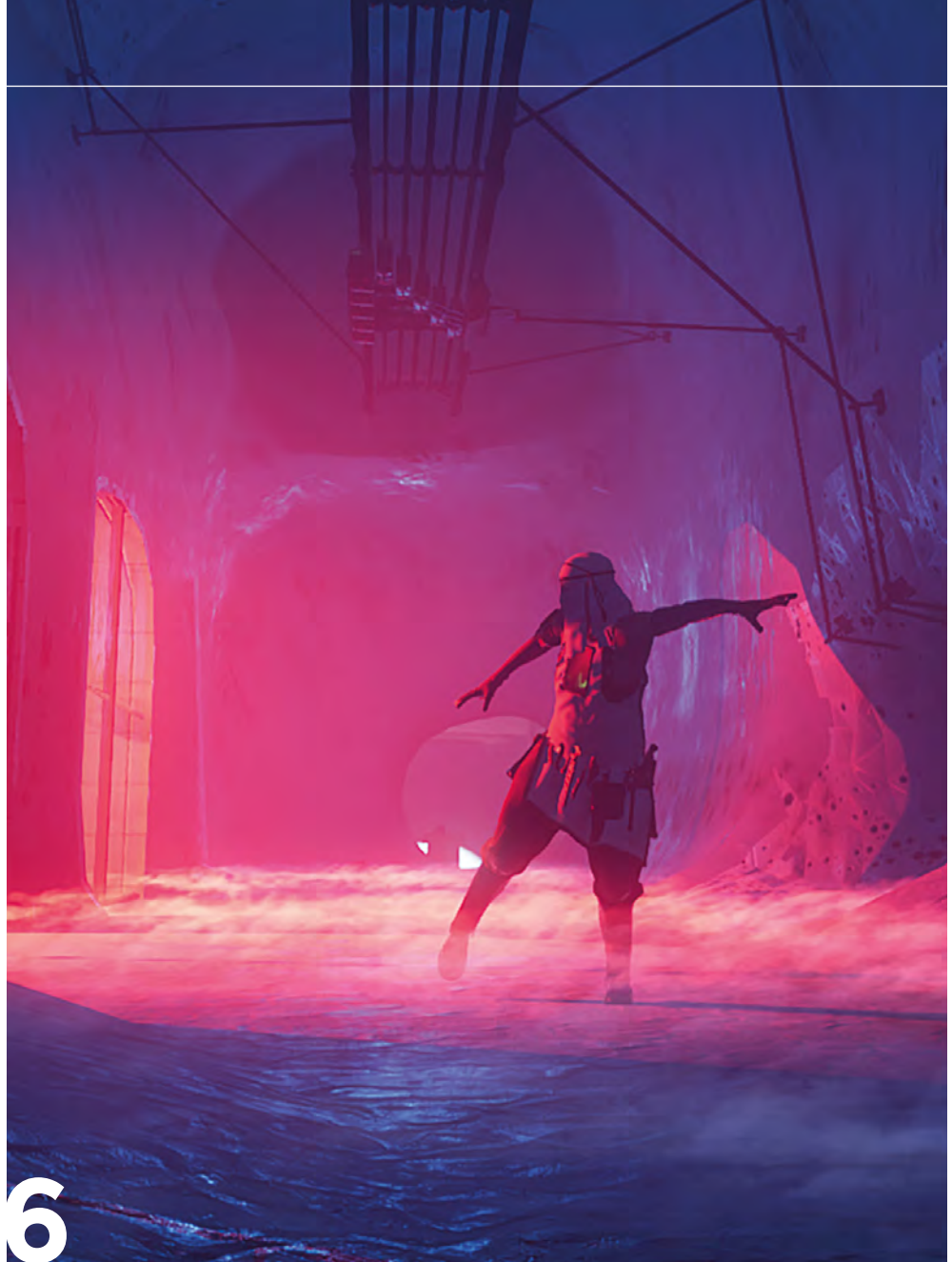
Alternatively, it can be profoundly exciting. To know that the job I do in another decade will be fundamentally different from the job I do now. I hope to still be working for many more beyond it, and I couldn't be more excited to see the innovations that lie ahead.

Maybe you'll come up with one. ⓦ

MIKE BITHELL

Mike Bithell is the developer and writer of Thomas Was Alone, Volume and Subsurface Circular.

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It goes without saying that we love video games here at Wireframe magazine, but we also love the stories behind games almost as much.

In this issue alone you'll find several fascinating ones: how a young French student started coding a 2D platformer for fun in his spare time and wound up at the Tokyo Games Show and catching the eye of an independent publisher.

How the director of *BioShock 2* is finally realising a game idea he first had over a decade ago with *The Blackout Club*. How a solo designer's affection for 3D platformers inspired him to spend years making one of his own. How *Alien vs Predator* was coded for the Atari Jaguar in a small terraced house in Yorkshire.

You'll find all these personal stories and more in Wireframe issue 2 – and, unsurprisingly, we're hungry to hear more of them. So whether you're a solo developer working on a tiny passion project or at the helm of a huge triple-A game at a major studio, we want to learn more from the people behind the code: how they got into the industry, what inspires them, and what their individual experience of making games is like.

If you have a story to tell, then drop us a line at **wfmag.cc/hello**. We'd love to hear from you.

Ryan Lambie
Editor

Toolbox

Rated

Shock of the new

BioShock 2 designer Jordan Thomas talks exclusively about his new multiplayer game, The Blackout Club

Jordan Thomas knows a thing or two about generating atmosphere in a video game. Back in the 1990s, he was lead designer on *Thief: Deadly Shadows*, a game prized for its suspenseful stealth action and world-building. Under the auspices of 2K Games, he worked on all three *BioShock* games: he was instrumental in the design of a key level in the 2007 original, served as creative director on *BioShock 2*, and helped guide the creative flow of the long-in-gestation *BioShock Infinite*.

In 2013, not long after *Infinite*'s release, Thomas co-founded the independent studio Question with *BioShock* collaborator Stephen Alexander. Their first game, *The Magic Circle*, felt like something of an exorcism: a game about the process of development itself, with its narrative taking in a pair of warring project leads whose ideas flatly refuse to coalesce into a coherent game. *The Magic Circle* was a critical if not financial success, and

Thomas's next project at Question feels more broad – maybe even mainstream – in its premise.

Taking inspiration from such horror-adventure staples as *The Goonies* and Stephen King's *It*, *The Blackout Club* is a four-player co-op horror game about a group of teenagers whose small town is being overrun by an unseen supernatural force. Each night will bring with it a new, procedurally generated mission for groups of players to tackle: you might be rescuing kids from possessed townsfolk one night, or gathering video evidence of the conspiracy another. To better understand the mechanics behind this unique-sounding game, we caught up with Thomas on Skype to find out more.

▲ Jordan Thomas: designer of *BioShock*'s Fort Frolic level, director of *BioShock 2*, and co-founder of the indie studio Question Games.

"It's a forensic story," Thomas says of his new game.
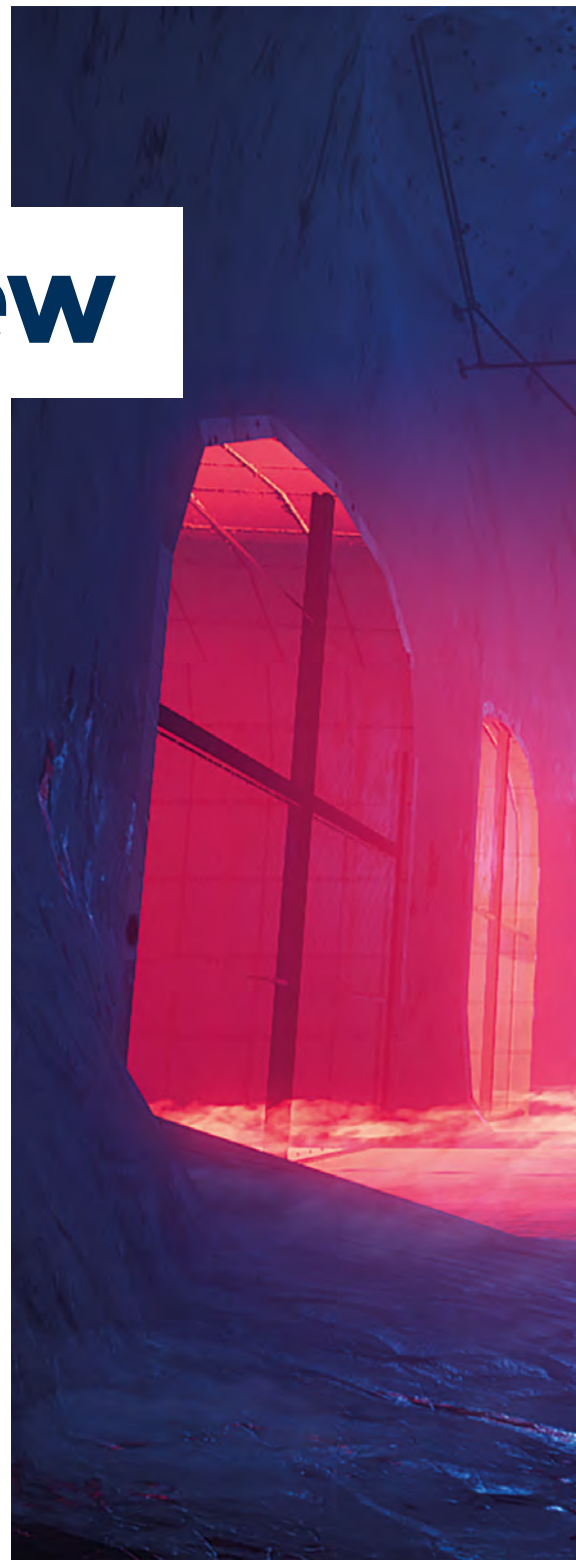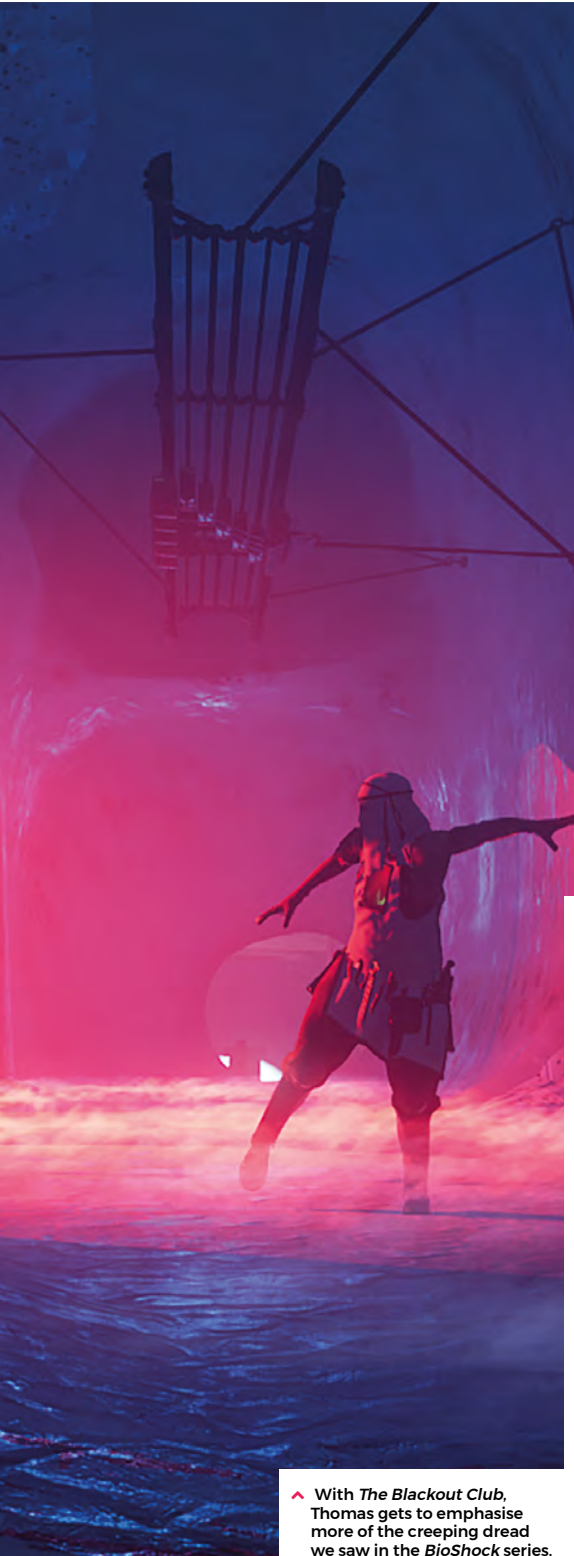
With *The Blackout Club*, Thomas gets to emphasise more of the creeping dread we saw in the *BioShock* series.

What was the genesis behind *The Blackout Club*? Was it the notion of an invisible threat, or was it that you wanted to make a four-player co-op game?
Way back in 2006, I started working on the universe for this game: an urban horror with a touch of fantasy, based on the idea of voices in people's heads. What they might mean, what they meant historically, and what they might ultimately become. But much later, aft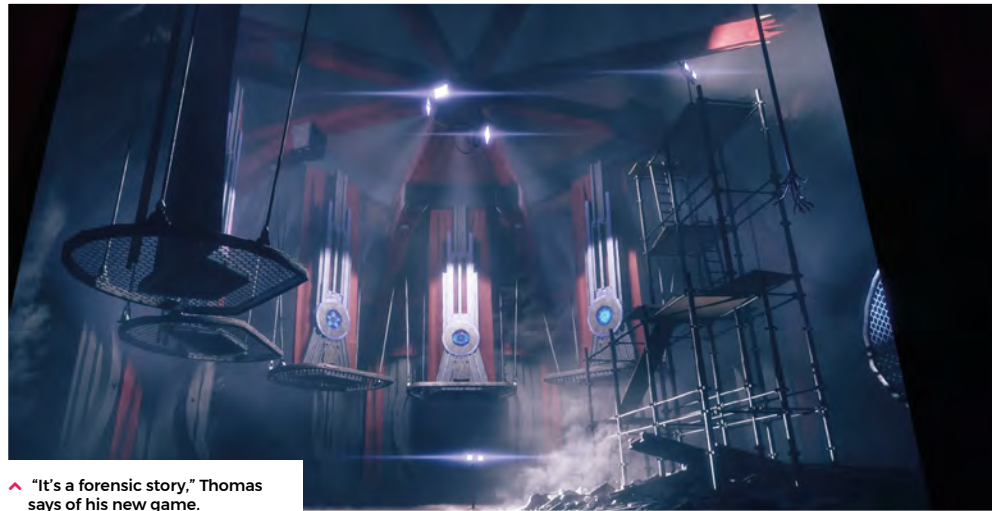er [*The Magic Circle*], we thought, 'OK, what is the region of game design and narrative that overlaps with what people are buying these days, that we would still be passionate about?'

We knew we had to go more mainstream than *The Magic Circle*, but we didn't want to sell our souls. So co-operative horror felt like the place to find those people. I played *System Shock 2* co-operatively back in the day when they

released a mod for it, and something lit up in my brain: this needed to exist eventually on a more widespread scale.

We also love things like *The Goonies*, *It*, *It Follows*, *Stranger Things* – they're usually a metaphor for growing up. All of that seemed to crest at the same time as we were deciding what to do next, so *The Blackout Club* was born out of that.

Those teen horror properties feel like modern takes on the weird fiction popularised by writers like HP Lovecraft.
Absolutely, yes. That specific cosmic horror genre. The idea that, 'You will never truly know the true shape of the thing in the dark'. Your flashlight may glance across it, and that one contour may haunt you to the end of your days.

Most of the game is centred around exposing the conspiracy, so we're crawling around with these crippled smartphones the kids have. They live in the National Radio Quiet Zone, which is a real place in the States. They're unable to get cellular signal, but they have a local version. So they have to smuggle the footage they accrue out of town by hand. It's arduous and risky, and kids tend to go missing when they try. Their argument is, 'If there are enough of us, then they can't stop us all.'

How will you impart those bits of the story? Through third-person cutscenes?
It's a forensic story, almost entirely. You'll be able to acquire narrative as a form of loot, almost – through ➡

> **"I really wanted, directing *BioShock 2,* to go back to a vulnerable protagonist, but it was a big FPS franchise, and the pressure was to make it a bigger one"**

achieving objectives, you'll be able to find somebody's cellphone and see what their last texts were before they were taken. You might hear a voicemail for the Blackout Club, left by someone whose house you might visit later.

You say that these teenagers are all friends, so how do you establish that connection? Is that something that's quite tricky to impart in a multiplayer framework?
A little bit, yes. I'll try not to spoil the exact context, but suffice it to say that you play one of them, who's the oldest and the boldest at the beginning, and you learn a little bit about her relationship to the others, and you get to make your own character later – a kid who looks how you want them to look, and customise them with cosmetic items you unlock through missions. They speak to one another in the field, so we got actual kids to record the voices. When you come back to the hideout, you'll sometimes hear new comments between NPC kids who are loitering in this abandoned train car in the woods. Very much in the tradition of that cosmic horror genre, you will uncover little bits here and there of what the overall world is trying to say, without ever coming out and stating it.

So it's not an out-and-out gore horror game?
Not at all. Our north star is the word 'dread'. Ever since my career began, really, I wanted to build horror that lived in the player's imagination. Their imagination can run wild and they can speculate about what's around the next corner. So there isn't a lot of on-screen gore. The invisible
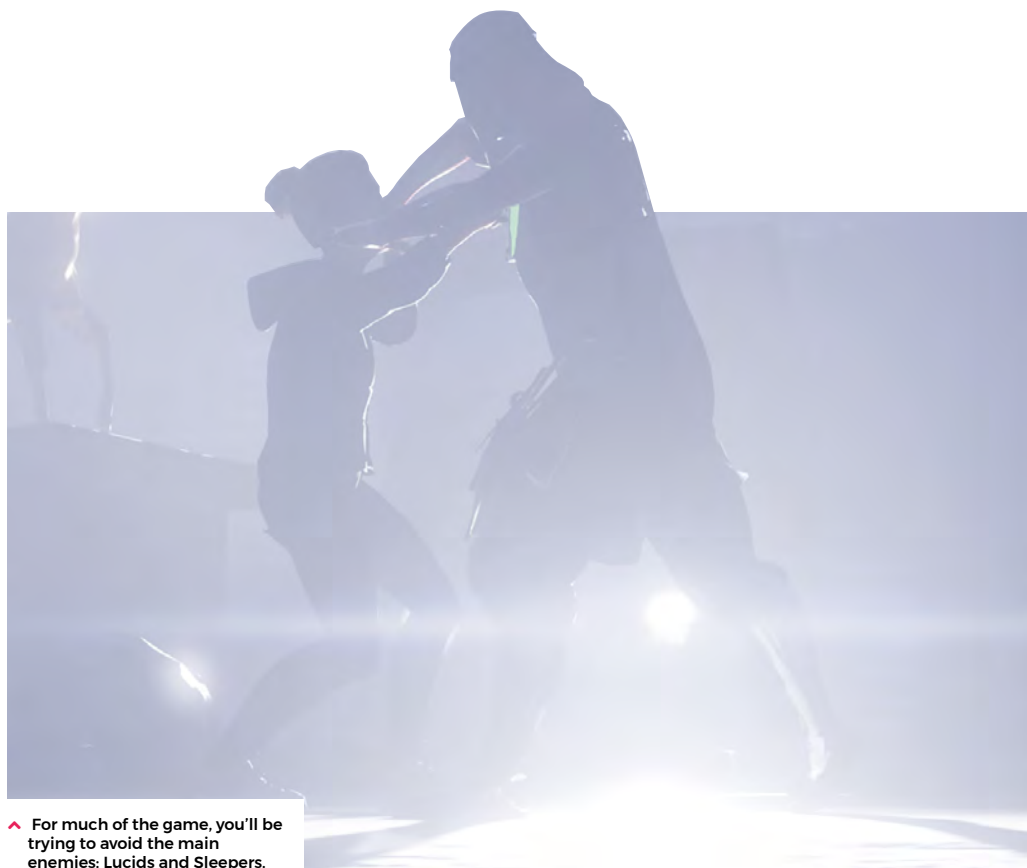
▲ For much of the game, you'll be trying to avoid the main enemies: Lucids and Sleepers.

boogie man, who we call The Shape, takes one of [the kids] beyond the red door. What happens there is the source of some mystery.

You have missions that are procedurally generated, and also you've got a backstory. But is the narrative going to carry on unfolding for as long as the player wants it to?
The current plan is that it's session based, so it does go on functioning infinitely. You will at some point reach a level cap, so when the game comes out there'll be a certain number of levels you can get and a certain number of powers you have access to. You can also keep earning cards in your deck that you use to define your player load-out. Meanwhile, we'll be adding new

▲ From left to right: Kain Shin, Stephen Alexander, Michael Kelly, David Pittman, Jordan Thomas. Not pictured: team member Jeff Lake.

mission types, which are also like their own adventure deck. We shuffle that and we say, 'Tonight is different than last night.' Tonight you're going to be rescuing kids, and then you'll segue into a vandalism scenario, where your job is to knock out as many security cameras as possible.

You said earlier about make something that people are going to engage with. What are your thoughts about single-player, narrative-led games? Do you think those are falling out of favour to a degree?
I've never been a doom-and-gloom prophet who likes to make pronouncements about whether a genre's over. I think they fall out of favour for a while and then there's a resurgence as price points change – for example, we were mired by the $60 disc for a long time, and those games tended to have value packed into them. There's a million ways to access game content now, whether it's subscription or a $30 game like *Hellblade*, where it has these triple-A values, but it's asking less of you, and it's delivering this beautiful little rosette of content.

We'll never see single-player die, but I do think that that specific thing, of a

⌃ *Stranger Things*, *Halloween*, and a wealth of other American horror influences are going into *The Blackout Club*.

game that is systems-driven, but has tons of story, and is still designed in a series of missions, is becoming a difficult thing for a team to commit to, because they're selling fewer copies, and there's more competition for that dollar.

You've come from a background of making suspenseful games. So what's the philosophy of creating tension in an experience like this?
I guess I'll give a two-pronged answer. The first is maybe bone-obvious, which is that the protagonists are vulnerable. I really wanted, directing *BioShock 2*, to go back to a vulnerable protagonist, but it was a big FPS franchise, and the pressure was to make it a bigger one. So we committed to an action heart, which many others decisions had to follow.

I truly loved the early moments of *BioShock 1*, and the *System Shock* series, where you're kind of hyperventilating, and you've got maybe one bullet, and you're leaning around the corner because you don't know if you can handle what's there. So some suspense tumbles naturally out of a scarcity of resources.

I guess that segues well into the second economy, which is information. So in *Blackout Club*, you mentioned the Closed Eyes mechanics, where the kid succumbs to the voice in their head and lets them

take control for a second, because it can see things that they cannot. The kids have all been brainwashed to un-see elements of their own town – objects and particularly this entity, The Shape. Once you close your in-game eyes to see it, you're blinding yourself to everything else, and so you have to constantly be making these trade-offs between which spectrum of information is most important. And you're frequently wrong. I think there's a lot of suspense in trying to navigate your own ignorance in that way.

In that regard, then, what's it been like showing the game to players and seeing their reaction to it?
Oh my God. Unbelievably gratifying. We went to PAX recently, and we were in a very hidden location. We were worried people wouldn't find us, but by the second day we had a line out the door. It was because they'd come in in twosomes and foursomes, and they would scream! Their first contact with the experience was everything we'd hoped. I'm not a cocky person – I was anxious on every possible front about how it would be received. I thought we'd get a lot more critique, and I saw a lot of problems that we still need to fix, so don't get me wrong. But they gave us life – almost literally, watching them go through this for the first time.

You're a team of six, is that right?
We are, but with some really legendary contractors. So Sam Gauss, a UI contractor, came in and made the game look a lot better. Patrick Balthrop worked on all the *BioShock*s with us, and he's our audio specialist, and the list goes on. So I'd say that realistically we're talking about the labour of more like ten people, plus some volunteers and things like that. But yeah, six full-timers.

So going from those big triple-A games to a small team like this, what are the advantages of that?
Agility, primarily. I know every member of our team, we can have a conversation like humans, without hierarchy needing to be an overt element there. It seems, frankly, like the game: a group of friends solving a complex problem. We're also able to make changes very quickly if there's a playtest. If we see that something is wrong, there is not a lengthy debate, there's no running it up the chain, it's just, 'Let's fix this.' It's often done by the end of the day. That part of it feels good.

On the other hand, we're constantly starved for resources, and when it's time to promote the game, we're split between making actual fixes to it and trying to do things like this [interview], frankly, right? That combination is often hard to navigate, but I wouldn't trade it. I may change my tune – once the game is live, we might be split in an entirely new way. But we're running closed betas right now and they're going very well. So I'm hoping we can keep coasting on that goodwill for a bit. ⓦ

The Blackout Club is scheduled to launch on Steam in 2019.

Making a Monster Boy

Producer Thomas Kern talks to us about Monster Boy, the forthcoming homage to the cult Wonder Boy franchise

Making a major design change to a video game several years into production can be tough, but sometimes developers have to make ruthless decisions. In the case of French studio Game Atelier, its platform adventure *Monster Boy And The Cursed Kingdom* had already been in development for four years when the team made a bold choice: to throw out all the existing artwork and replace it with hand-drawn characters and backgrounds. Out went the colourful yet somewhat stiff blue-haired hero and his variety of animal alter egos; in came a much livelier roster of characters that squash and stretch as they run and jump.

It was a creative move that brought *Monster Boy* closer in style to its Japanese inspiration, Westone's cult platform-adventure series *Wonder Boy*, but one that also meant a considerable amount of extra work for Game Atelier, as producer Thomas Kern explains.

"When we changed to hand-drawn animation," Kern tells us, "a lot of new problems came with it: the animation loop, the number of frames, and the need to sometimes interpolate animations. There's a lot going on in the background to keep the controls fully intact and highly responsive without any lag. Another big issue was the character customisation. Up until early 2017 we used a puppet animation system, and we could easily change a body part to display custom armour, boots, or weapon right on the sprite. With the new frame-by-frame hand-drawn animation, a lot of work and planning was required for the whole team to keep this feature."

Then again, *Monster Boy* has been through a number of iterations since work began on it in 2013. Right back at the beginning, it was dubbed *Flying Hamster II: Knight of the Golden Seed*, before indie publisher FDG Entertainment stepped in and the game was renamed *Monster Boy and the Wizard of Booze*. The title, visuals and level designs have evolved in the years since, but one thing has remained a constant: Game Atelier's affection for the *Wonder Boy* series, and specifically *The Dragon's Trap*, released in 1989.

"It was an incredible experience to explore an interconnected world, not limited by stages but obstacles that you could overcome with special equipment and different forms," Kern says of Westone's eighties classic. "This freedom of exploration completely absorbed me, and it was fascinating to see the game world from the characters' different perspectives."

⌄ The player can switch between characters, such as this sticky-tongued lizard, at any point in the game.
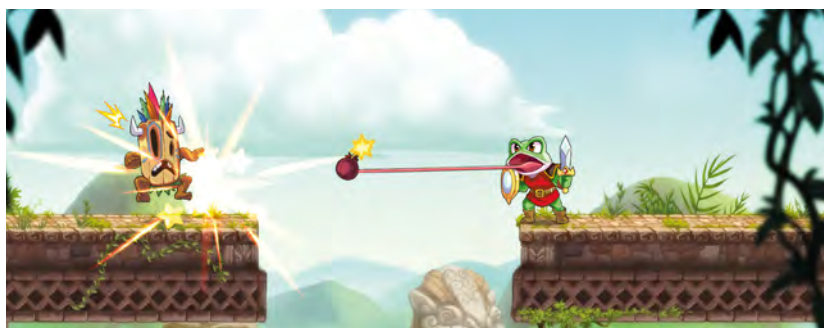
Wonder Boy: The Dragon's Trap is so fondly remembered that it's already received one 21st century homage – Lizard Cube's slavishly faithful remake, first released for current-gen consoles in 2017. *Monster Boy*, meanwhile, is a spiritual successor rather than a remake, with new (albeit highly familiar-looking) characters and, according to Kern, a much larger campaign that will take about 20 hours to complete.

Monster Boy also has some impressive Japanese talent backing it. *Wonder Boy* creator Ryuichi Nishizawa has lent his support as a consultant (as he did with Lizard Cube's remake), while veteran composers including Motoi Sakuraba and the eminent Yuzo Koshiro have provided the music. The cutscenes, meanwhile, are being handled by Japanese animation house Nomad, which also helped Game Atelier fine-tune its new hand-drawn character animations.

As Kern admits, *Monster Boy*'s four-year development has involved constant reinvention – not just in terms of its artwork, but also the fundamentals of its design. *Monster Boy*'s bespoke engine needed constant revisions as mechanics changed and new features were

added. At one stage, the game's shape-shifting hero could only select a new form at predefined points on the map; during testing, however, Kern and his team realised that allowing players to change forms whenever they wanted would make the whole game more enjoyable.

"The further you go in the game, the more it unfolds, and once you've unlocked all forms the amount of possibilities is huge," Kern says. "We designed puzzles and traps around that, and noticed how much more fun the game became. The more we played, the more ideas we got, which meant we had to basically rework the whole game multiple times until the pacing, balancing, and difficulty curve worked perfectly."

Individual puzzle rooms and entire areas have also been reworked over the past 18 months; for Kern, though, the repeated building, testing and rebuilding have all been worthwhile. "It was a big risk," the producer says of his team's ruthless approach, "but we wanted to create something truly special." Ⓦ

"Monster Boy's four-year development has involved constant reinvention"

THE LICENCE TRAP

Although created by Westone, the *Wonder Boy* name has belonged to Sega since the series' inception in the mid-1980s. This is why you'll often find games in the series released on home consoles under a variety of alternate titles (and often with modified graphics), which included *Adventure Island* on the Nintendo Entertainment System. True to form, *Wonder Boy III: The Dragon's Trap*, first released for the Sega Master System in 1989, also appeared under a different name elsewhere: as *Adventure Island* on Japan's PC Engine. Oddly, this *Adventure Island* had nothing to do with the NES game of the same name mentioned earlier, which branched off as a series of its own. Confusing? Very.

⌄ Following their 2017 overhaul, *Monster Boy*'s character designs now have a more Japanese anime feel.

The long war

After almost 20 years with DICE, creative director **Lars Gustavsson** tells us how he's still excited – and nervous – about Battlefield V

Info

GENRE
First-person shooter

FORMAT
PC / PS4 / XBO

DEVELOPER
DICE

PUBLISHER
EA

RELEASE
Out now

⌄ *Battlefield* has been busting tanks since 2002.

You would think Lars Gustavsson would be comfortable by now – the creative director has been a part of Swedish outfit DICE for the better part of 20 years; he's been hands-on with almost every game carrying the *Battlefield* moniker. He's seen it all before. But *Battlefield V* brings up the same emotions as every game before: anticipation, almost fear, the same feeling one might get packing their parachute before jumping from a plane.

"If there's one thing [I feel], it's definitely anticipation," Gustavsson tells us. "You can do the best you can, and for every *Battlefield* we've learned a lot and set out new routines and processes for how to finalise, how to have good test practices, and how to continue to push the boundaries." But there are still challenges to overcome – technical aspects, networking elements, things that can pop up and cause problems and, largely, are out of the hands of the developers.

"We do our utmost to twist and turn, double-check and triple-check," he continues, "but I think you can never really as a developer feel that 'we checked everything, we're safe'. At the same time, having that worry is a good thing in a sense – it keeps you on your toes and makes you continuously strive for better and better, to hit that quality level. The day you become too self-assured, you should probably go work at something else."

Something of an elder statesman of the FPS – at least of those still working on their chosen series – Gustavsson has seen everything, from

top to bottom, change at DICE. Far from fearing that change, though, he embraces it – and feels it does nothing but help *Battlefield V* as a package. "With lots of new people coming in, younger people and those from other studios around the world, I learn a lot on a daily basis," he explains.

"And that's the beauty of this industry and what I love about DICE: it's a mix of people from all over the world with a big mix of different backgrounds. And – I'm not getting any younger here – at times it can be daunting to hang on and constantly learn everything new, but at the same time that's what I love. I've never had a day when I sit at work and wait for the time to become five or six to go home: it's a place where you constantly learn and constantly push yourself to do better."

FREE FOR ALL
Of course, it's not just different faces and a better coffee machine that come as a studio grows and changes over the decades. DICE went from small, independent studio to a part of the EA family – and all along it has been making *Battlefield* titles. *Battlefield V* is the latest, the biggest and, as Gustavsson hopes, the greatest. While the core remains – it's war, it's on a battlefield, there's a mix of on-foot and vehicular combat – there are big changes this year to how everything is being released. In short: everything post-launch is free.
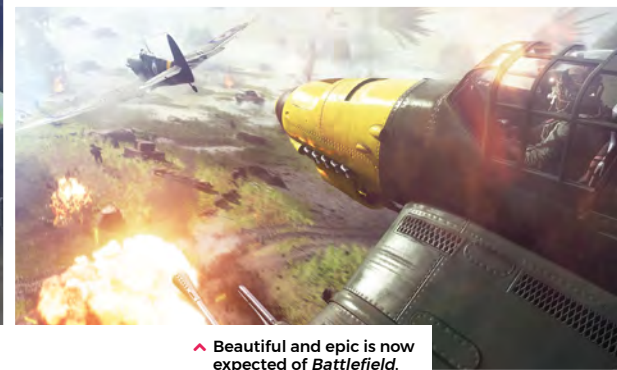
"The big part for us is that we've seen over the years that the *Battlefield* games live for a long time," Gustavsson says. "There's very big interest in the continuation of the journey and getting to play more, us taking players to new places, getting new in-game experiences…

^ Customisation was reined in following feedback.

^ Beautiful and epic is now expected of *Battlefield*.

With the beauty of the removal of our premium pass that we had previously, we now build what we build post-launch for everyone, free of charge." With this freedom comes unification, and as Gustavsson explains, this makes it more natural for what the *Battlefield V* players get at launch to be a stepping stone: "The first step into the universe of DICE's portrayal of the Second World War."

It has to be asked, though – surely free content isn't ever going to be as impressive as the paid-for add-ons of *Battlefield*'s past? Not so, says the creative director: "I would still argue that whether we charge for something or whether we give it away for free, DICE doesn't differ in its approach," he explains. "There's a lot of discipline and pride in doing the best we possibly can, disregarding whether it's being given away free or not… We won't make any sort of cheap shots just because it will go out to everyone – it will be the same push for that DICE quality we continue to strive for."

"A shrink would probably say I need to have my head checked after 20 years with Battlefield"

With so long working at a single studio, and with so much of his personal career focused entirely on one franchise, it's tempting to assume Gustavsson is tiring of *Battlefield*; that he has every right to start phoning it in. Perhaps that he wouldn't be of sound mind were he to still b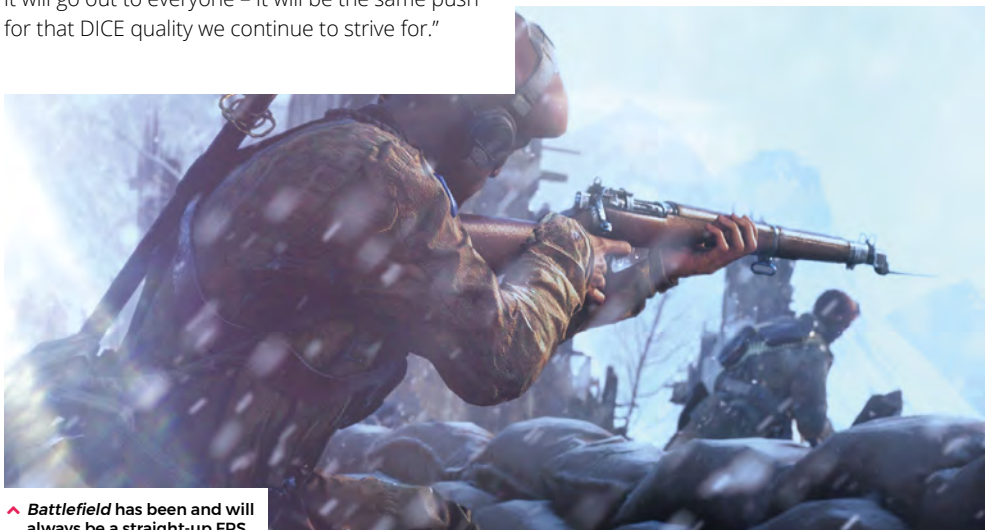e enjoying making people go to war every few years. "A shrink would probably say I need to have my head checked after 20 years with *Battlefield*," Gustavsson laughs. "But even though it's been evolving so much, I still feel frustration at times that we still only scratch the surface. There's still so much more to be done. That's what drives me, and a lot of people at the studio: that there's so many more things that we want to do.

"I'm never bored going to work. There's been hectic times, there's been a lot of hard work through the years, but I still have so much love for *Battlefield* and what we do – especially the great people in the studio here, who make it a joy to come to work." Ⓦ

^ *Battlefield* has been and will always be a straight-up FPS.

WOMEN AT WAR

DICE proudly showed off its women in *Battlefield V* when the game was revealed – resistance fighters and frontline soldiers alike – and certain subsections of the internet responded with utter bad faith, pretending to be offended and rebuking the studio for choices aimed at fostering a level of inclusion (as well as being historically accurate). Even with the state of online discourse these days, it still took Gustavsson by surprise: "To be fair," he says, "especially for me, who's been with the franchise such a long time, we've been talking about female soldiers being provided as a choice in *Battlefield* endlessly in interviews… I'd be a rich man if I got a dollar every time I had to deal with that question. So when [the reaction happened] I was surprised. But for us there was never any question… It's a huge step forward for the franchise and I'm really happy that we managed to do it."

Out of exile

Microsoft's continued run of acquisitions brings inXile and Obsidian under its wing

∧ inXile's *The Bard's Tale IV* **harked back to the classic series, but was rather undercooked.**

Microsoft has brought two independent RPG development legends into its fold, with both Obsidian Entertainment and inXile Entertainment now under the Microsoft Studios banner. Announced earlier in November at X018 in Mexico City, the purchase of Obsidian had been rumoured for a while – but the inXile sale popped up as a surprise bonus.

Each studio has a storied history in the development of RPGs – and an equally storied history of trying to simply survive in an industry ever-less supportive of mid-tier independent development studios. Few reports on Obsidian have failed to mention the studio's financial woes over the years, and inXile founder Brian Fargo ended up creating his own crowdfunding platform, Fig, in order to get projects like *Wasteland 3* off the ground.

As the narrative is being pushed by all involved parties, the deals will see each studio 'maintain its independent, creative culture'. With this proviso in mind, both Obsidian and inXile are to be treated as independent entities, apparently, with the Microsoft ownership factor merely amounting to improved resources for each studio, as well as a level of financial security the world of independent development struggles to supply.

INDEPENDENT SPIRIT

Time will tell how much truth is in said narrative – there's little chance Microsoft will allow Obsidian to push out products late and in a buggy fashion, for which the studio is infamous, and it's tough to see Microsoft putting much muscle behind the promotion of, say, *Wasteland 4*, should that come to pass. But we'll take off our sceptical hat and put on our beret of hope for this one: both Obsidian and inXile are studios full of talented people, and the chance to shine, free of the shackles of a more constrained, life-or-death budget, is sure to reflect well on the games each team releases in the coming years.

There's a transition period to work through, of course – inXile's latest, *The Bard's Tale IV* (awarded a middling 55% in Wireframe #1), won't see any

⌄ Obsidian's *Fallout: New Vegas* **is a franchise great.**

of the Microsoft effect, and it's unlikely there'll be a giant impact on the upcoming *Wasteland 3*, which was successfully funded to the tune of over £2.4 million via Fig. Obsidian's work on its as-yet-unnamed RPG from *Fallout* alumni Tim Cain and Leonard Boyarsky, to be published by Private Division (a Take-Two Interactive spin-off label), is also reported to be unaffected by the new ownership.

In a statement to Wireframe, inXile founder Brian Fargo said: "This will be the first time in my career that I will get to spend almost all of my time in development, something I've always wanted. We retain 100% of our creative reins with Microsoft but will have incredible assistance which allows us to improve quality across the board. Our future has always been dependent on our ability to deliver good games and now we have all the resources to do so."

PRIDE AND PREJUDICE

And in a video released after the purchase announcement, Fargo expanded: "I am proud and honoured to say we are now part of the Microsoft family. One of my dreams has always been to create an environment in which creativity could flourish, and this is going to allow that to happen in a way that I've never had before... Needless to say, I'm not going to be retiring any time soon."

He went on to say the studio would focus on what it does best – RPGs – and, just like Obsidian, the sale won't change much of the day-to-day activities. What it will change is the studio's access to the likes of quality assurance teams, localisation, focus groups, and general tech support – elements mid-tier dev teams often struggle with. "We live in this precarious position," Fargo said, "while simultaneously watching the audio, video, and design capabilities grow at a breakneck pace. Joining the Microsoft team is going to allow us to spend all of our energies crafting the game experience.

"The bottom line is: we will be able to make games we wouldn't have been able to make otherwise."

Matt Booty, corporate vice president at Microsoft Studios, said: "It was important for us to find studio partners who have strong creative visions, a mastery of their medium, and

^ *Crackdown 3* will finally be unleashing its destruction.

> ### "Our future has always been dependent on our ability to deliver good games"

are expert world-builders. Obsidian and inXile embody all of these qualities while also bringing expertise on the PC platform and a unique RPG focus to the table... It is a genuine pleasure to welcome Obsidian and inXile to the growing Microsoft Studios team and work with them to deliver bigger and more ambitious games for their fans. I'm excited to see the teams maximize their potential at Microsoft and can't wait for what the future has in store."

A less rosy factor regarding the acquisition centres on claims Obsidian has been suffering with management issues for a while now, with co-founder – now ex-employee – Chris Avellone remaining vocal about his claims of mismanagement at the top of the studio. Microsoft says it will be hands-off in the running of things, but if there is any truth to Avellone's claims, there's sure to be a closer eye on Obsidian's internal machinations.

Still, with these acquisitions, Microsoft now hosts some 13 dev studios at this year's Christmas party. The likes of Ninja Theory, Playground Games, and Undead Labs joined the Redmond-based publisher earlier in 2018, while a new studio headed by ex-Crystal Dynamics' Darrell Gallagher – The Initiative – formed around the same time. It will take a while for all of this action to calm down and start to really percolate, but the results – as Microsoft clearly hopes – could be very special indeed, especially if studios do maintain their independence. ⓦ

CRACKING DOWN ON VALENTINE'S

Elsewhere in Microsoft announcements, the company revealed that its long-awaited – and almost as long-delayed – open-world sequel *Crackdown 3* will finally be releasing on 15 February 2019, and it will be included as part of the Xbox Game Pass subscription service.

First revealed at E3 all the way back in 2014, *Crackdown 3* will also see a five-on-five multiplayer mode called Wrecking Ball added into the mix. The aim of the game? Well, to wreck things, naturally, in a specially made arena.

Saints Row 5: Red Faction… sorry, *Crackdown 3* will release on Xbox One and PC. As long as there aren't any more delays.

ⱽ Obsidian has a good track record with licensed titles.

Incoming

Cuphead: The Delicious Last Course ⬆

Studio MDHR's "Most exciting addendum" to its run-and-gun shooter is out next year, and will introduce a new playable character, Ms Chalice, plus a new area, additional bosses, and a bunch of extra weapons to test out. Best of all, expect lots more of that glorious, Tex Avery-inspired hand-drawn animation.

Release date: TBA 2019

Katamari Damacy Reroll ⬆

Like a dung beetle, you push around a sticky ball that collects random objects as it rolls. The more objects that stick to the ball, the bigger it gets. Keita Takahashi's 2004 action-puzzler has a timelessly addictive concept, which is why this HD remaster is so worth looking forward to. It's coming to PC, but it's the Switch edition, with its optional motion controls, that we're most keen to try out.

Release date: 7 December 2018

Tunche ⬆

Don't let the storybook character designs fool you: *Tunche* is a 2D brawler with bruised knuckles and violence in its eyes. Based on Peruvian legend, *Tunche* introduces Rumi, a wide-eyed heroine capable of unleashing some deadly combos. Crafting and a co-op mode should add depth to the fighting action, while the cartoon graphics give the game a cuddly, hand-crafted feel.

Release date: TBA 2019

Maneater ⬇

If you thought the poor old shark got a raw deal in *Jaws*, then along comes developer Blindside Interactive to even the score a little. *Maneater* is an action RPG where you control an angry bull shark on the hunt for the human that killed its mother. Along the way, the shark terrorises surfers, divers, and other hapless sea creatures. It's *Jaws: The Revenge*, but without Michael Caine's awful one-liners.

Release date: TBA
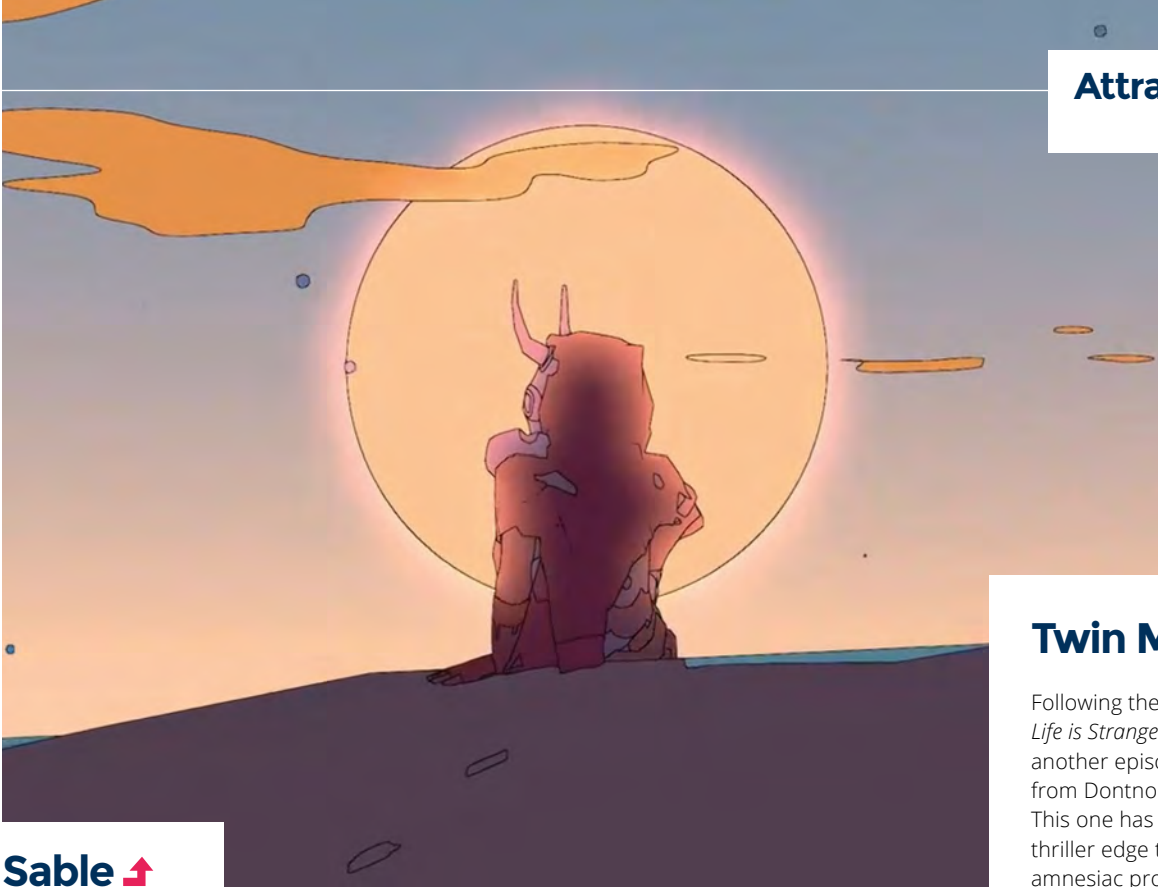
Sable ⬈

There are some games that can't be fully appreciated by simply glancing at a static image – to truly grasp how beautiful they look, you have to see them in motion. Like *Ōkami* before it, *Sable* is one of those games: an ambient 3D adventure that looks like a piece of Jean Giraud artwork that has somehow sprung to life. With its masked protagonist journeying along a parched landscape, it also calls to mind Hayao Miyazaki's anime and manga, *Nausicaä of the Valley of the Wind*. There are lonely deserts, eerily quiet industrial interiors, and sleek flying machines, all rendered in a cel-shaded style that makes the 3D landscape look like a delicate pen-and-ink drawing.

Sable's creators, Greg Kythreotis and Daniel Fineberg, describe the game as a coming-of-age story, with its cloaked heroine venturing out into the desert to discover the mysteries behind all those forgotten, cathedral-like places. Developed by Shedworks – a studio operating from a back garden in London – and featuring character animation by Micah Holland and music by Michelle Zauner, *Sable* promises to be one of next year's most sumptuous-looking indie games.

Release date: TBA 2019

Twin Mirror ⬇

Following the success of *Life is Strange*, along comes another episodic adventure from Dontnod Entertainment. This one has more of a noir thriller edge to it: there's an amnesiac protagonist, a small town, a murdered journalist, and a bathroom sink full of blood. To solve the case, you have to enter the hero's Mind Palace – a 3D dream space where clues can be compiled and examined.

Release date: TBA 2019
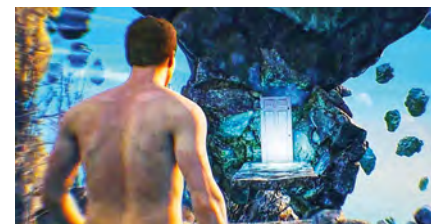
Earth Defense Force 5 ⬎

When you're feeling down about the state of modern society; when it seems like the world of gaming is absolutely committed to remaining po-faced about everything, rest easy: *Earth Defense Force 5* exists. The fifth main entry to a series that – somehow, some way – is still going after 15 years, *EDF5* brings back the absolute base-level aims and action of its forebears. You shoot giant ants, spiders, and other related towering beasts. You accidentally destroy entire cities and it doesn't matter. The frame rate often drops to single digits. And you have a brilliant, fun time doing it all. All together now: EDF! EDF! EDF!

Release date: 11 December 2018

Adapting
the mechanics of
tabletop RPGs

Pen-and-paper RPGs share many of the systems and mechanics of their video game counterparts. So why isn't adapting them more straightforward?

∧ CD Projekt's forthcoming *Cyberpunk 2077* takes an aggressive, fast-moving approach to adapting Mike Pondsmith's original tabletop game.

∧ Over 40 years since it emerged, we're still seeing the impact of Dungeons & Dragons on both tabletop RPGs and video games.

In the grime and murk of Night City, gaudy adverts blare and shady characters bustle back and forth on the crowded pavements. It's the world of CD Projekt Red's forthcoming *Cyberpunk 2077* – a world so detailed it's easy to forget that it's based on a tabletop role-playing game first published in the 1980s.

A world that once existed in the pages of a rule book or the minds of its players is being realised in a fully-3D form that, at least judging by the hands-off glimpses offered by CD Projekt in its reveal footage, is full of detail and systems that react to the player's actions.

And yet, beneath the 21st century sheen of *Cyberpunk 2077*'s voice-acted characters and high-resolution textures, traces of its pen-and-paper legacy still remain. At its heart we find the character creation, evolving skill sets and intricate world-building that has made designer Mike Pondsmith's original tabletop RPG, Cyberpunk 2020, so enduringly popular.

If those elements are easy to miss among the blinking neon signs and screaming gun battles of CD Projekt Red's adaptation then, well, maybe that's just proof that the elements that underpin most analogue RPGs are now so embedded in video games that they've become almost invisible. Games as fast-paced and violent as *Dishonored* and *Devil May Cry* still employ experience systems to add welcome depth to their fearsome action; *Borderlands* contains random weapon drops and skill trees.

All the same, the process of adapting tabletop RPGs to the video game medium remains a difficult one. So what, exactly, are the pitfalls of adapting an analogue RPG to a computer or console? How are the two similar, and in what ways do they differ? To find out, let's briefly head back to the 1970s, when both the video game medium and the tabletop RPG were still in their infancy.

THE DIE IS CAST

Just about anyone who's ever thrown a twelve-sided die will know something about the tabletop RPG's formative years. Although many of its rules and elements hark back to tabletop war-games, it was Dungeons & Dragons, designed by Gary Gygax and Dave Arneson, that established the

▲ *Baldur's Gate* **was such a classic because BioWare "genuinely cared about translating it properly," according to Chris Avellone.**

framework of the pen-and-paper RPG. First published in 1974, Dungeons & Dragons introduced a complex set of rules which allowed a group of players to create and inhabit imaginary characters and embark on fantastical quests.

D&D's mechanics are underpinned by numbers and probability, whether it's a character's intelligence and ability to wield a sword, or how much damage they take when they're smitten by an enemy's club. But what really makes D&D so absorbing to its devoted core of fans is its concept of a shared storytelling experience.

Although playing D&D requires physical items like dice and a pen and paper, its true magic is that its stories are sculpted by the decisions of both the player and the Dungeon Master (or Game Master) who presides over its imaginary world. The Game Master can follow the rules as rigidly or as loosely as he or she likes; they can intuit when players are growing frustrated or bored by a difficult encounter and modify the game accordingly. By the same token, players can make unpredictable decisions that a Game Master could never foresee.

Even the most cutting-edge of modern RPG video games can't quiet replicate the sheer freedom of a pen-and-paper adventure, as *Fallout 2* and *Baldur's Gate* designer Chris Avellone points out.

"With tabletop games, the Game Master can react to player actions on the fly, and customise and refocus the adventure quickly, while in a computer role-playing game you have a finite set of actions and results the players can engage in," Avellone says. "And you have to plan for them all in advance of the game's release, and ensure you're giving enough options to the player to make the 'role' in 'role-playing game' worthwhile."

Tabletop campaigns can last for hours, days, or even years; players are able to inhabit their characters for so long that they can take on an imaginary life of their own. Indeed, tabletop RPGs are only really limited by time and imagination; video games, meanwhile, are made with one eye on costs. One developer who knows all about this is Mike West: he's the creative director behind the upcoming RPG *Gloomhaven*, adapted from the tabletop game of the same name, so he's well aware of how a budget can inform the scale and detail of a role-playing video game.

"Game development costs money," West says. "Every wall, crate, door, or chest, every monster animation, spell effect, or weapon mesh, every line of dialogue, dying scream, or dragon roar, and every choice made and the consequences from those choices needs to be budgeted and paid for. When you face a dragon in a pen-and-paper RPG, it's words, with some numbers on a sheet of paper, or maybe a lead miniature. In a video game, it's cold hard cash."

PAPER TO PIXELS

As the popularity of the tabletop RPG grew through the second half of the 1970s, so too, of course, did the new medium of video games. And while early computer and console games like *Pong*, *Breakout*, and *Space Invaders* often focused on action, game designers were also quick to ➡

CASTING SHADOWS

Inevitably, the process of adaptation can be a painful one. The making of *Shadowrun*, a take on FASA's 1989 tabletop RPG of the same name, for example, was infamously difficult. Australia's Beam Software first began work on its adaptation for the Super Nintendo in 1989, and the team sought to retain much of the source game's mechanical complexity. *Shadowrun* took a then-hefty four years to make, and was a financial disappointment when it finally emerged in 1993. The game quickly garnered a cult following, however, and has since been praised as a pioneering instance of a console RPG made with depth as well as style; indeed, it could be argued that *Shadowrun* was an early foray into territory later explored by the likes of an acclaimed series like *Mass Effect*.
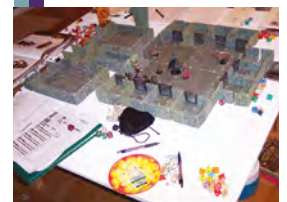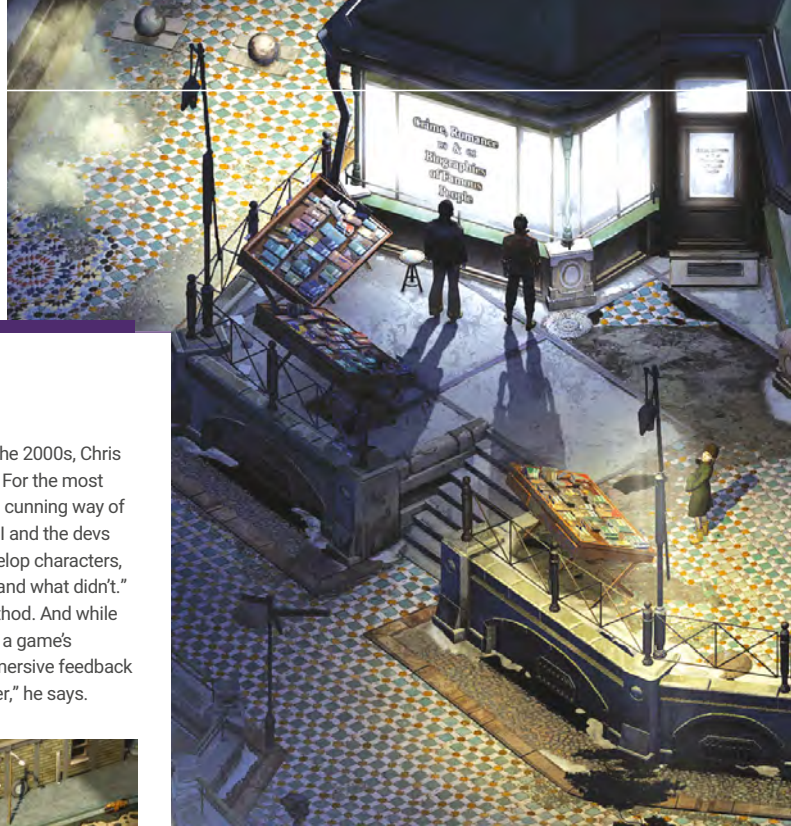
VIDEO GAME TO TABLETOP?

The adaptation of tabletop RPGs to video games isn't necessarily a one-way street. In the 2000s, Chris Avellone was designing Black Isle Studios' sequel to *Fallout 2*, code-named *Van Buren*. For the most part, Avellone was the only developer working on the project, and so he came up with a cunning way of testing its systems out by himself: "I turned *Van Buren* into a pen-and-paper game that I and the devs who'd eventually move onto the project could play," Avellone explains. "They could develop characters, explore areas I'd laid out, test certain companions for the game, and see what worked and what didn't."

Avellone says he quickly gained useful feedback from this analogue playtesting method. And while *Van Buren* was later cancelled, Avellone believes it's a great way of finding out whether a game's systems will work for players. "I wish more titles had the chance to get such direct, immersive feedback from developers and players 'adventuring' through the computer game version on paper," he says.
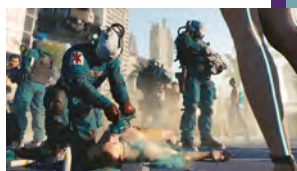

figure out how the rules and storytelling of tabletop RPGs could be adapted to a machine.
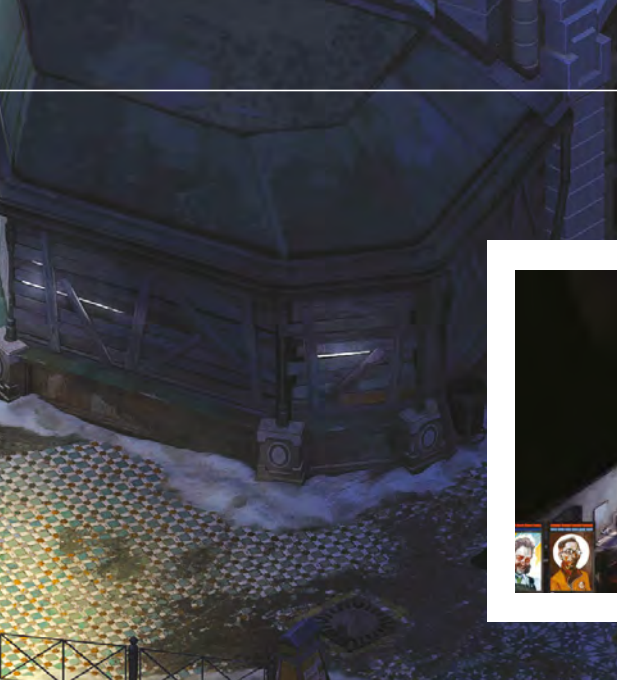
As early as 1975, *Dungeon*, programmed by Dan Daglow on a PDP-10 mainframe computer, attempted to simulate the combat and high-fantasy setting of Dungeons & Dragons in just a few lines of code. In 1979, Richard Garriott (better known as Lord British) created *Akalabeth: World of Doom* for the Apple II – a fantasy RPG that served as a dry-run for his genre-defining *Ultima* series. The late seventies also saw the growth of the MUD, or Multi-User Dungeon – a pioneering ancestor of the modern MMORPG.

Although these early games couldn't hope to recreate the social nuance of the D&D campaigns which inspired them, they still managed to zero in on the two other pillars of the tabletop RPG: a system of rules governed by mathematics, and the creation of an imaginary world that is affected in some way by the player's choices. From 1975's *Dungeon* to 2015's *The Witcher 3*, it's these pillars of systems and storytelling that video games have sought to evolve and improve on ever since.

> ## "This game is unlike chess in that the rules are not cut and dried"

"D&D and other pen-and-paper RPGs are still the ultimate goal for video game RPGs," concurs Mike West. "These P&P games allow players complete freedom in their choices, the characters they play and the locales and situations they find themselves in, while video games are continually evolving to replicate this. More and more of these elements will find their ways into the video games you play, although we are still a long way off from free-form video game role-playing."

Chris Avellone adds: "A lot of the principles D&D established – statistics for characters (Strength, Intelligence, Class Levels, Hit Points), RPG races and classes, and even the creatures you encounter – still find their way into video games today."

ADAPTATION

Through the eighties and nineties, video game developers took a varied range of approaches when adapting the rules of tabletop RPGs. Indeed, entire subgenres have sprung up around those differing approaches; there are hack-and-slash games – like John Palevich's seminal dungeon crawler, *Dandy* – that take some elements from tabletop RPGs but eschew much of their depth and nuance. A mechanically complex game like *Baldur's Gate*, meanwhile, adheres quite closely to the rules of Advanced Dungeons & Dragons' 2nd edition, such as the creation of characters defined by their race, class, and abilities. ("The *Baldur's Gate* series did a great job," says its designer Chris Avellone, "mostly because I feel BioWare

genuinely cared about the licence and genuinely cared about translating it properly.")

You only have to look at the staggering variety of games adapted from Dungeons & Dragons to see how many different ways a tabletop RPG can be reinterpreted as a video game: from the ambitious *Pool of Radiance*, SSI's ambitious RPG from 1988, to the more action-oriented console title *Forgotten Realms: Demon Stone* from 2004, developers have picked and chosen elements from tabletop RPGs to suit their own adaptations. It's inevitable, too, that some of these adaptations have been better than others. As CD Projekt Red's Marcin Blacha – story director on *Cyberpunk 2077* – tells us, there are a number of pitfalls a developer can fall into when adapting a tabletop RPG.

"The main pitfall of adapting a tabletop RPG into another format is the belief that a set of rules and the setting is enough to recreate the fun of playing with friends," Blacha says. "Single-player video games, however, are meant to deliver a different kind of experience. The dynamics are focused on the interactions between the player and the game, the latter replacing other participants of the experience. We can't script human complexity, wit, and imagination. We can, however, create an elaborate and believable sandbox, featuring a focused direction, vivid visuals and sound, and meticulously crafted dialogues. In my opinion, a good tabletop adaptation should take what's important in the source material, that which makes it unique, and build a convincing and directed experience based on it."

It's deciding exactly how to implement the mechanics of a pen-and-paper RPG in a video game that provides developers with the biggest challenge, in Chris Avellone's experience; whether it's how spells and abilities work, or how turn-based combat is translated to a real-time system, there are dozens of creative decisions to be made at every stage.

"In a computer game with very finite results and outcomes, you need to redefine exactly what that wide-ranging spell can do in the context of the game," Avellone says. "Furthermore, you'll discover that many spells meant to aid travel and exploration may not directly translate into a computer game, because they need the fictional game environment a Game Master can narrate."

"The first thing you have to decide is what *must* go in," says *Gloomhaven* creative director Mike West. "The core of the game, the rule-set, the setting, certain creature types or hero classes... Once you have all of that, you have your MVP, or Minimum Viable Product. It sounds quite businessy, but fundamentally, you've listed everything that a fan of the game will expect. You then see how much that costs; if it's in budget, you then add other features until it fills the budget up."

Indeed, adapting the rules of a tabletop RPG can be tricky to replicate in a video game, not just because of their complexity but because of their potential flexibility. Chris Taylor, lead designer on the original *Fallout* and inventor of the SPECIAL system (which directly emulated ability sheets of tabletop RPGs), reminds us rule zero in the original Advanced Dungeons & Dragons books read: "This game is unlike chess in that the rules are not cut and dried." ➡

> Based on the tabletop RPG, *Gloomhaven* is currently in development at Flaming Fowl Studios.

^ By modifying and expanding his own tabletop game, 1971's Chainmail, Gary Gygax helped author an entire genre with Dungeons & Dragons.

"Rule zero is the most important rule in tabletop RPGs, and computers don't like 'guidelines,'" Taylor says. "They like hard, cold, well-defined mathematical equations."

Even a tabletop war-game, with a more rigid set of rules than a typical bout of Dungeons & Dragons, can pose challenges of their own as they're adapted into a video game. Taylor experienced this for himself in the late 1990s, when he worked on *Star Trek: Starfleet Command* – an adaptation of the Star Fleet Battles tabletop war-game.

"Even with all those well-written rules," Taylor says, "we had to make some changes to fit the computer game. One consideration is that we were going from a turn-based game to real-time. We also removed or automated some of the player decisions to streamline the user interface."

Then again, some systems can translate quite cleanly from one form of game to the other: turn-based combat, for example, can work extremely well in a video game if it's balanced correctly.

"All the mechanics of combat and strategy translate very well," Mike West says. "For example, *Gloomhaven* is primarily a combat-oriented strategy board game with an RPG choice-and-consequence wrapper. Combat between animated characters, with magical spells flying around, the roars of enemies and clashing of weapons, is always going to do a better job of portraying what is happening than rolling dice and moving lead figures around on your dining table."

DIFFERING DYSTOPIAS

As an example of how the mechanics of a tabletop game can be interpreted in wildly different ways, it's worth comparing *Cyberpunk 2077* with a much lower-budget game: *Disco Elysium*. The latter, developed by Zaum Studio, actually began life over a decade ago as a pen-and-paper game. Its lead writer and designer, self-confessed Dungeons & Dragons fan Robert Kurvitz, began work on the game in its nascent form over 15 years ago.

Brought to life with distinctive, hand-painted graphics, *Disco Elysium* takes a distinctly literary approach to its storytelling that will be immediately familiar to players of tabletop RPGs. The detective's path through the game is governed by his inner dialogue, and the player's choices define both how the anti-hero reacts to the world and, in turn, how its inhabitants react to him.

In *Disco Elysium*, even combat is derived from inner dialogue options rather than selecting predefined moves like 'punch' or 'shoot'. There are turns (here dubbed whirls), there are dice rolls that decide outcomes, but the results of those outcomes are varied and unpredictable: a player's choice during any given moment can determine with characters are killed, injured, or get away unscathed.

"If this sounds like a lot to produce," Kurvitz writes on the game's dev blog, "then that's because it is. Do not expect an encounter to await behind every corner. But I thoroughly believe this approach is, if not the future of RPGs, then an early warning of that future."
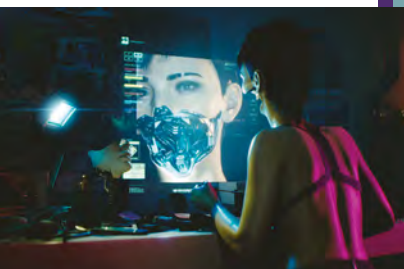
Cyberpunk 2077, on the other hand, takes a more aggressive, real-time approach to its combat. While its developers say the game's an RPG first and an FPS second, its level of action will certainly help endear it to an audience unfamiliar with its tabletop origins. Not that its pen-and-paper underpinnings are difficult to spot: for CD Projekt Red, capturing the essence of Pondsmith's original game – if not all the mechanics – was key.

"We had numerous discussions on the subject of which Cyberpunk 2020 features we wanted to include in our game," Marcin Blacha tells us; "from the mechanics, to the general look and feel of the world and its individual building blocks, to the iconic characters. Mike Pondsmith is, of course, an important person in that conversation. We exchange ideas, consult with him regarding matters related to the game's setting. As the creator of Cyberpunk 2020, he knows the universe we're working within inside out, which makes him an invaluable member of the team."

"Video games and tabletop RPGs are two nations united by a common language"

INTO THE FUTURE
Video games and tabletop RPGs, then, are two separate nations united by a common language: at their best, they both use complex mathematical systems and intelligent storytelling to create imaginary worlds and characters that, in the moment, feel astonishingly real. At their heart, tabletop RPGs are essentially a form of co-authored storytelling, where the level of freedom to improvise and explore is limited only by the participants' time and imagination. Mike West also points out that tabletop RPGs have another useful side effect: they can teach players a great deal about the mechanics of making games.

"Anyone who's sat down and run their own RPG campaign with their friends likely has a good understanding of storytelling, branching narrative, combat mechanics, and gameplay balance," West says. "All of these skills are highly desirable for modern-day game developers."

Video game RPGs, meanwhile, have evolved to an astonishing extent since the medium began; games like *EverQuest* and *Neverwinter Nights* make an impressive attempt at simulating the experience of being a Game Master; *Planescape: Torment* and *Disco Elysium* feature vast dialogue

trees; the *Elder Scrolls* games depict huge worlds and ever more realistic illusions of non-player characters with their own personalities, histories, and goals.

It follows, then, that RPGs will continue to evolve in exciting and unpredictable ways – even as they continue to draw on the influence of those tabletop RPGs that originally set the pace.

"The main way RPGs will evolve," West says, "is by being able to generate better and better content on the fly without having to be authored by designers like me. Computers will soon be able to make quest structures, give characters long term motivations and make any interlocking stories that the player can get involved in. These stories will also allow many more emergent consequences than you see now."

"One path could be more reactive storytelling," Chris Taylor agrees. "More depth, more options for the player, larger dialogue and story branches. Of course, that's more content, which would require more development money. Since big-budget games have more concerns about risk, I expect most evolution will come from smaller titles. Perhaps AI research will advance to a point where we can have virtual GMs that create or modify content on the fly. I look forward to playing those in my self-driving flying car." Ⓦ

△ First published in 1988, Cyberpunk (later Cyberpunk 2020) established a high-tech dystopia of body mods and gloomy social malaise.

THE DIGITAL ADVANTAGE

Video game RPGs have one obvious advantage over their tabletop counterparts, Chris Avellone points out: you can play them on your own.

"When I was growing up, I wanted to play tabletop games, but trying to gather a group and also trying to find someone willing to put in the work to be a Game Master was difficult," Avellone tells us. "But the first time I saw *The Bard's Tale II* being played on my friend's Commodore 64, I suddenly realised, maybe I didn't have to wait for someone willing to take up the reins. I could play against a digital Game Master and still have an enjoyable experience."

6/6

^ Rob Wass has spent seven years perfecting his 3D platformer.

Interactive

Clive 'N' Wrench's homage to the nineties platformer

It's been in development for seven years and counting. Meet Clive 'N' Wrench, and the solo developer behind it

ˇ *Clive 'N' Wrench* is now due for release in 2019.

With the likes of *Crash Bandicoot* and *Yooka-Laylee* returning to consoles over the past year or so, the 3D platformer is enjoying a belated resurgence. That wasn't the case back in 2011, though, when the apparent death of a once popular genre spurred graphic designer Rob Wass to try to make one of his own. "One day, I decided it'd be a laugh to just try myself," Wass tells us. "If no one else is doing it, then why not me?"

Wass's project, then, is a Unity-based action game in the mould of N64 hits like *Banjo-Kazooie*. Like that earlier hit, and its spiritual sequel *Yooka-Laylee*, *Clive 'N' Wrench* introduces a cartoon duo – in this case, Clive the rabbit and Wrench the monkey – who dash and leap around collecting things. The twist here is that Clive the rabbit can spin his monkey sidekick around his head, which allows him to extend his jump and float across impassable chasms – this comes in handy when you're trying to collect, say, a key secreted on a hard-to-reach platform.

It's an ambitious game for a solo developer – particularly one who's never made a full game before. You only have to look at how in-game cameras evolved in 3D platformers of the early

> **"Pretty much every discipline has been a case of learning on the job"**

1990s to the 2000s to see that it's a tricky genre to get right. For every much-loved classic like *Super Mario 64* or *Jak and Daxter*, there was a clunky, hard-to-control nightmare like *Bubsy 3D* or *Jersey Devil*.

"I was rather naive back then," Wass admits. "I had no idea how big of a project I would be taking on at all. Pretty much every discipline has been a case of learning on the job, which may explain why the game has changed so drastically over its lifetime."

For the past seven years, Wass has been reworking and honing his project. It's had its ups and downs in that time, including a name change (it was once called *Clive and the Stones*) and two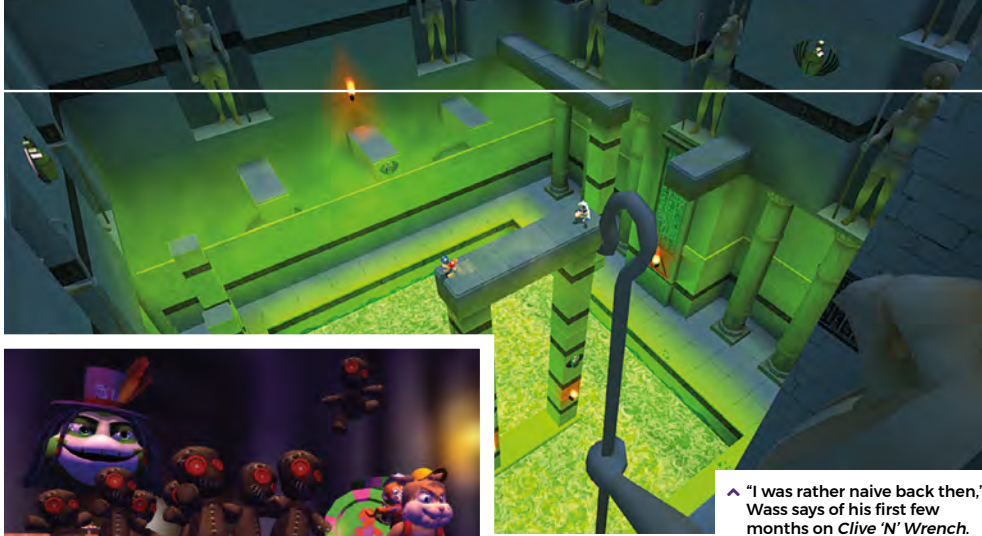 unsuccessful campaigns on Kickstarter. One major turning point came when Wass brought aboard character artist Luigi Lucarelli, who helped overhaul the game's visuals and bring its style and overall polish closer to the Rare-developed platformers that inspired it.

Unity, meanwhile, has proved both a blessing and a curse over *Clive 'N' Wrench*'s long development; while it helped Wass get early builds of the game up and running without having to resort to too much fiddly coding ("I'm not the world's best programmer by any stretch of the imagination," he tells us), the job of

▲ "I was rather naive back then," Wass says of his first few months on *Clive 'N' Wrench*.

moving the game from outgoing versions to new can, he says, "cause all manner of headaches."

Thanks to the occasional spot of programming advice from friendly indie developers, though, Wass's game has changed almost beyond recognition over the past six years. He's worked hard at improving the physics and feel of the controls, and his time on *Clive 'N' Wrench* has also helped him gain a better understanding of level design.

TOWARDS THE FINISH LINE

"A big question I often ask myself when designing levels is, 'is this too linear, or not linear enough?'" Wass says. "I try to make sure each level has a good enough mix of the two to allow exploration, but also to make sure the player doesn't get lost or bored. Another big part of this is the need for landmarks: unique objects or locations that help a player to know where they are in relation to the rest of the level."

In more recent years, Wass has used Patreon to help fund *Clive 'N' Wrench*'s development. This has meant that he's been able to reduce his working days as a graphic designer from five days to four, giving him more time to devote to his passion project. As of autumn 2018, *Clive 'N' Wrench* is now progressing nicely; Wass's father (who, handily, happens to be a composer) has written the music, and Wass estimates that the game is now about 75 percent complete.

"There is a finish line in sight," Wass says; "I know how the finished article will look now, so it's just a case of filling in the gaps."

It's been a long road for *Clive 'N' Wrench*, and its development has seen Wass progress from a self-described amateur to a fledgling indie developer. So, given all his experiences so far, what advice would he give to a budding designer thinking of starting their own game? One consideration, Wass says, is how and when you start showing off your work-in-progress

– especially if you're thinking of funding it via Kickstarter.

"It does seem that people are far less trusting of Kickstarter projects these days," Wass says, "given the high number of missed promises, and disappointments. At the very least, my advice would be to have a solid vertical slice of your game done before launching that sort of campaign, or else you stand very little chance! Patreon on the other hand, has been fantastic, both for engagement and for finding the right people to help test out the game in its alpha form."

Clive 'N' Wrench is currently pencilled in for a 2019 launch, although Wass hasn't yet decided on a release date. Once complete, however, *Clive 'N' Wrench* will, Wass hopes, transport players back in time to the genre's heyday.

"The goal was always to make as faithful a recreation of that time's platformers as possible," Wass says. "My hope being that if someone were to pick the game up without any prior knowledge, they'd be fooled into thinking it came out in 2004." ⓦ

The 3D platform renaissance

Like fashion and financial crises, video game genres appear to move in cycles. Now, 20 years on from its first flourish, the 3D platformer is enjoying a resurgence. We've seen the team behind Rare's *Banjo-Kazooie* reunite to make the cartoony homage, *Yooka-Laylee*. *Crash Bandicoot: N. Sane Trilogy* remastered the PlayStation originals for a new generation. *Super Mario Odyssey* was arguably the best of them all: unabashedly modelled on the franchise's first 3D outing, *Super Mario 64*, it was an absolute joy – the perfect collision of old and new.

⌄ Artist Luigi Lucarelli has helped Wass transform the game's visuals.

Life in the trenches

JANE WHITTAKER

Jane Whittaker has been in game development for over 30 years, rising from the ranks of trainee programmer to Vice President levels in the industry.

I've been making games since dinosaurs ruled the world. Well, perhaps not that long, but certainly since my first commercial release in 1981. I joined the industry full time in 1984, beginning an unbroken career that stretches to this day. I've done pretty much every job in development and publishing; I've worked with such companies as Atari, Electronic Arts, and Microsoft, across an eclectic range of titles, including *Microsoft Flight Simulator*, *Alien vs Predator*, and a whole host of open-world titles. At the time of writing, I've gone back to my roots and formed a new development studio, Blue Sock Studios, so I'll keep you posted as we seek publishers and partners for this new adventure.

So in this column, I'll be lifting the lid on 25 years of industry techniques and practices, sharing anecdotes of how some of your favourite games were made, and tall tales from the trenches of game development. First, then, let me tell you the story of *Alien vs Predator* on the Atari Jaguar – and how such a big game ended up being developed around my parents' kitchen table in the UK.

The programming for *AvP* was led by Mike Beaton and myself – both ex-pat Brits working at Atari's office in the San Francisco Bay Area. Along with our producer Purple Hampton, we were working night and day to meet the game's Christmas release. As the deadline approached, Mike understandably began to feel homesick. A hurried council of war was called to discuss how best to proceed. And so, before I knew it, a phone call had been placed to my parents, asking if we could hijack their home and use it as a temporary Atari office.

That might sound fairly straightforward. Mike and I would board an aircraft, and away we'd go, back to the UK.

⌃ *Alien vs Predator*: partly developed in a small house in sunny Yorkshire.

Things aren't that simple, though, as in addition to us relocating to the UK, we needed our entire development kit, and machines, and array of tools we were using. In a bizarre scene, we had an army of couriers knocking at my parents' front door, one after the other, delivering all our kit. This included extremely large Atari TT machines and monitors, prototype Atari Jaguars, a couple of PCs, and all sorts of impedimenta. It was more like an army of Sherpas carrying equipment for an ascent of Everest rather than a couple of programmers finishing a game.

So, in my parents' small house, space was rather an issue (which we hadn't considered before – we were, after all, programmers with a can-do attitude). We ended up spending many weeks coding the game on the kitchen table, with my parents providing full hotel services, especially for visits from Atari. We actually had Sam Tramiel, CEO of Atari, turn up and share beers with my dad as work progressed.

So if you think game development usually takes place in shiny air-conditioned offices, think again. A fair old chunk of *Alien vs Predator* was developed in a terraced house in Yorkshire. ⓦ

> **"In a bizarre scene, we had an army of couriers knocking at my parents' front door, one after the other, delivering all our kit"**

Toolbox

The art, theory, and production of video games

∨ **Learn more about the maths of balance on page 34.**
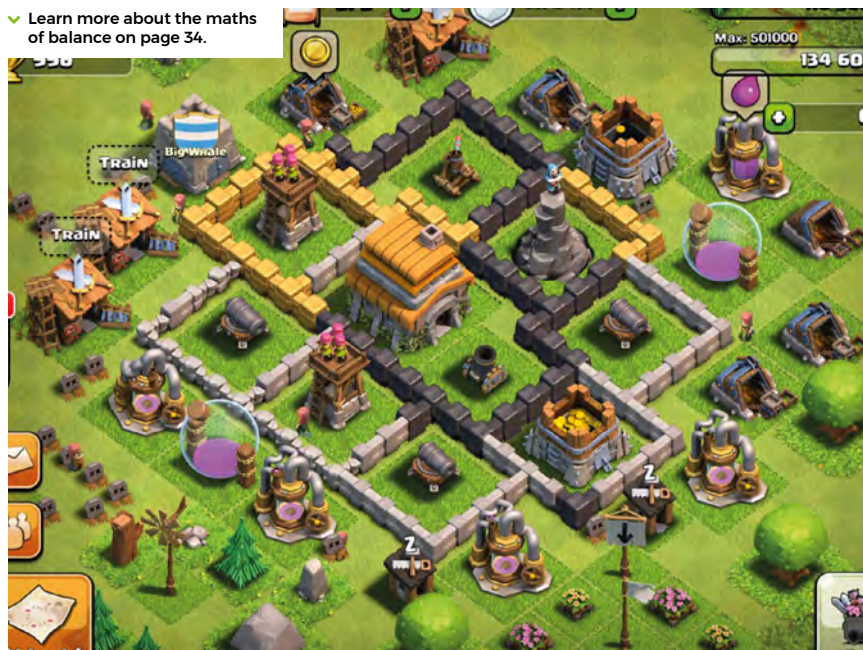
∨ **Half-Life 2 can transform your understanding of FPS level design. See page 28.**

Getting into FPS level design

Want to design your own first-person shooter levels?
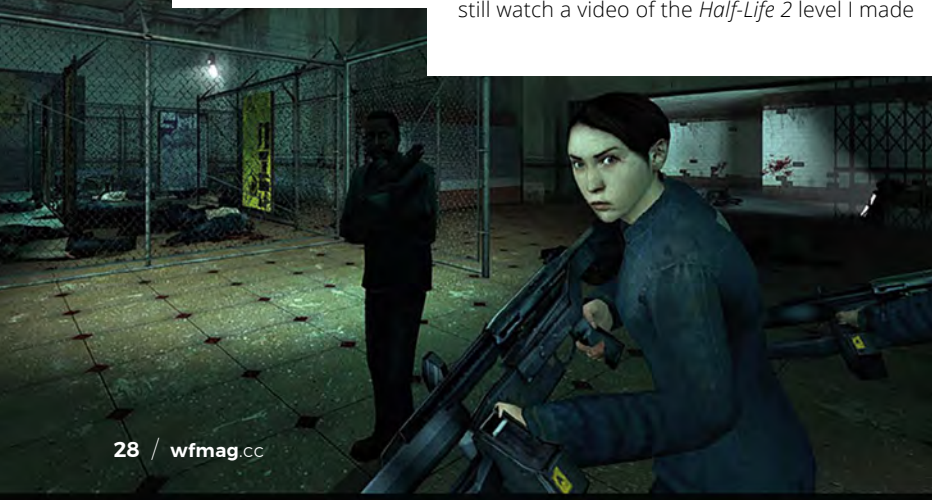Then Half-Life 2 is a perfect place to start

AUTHOR
STEVE LEE

Steve Lee is a former designer at studios including Arkane
and Irrational, and is now freelancing and consulting.
doublefunction.co.uk

⌄ **Here's how Steve's Terminal
level looks in Valve's
Hammer Editor, the studio's
Source engine map editor.**
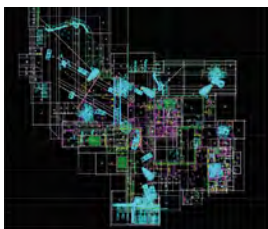
⌄ **Steve Lee's Terminal level up
and running in *Half-Life 2*.**

've been a designer in the games industry for about 12 years now, mostly working as a level designer on such triple-A games as *Bulletstorm*, *BioShock Infinite*, and *Dishonored 2*. The through-line that connects these titles is my love for the mix of action, storytelling, and exploration in first-person games. Like many designers of my generation, I started out making my own maps for *Doom*, back in the 1990s: one day, my older brother got hold of a *Doom* level editor called DoomCAD. As an eleven-year-old, it was a real watershed moment for me to learn that I could design levels myself.

The idea of learning game development at school or university basically didn't exist back then, but when *Doom* helped kick-start the mapping and modding scene, a number of later shooters included official level editors. I moved onto *Quake* level editing after *Doom* – another milestone, because it was one of the first truly 3D game engines that was deliberately designed to be modded – and later, *Half-Life 2*. You can still watch a video of the *Half-Life 2* level I made

as my final project in university on YouTube (**wfmag.cc/GkjGBB**). That level and video was my main portfolio piece when I applied for level design jobs in the industry.

Today, most people talk about Unity and Unreal 4 as the game engines of choice for would-be designers – but for getting into a first-person, single-player level design in 3D environments, I still recommend *Half-Life 2* as an ideal way to get started. It's modern enough that you can make things that look good, but also simple enough that it won't take you three years to finish a map on your own (which is an important thing to consider while you're learning).

Unity and Unreal 4 are obviously great at a lot of things, but they're largely a blank canvas for making games from scratch. This basically

A few tips for beginners:

1 Start with the smallest ideas and projects that you can think of. You'll learn far more by finishing a few small projects than starting one major project that's too ambitious to complete.

2 Focus on the player's experience. What can the player do, what are they thinking at any given time, and what happens if they perform a particular action?

3 Work efficiently to make something playable early on, in simple, rough form – then test it, analyse it, and build on it from there.

4 Get some friends or find people online to playtest your levels and give honest feedback throughout the process. Testing your own work is important, but the real acid test is when other people play it.

▲ **Placement of enemies is a key consideration in FPS level design.**

▲ **Doom Builder's top-down level editor is clean and intuitive.**

▲ ***Doom* may be an antique, but Doom Builder is still an intuitive, fun map editor.**

means that in order to do any level design with them, you have to make a whole game, too – exponentially multiplying the amount of work on your plate before you even start thinking about level design. If you know that it's

> **"What employers want to see is that you can make real, playable levels, with smart, interesting design"**

specifically level design that you want to get into, I strongly recommend you approach it in a way that lets you focus on it as purely and efficiently as possible.

I want to stress that to get a job as a level designer at a modern studio, you don't need to use the latest software or make levels for the latest, most complex games. My last job on a triple-A game was as a Senior Level Designer on *Dishonored 2* at Arkane Studios, and for my level design test, I made another, small *Half-Life 2* level to show that I knew my stuff and was a good fit for the team. This worked partly because I knew that Arkane have a history of using that engine, and that they like the kind of game *Half-Life 2* is: rich world-building and narrative, non-linear, systemic gameplay – all of that stuff.

What employers want to see is that you can make real, playable levels, with smart, interesting design, that are robust enough to deal with lots of different players let loose inside them. Knowing how to use a certain editor or tool a company uses is a plus, of course – but if you've made something good, they'll assume you can learn a new tool on the job.

So this first column is a call for you to go and seek out some level design software, look up the level design communities and tutorials online, and see what you can make. These projects take a lot of time, but stick with it and you might be surprised by what you can come up with, and where it leads you. ⓦ

What if I don't like shooters?

Here are a few alternative approaches for you to consider, if you're keen to dip your toes into level design some other way:

- Make a small *Half-Life 2* level that tells a simple story without any action – perhaps through environmental storytelling, some simple interactions with other characters, and using the game's weapons to solve puzzles and navigate the area instead of engaging in combat.

- Find another kind of game that you like that comes with a level editor. *Portal*, *Super Mario Maker*, *TrackMania*, *Skyrim* – there are plenty of them to choose from.

▽ ***Half-Life 2*: classic game, perfect for learning level design.**

CityCraft: how urban functions shape video game cities

Understanding how real cities function will make your virtual cities really spring to life
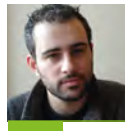
AUTHOR
KONSTANTINOS DIMOPOULOS

Konstantinos Dimopoulos is a game urbanist and author of the forthcoming *Virtual Cities* atlas.

Cities have been a part of video games for almost 40 years, and even though the medium has evolved almost beyond recognition, there are still occasions where virtual urban spaces simply feel wrong. Crucial elements are often forgotten, civic sizes aren't properly conveyed, and even open worlds that look lush and colourful at first glance can feel uncanny and paper-thin on closer inspection.

So what are the important things to consider when building our own video game cities? Well, as we covered in the last issue, a city is a spatial expression of cultures and their histories. A city is its people, economy, monuments, power structures, architecture, vehicles, customs, art, history, and, above all, a city is its functions. Let's take a closer look at what those functions mean, how they interlock, and end with a working example.

A HOLISTIC APPROACH

In order to become believable, virtual cities have to first and foremost look as though they're functional. That is, they have to be perceived as complete entities, meaning that even if all you need are a few façades or some small locations across a quiet town, you still have to consider how it all works in a greater context. Something as simple as a rough sketch with a descriptive paragraph is better than nothing, provided


▲ *SimCity* has long demanded that its players grow to understand urban functions.

certain basics like the economy are in place. Try to figure out where people live and work, and how they entertain themselves. Sketch out roads and avenues, decide on power sources, place social groups, and design public space.
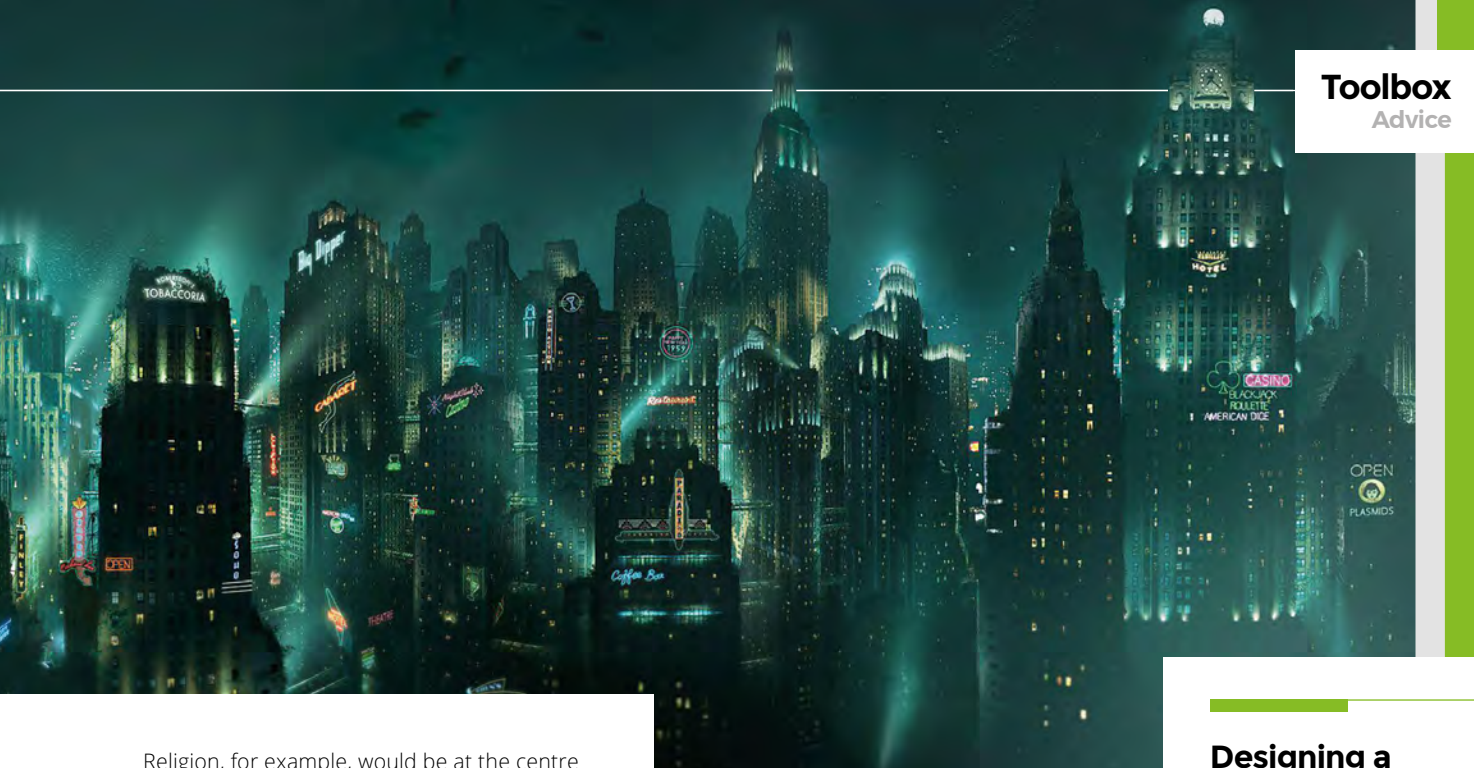
Say, for example, you're designing a game that takes place in an average American cul-de-sac. Before you rush off to buy models of a house and a car from an online assets store, think first about its context: the cul-de-sac might be located outside an average-sized US city in the Midwest with breathtaking mountain views, a religious population, and a mining history. Think about your location this way and you'll be able to create a far richer and more believable environment for your players.

URBAN FUNCTIONS

Cities are constantly growing and evolving, and looking back through history, we can see how their functions have changed over time.
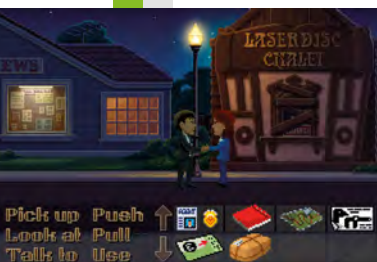
▲ As beautiful a town as Thimbleweed Park is, its (eventually explained) lack of residences borders on the uncanny.

Ideology is the function that dominates *BioShock*'s Rapture, influencing everything from its location to its architecture and economy.

Religion, for example, would be at the centre of a holy city; settlements in the medieval era would often include defensive walls to fend off attackers. The functions of a modern city can include commerce, production, consumption, transportation, culture, the circulation of capital, governance, and housing.

Cities evolve to meet those changing needs, but there are certain core functions, those common to all cities, that remain constant. After all, those basic functions are why people originally started gathering together in large settlements in the first place: they were looking for shelter, work, sociability, and access to food and water.

A WORKING EXAMPLE

So, how can the concept of urban functions be applied to the setting of an actual game? Here's an example: let's imagine we want to create an isolated setting for a detective game. Placing it in an icy, late 19th century Norway would allow us to create a town with a modern feel, but also make its isolation feel plausible to the player. We could choose a coastal town on the fjords with a modest population of a few thousand. Not only would such a choice make historical sense, but it would also be relatively cheap to build in terms of assets (your textures and 3D models of buildings, for example), and would offer plenty of varied spaces to explore.

Approaching the town from its functional angle means thinking about how it provides housing for its people, rudimentary roads for them to move around, and jobs that would allow them to buy food and fuel. In short, the functions to consider are: residence, transport, economy, commerce, and survival.

> **"In order to be believable, virtual cities have to look functional"**

Structuring the place around fishing would work well, and would provide us – after a bit of research – with a wealth of history, and associated legends. The city's functions would also be based entirely around the fishing industry (transportation, storage, retail, boat repairs, supplies, workers' residences, and so on), and also the common functions of the 19th century European city (town hall, hospital, public space, law enforcement).

If you wanted to, you could add hints of history from the Viking era of ancestral shrines, medieval wooden temples, the harbour expansions of the 18th century, and contemporary, canned fish meat factories. You've now got a solid foundation for a vibrant city with its workers' district, industrial areas, rural suburbs, entertainment spots, and harbour area.

In other words, what the player sees in your game is only the tip of the iceberg. Consider all the other background elements that make your location work, and you'll end up with a far more effective setting for your story. Ⓦ

∨ The whale oil industry and its related functions sit at the very heart of *Dishonored*'s urbanism.

Designing a Lovecraftian city

The popularity of Lovecraftian horror and 1920s New England go hand-in-hand. So, what would a city of the time be like? Well, it would be well connected with its surrounding landscape, and feature a population of at least a few thousand. According to its functions, such a place would have to include elements from the following, far from exhaustive list: bus stations, railways, sanatoriums, libraries, police departments, jails, shops, taverns, graveyards, post offices, banks, squares, offices, hospitals, schools, factories, houses, churches, and graveyards. Even if you aren't planning on creating your own *Call of Cthulhu*, making lists like these is a great way to start thinking about your own virtual city.

Source Code

Galaxian's dive-bombing aliens

Namco's Galaxian took 2D shooting games to new heights thanks to its dive-bombing aliens

AUTHOR
RYAN LAMBIE

Released by Taito in 1978 and designed by Tomohiro Nishikado, *Space Invaders* earned millions of dollars at a point when the games industry was still in its infancy. In its wake, rival manufacturers scrambled to make shooting games of their own, almost all of them sticking rigidly to the *Space Invaders* template: the player moves left and right, shooting a phalanx of aliens slowly advancing from the top of the screen. Even the names hewed cheekily close to Taito's branding: late seventies arcades were packed with games like *Beam Invader*, *Space Attack*, and *Cosmic Monsters*.

Galaxian, on the other hand, represented a more concerted effort to expand the *Space Invaders* rulebook. Designed by Kazunori Sawano and Koichi Tashiro, 1979's *Galaxian* was Namco's aggressive response to Taito's invasion juggernaut: unlike the monochrome *Space Invaders*, *Galaxian* offered full-colour sprites, while the action took place against a shimmering,

scrolling starfield that created a feeling of movement.

What really set *Galaxian* apart, though, was its enemy AI. Whereas *Space Invaders*' aliens simply sat passively at the top of the screen, waiting to be shot down, *Galaxian*'s insect-like invaders routinely peeled off from their main formation

> **"*Galaxian*'s invaders peeled off from their main formation to swoop down and attack the player's ship"**

to swoop down and attack the player's ship. This dive-bombing motion not only made the game more hectic, as the player swerved to avoid both bullets and falling invaders, but it also created the illusion of a swarming intelligence.

BEHIND THE SCENES
In reality, the programming that drives the aliens' AI is quite simple. Aliens always peel off from the main formation in the same

way, performing a half-turn to the left or right before beginning their descent. If we were to recreate the start of an alien's dive-bomb in Python, it would look something like the code on the right: we can see how the alien ship spends half a second performing a half-loop, and then begins to move downwards in a sinusoidal (side-to-side) motion.

Although there's more to *Galaxian*'s alien AI than this one movement – the aliens can also descend in groups of three, and rejoin their formation if they reach the bottom of the screen, for example – the invaders nevertheless follow this same wave-like pattern throughout the game. But with so many aliens diving from different positions, *Galaxian* creates the impression of an attacking alien force – and presents the player with a highly challenging opponent.

Galaxian was an early hit for Namco, and set the pace for its later arcade hits. *Pac-Man* and *Galaga*, released in 1980 and 1981 respectively, both featured colourful graphics and, more importantly, enemy AI filled with aggressive personality. ⓦ

DIVE-BOMBING ALIENS in PYTHON

Here's a simplified look at how a dive-bombing alien routine would work in Python, courtesy of Daniel Pope. To get it
running on your system, you'll first need to install Pygame Zero – you can find full instructions at **wfmag.cc/XVIIeD**

```python
import math
WIDTH = 400
HEIGHT = 800
# How many wobbles the ship does while diving
DIVE_WOBBLE_SPEED = 2
# How far the ship wobbles while diving
DIVE_WOBBLE_AMOUNT = 100
def dive_path(t):
    """Get the ship's position at time t when diving.
    This is relative to the ship's original position (so, at
    t=0, dive_path(t)
    returns (0, 0)). Here we flip to the right before diving.
    """
    if t < 0.5:
        # During the first 0.5s, do a half-loop to the right
        return (
            50 * (1 - math.cos(2 * t * math.pi)),
            -50 * (math.sin(2 * t * math.pi))
        )
    # For the rest of the time, follow a sinusoidal path
    downwards
    t -= 0.5
    return (
        DIVE_WOBBLE_AMOUNT * math.cos(t * DIVE_WOBBLE_SPEED),
        t * 350,
    )
def make_individual_dive(start_pos, flip_x=False):
    """Return a function that will return a dive path from
    start_pos.
    If flip_x is True then the path will be flipped in the x
    direction.
    """
    dir = -1 if flip_x else 1
    sx, sy = start_pos
    def _dive_path(t):
        x, y = dive_path(t)
        return sx + x * dir, sy + y
    return _dive_path
def ship_controller_pan(ship, dt):
    """Update the ship when the ship is panning."""
    ship.x += ship.vx * dt
    if ship.right > WIDTH - 50:
        ship.vx = -ship.vx
        ship.right = WIDTH - 50
    elif ship.left < 50:
        ship.vx = -ship.vx
        ship.left = 50
def ship_controller_dive(ship, dt):
    """Update the ship when the ship is diving."""
    # Move the ship along the path
    ship.t += dt
    ship.pos = ship.dive_path(ship.t)
    # Look ahead along the path to see what direction the ship
    # is moving, and set the ship's rotation accordingly
    ship.angle = ship.angle_to(ship.dive_path(ship.t + EPSILON))
    # If we've reached the bottom of the screen, resume dive
    mode
    if ship.top > HEIGHT:
        ship.controller_function = ship_controller_pan
        ship.pos = ship.dive_path(0)
        ship.angle = 90
        clock.schedule(start_dive, 3)
EPSILON = 0.001
# Create an Actor using the 'ship' sprite
ship = Actor('ship', pos=(100, 100), angle=90)
ship.angle = 90  # Face upwards
ship.controller_function = ship_controller_pan
ship.vx = 100
def draw():
    """Just draw the actor on the screen."""
    screen.clear()
    ship.draw()
def update(dt):
    """Update the ship using its current controller function."""
    ship.controller_function(ship, dt)
def start_dive():
    """Make the ship start a dive."""
    # flip the dive if we're on the left of the screen
    flip_x = ship.x < WIDTH // 2
    ship.controller_function = ship_controller_dive
    ship.dive_path = make_individual_dive(ship.pos, flip_x=flip_x)
    ship.t = 0
clock.schedule(start_dive, 3)
```


⌄ *Galaxian*'s diving
aliens add personality
and intensity to the
shooting action.

The mathematics of balance: part 2

Behind every game, there's maths. **Will Luton** looks at the economic theories and matchmaking systems that shape the games we play

Behind all of your favourite games, numbers are running the show: from the simple buying and selling of Monopoly to the complex matchmaking of *Overwatch*, mathematics is the language of game design, and in this series we look at some of the key concepts you need to better understand how games are made.

In the last issue, we looked at how curves can be used to describe the relationship between two values and how we can design chance to give us exciting but controllable results. This second and final part will look at two more interesting areas: economics and matchmaking. As before, we'll go through each subject with a focus on the nuts and bolts of balance, rather than academic complexity. As such, this article is far from a complete reference on the meeting of maths and game design, but if you learn and practise the tools in both parts, I guarantee that you'll become a more confident and effective game designer. So, let's get started!

League of Legends' **economy depends on the flow of gold into the game, and the steady expenditure of it in shops.**

Economics

WHAT IS IT?
Economics is a large field of study covering how and why the production, consumption, and transfer of items occur. For example, the UK's economy is defined by the complex flow of money between corporations, households, and the government.

WHY IS IT IMPORTANT?
As games become more complex with currencies being created, used, and transferred, they are effectively becoming their own economies. Understanding a few economic theories will help you to understand and curate game resources better.

Over the last decade, economic theories have been increasingly applied to the complex value exchanges within games, becoming an invaluable tool for designers. Back in 2012, Valve, seeing the value of economic theory, hired Yanis Varoufakis as their economist-in-residence. Varoufakis later went on to become Greece's finance minister. Economics is the use of maths to understand the production, exchange, and consumption of a good, and is as effective a tool for Greece's national debt as *Team Fortress 2*'s hats. So let's start by looking at the simplest expression of economics in games: the creation and destruction of in-game resources.

TAPS, SINKS AND PINCH

A game's economy is the flow of resources between its systems and players. When talking about game economies, there are two helpful concepts: taps and sinks. A tap is the point of creation of a resource: in *League of Legends*, for example, the player receives gold at a rate dependent on the map and any items they are carrying, making the map and items gold taps. Meanwhile, a sink is a place where the resource is destroyed: *League of Legends* players spend their gold in the shop, so the shop is the game's singular gold sink.

The analogy of tap and sink is an interesting one, because it allows us to build a mental picture of how resources flow (**Figure 1**). If the tap is generating the resource quicker than the sink can remove it, then an excess builds (**Figure 2**). Any resource in excess becomes

> **"A game's economy is the flow of resources between its systems and players"**

effectively worthless to the player, and they stop interacting with the tap. If you've ever used an infinite health hack in a game, you'll know how boring it becomes once health is abundant.

However, the inverse can also be true: when there is too little resource coming from a tap, then there is little motivation for a player to interact with it. The correct balance between a tap and a sink is known as a pinch point.

In economics, a pinch point is the level of supply of a commodity at which demand is maximised due to consumers becoming concerned about the supply. In games, we can think about this as the point where the supply shows the utility of a resource but is scarce enough to have players continue to seek it.

A great example of this is any game with a rocket launcher: rocket launchers are nearly always the most destructive, powerful, and fun weapons to use, but in finding the pinch point ➡

Tap

Game resource

Sink

Tap

Sink

of new content or as a result of emerging economic efficiencies coupled with player-to-player trading (such as gold farming).

There are some big benefits to intentional inflation within a game: as players progress, they feel rewarded by increased taps. Incremental games make great use of intentional inflation by building sinks that increase the taps exponentially (see part 1 last issue for more details), constantly rewarding the player.

But incremental game makers also increase the sinks so as to balance the expanding flow of resources: this stepping of increased taps and sinks allows the player to feel as though their demand is being met while the goalposts shift proportionally, ultimately creating a moving pinch point.

Let's look at a hypothetical gold-mining incremental game where the player buys and equips items that increase the rate at which they can mine gold (see **Table 1** below).

By inflating taps and sinks proportionally, you're able to effectively manage inflation to

on ammo, designers show the utility of rockets while stopping short of satiating your appetite for destruction. This ammo pinching keeps players motivated to play as they seek those elusive rockets. (A game's pinch point doesn't have to be static, however. Instead, it can move as all the taps and sinks grow in size.)

INFLATION

In economics, inflation is described as the increase in cost of goods and services, often driven by an increase in resources, such as cash, within the system. Inflation in games can occur throughout a playthrough, via the introduction

▾ **Table 1: The cost and gold generation rate of equipment.**

Item	Gold Generation (Gold per second)	Buy Cost	Effort (Seconds mining to upgrade to item)
Hands	2	–	–
Spoon	3	200	100
Pickaxe	5	300	100
Shovel	10	500	100
Jackhammer	30	1000	100
Digger	150	3000	100

▾ **Table 2: An exponential effort growth.**

| Item	Gold Generation (Gold per second)	Buy Cost	Effort (Seconds mining to upgrade to item)
Hands	2	–	–
Spoon	3	200	100
Pickaxe	5	400	133
Shovel	10	1000	200
Jackhammer	30	2800	280
Digger	150	9200	307

require the same level of effort, which in our example is 100 seconds of play. However, you can also modify the rates of tap and sink growth to create a different effort growth. In **Table 2**, the tap and sink grow non-linearly, creating an increasing rate of effort, which is more common.

Yet it's rare that any game has one resource, one tap, and one sink: the majority of games feature multiple resources that can be converted between each other, creating complex economies that are interesting for players to manage and challenging for designers to build. How then can we begin to design such an economy?

ANCHOR VALUES AND CONVERSION

An anchor value is some resource from which you can build other resources through one or more conversions. For example, in *Clash of Clans*, players starts with mines and pumps that generate gold and elixir second by second, so the initial exchange is real-world time for resources. This gold and elixir is exchanged for construction or troop training, which also requires time. Therefore, gold, elixir, troops, and buildings in *Clash of Clans* are the product of time. Elixir, gold, buildings, and troops are the foundation of the entire game's economy, and so time is *Clash of Clans'* anchor value.

But what does an anchor value allow us to do? Anchors are the yardstick of balancing, and with them we can model, build, and refine a game's economy. The designers working on *Clash of Clans* were able to plan how quickly players would get through content and, as in-app purchasable gems allow timer skips, know how
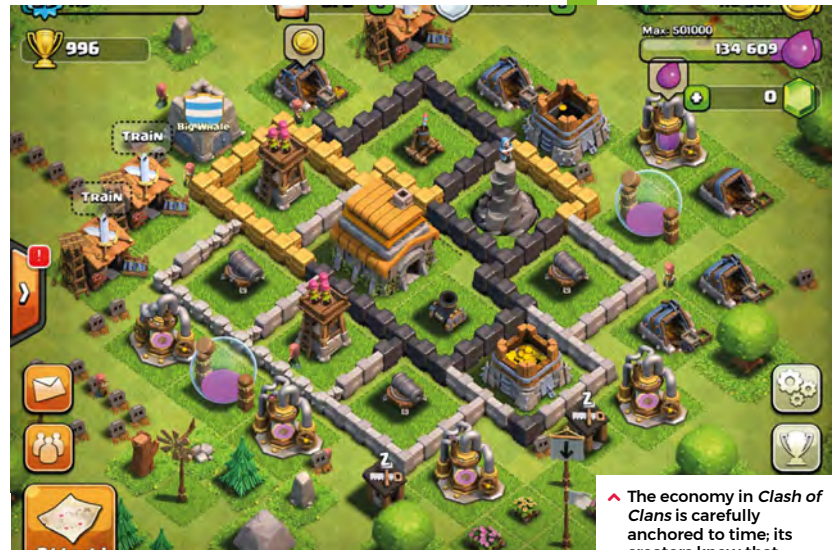
⌃ The economy in *Clash of Clans* is carefully anchored to time; its creators know that some players will make in-app purchases to generate gold more quickly.

much money they could expect from top-end players. In other words, anchors are the base on which we build our economies.

If as a designer you get your anchor values wrong, the impact can be devastating, resulting in an under- or overpowered mechanic. In effect, any mechanic that is overpowered (or OP) is one in which the exchange is far more effective than comparative offers. OP mechanics can shrink the diversity of strategy, making good games repetitive and dull.

While good game designers plan out their anchor values and comparative exchange rates, great game designers build exchanges so subtly complex that they keep players enthralled for many years, just as *Clash of Clans* has. So avoid linear exchanges, and think about how values can vary with time, turns, or other mechanics to make systems that create deep and varied strategies. Even if you occasionally build something overpowered. ➡

TRY THIS:

Find a game you like with a historical OP mechanic. What exchange of value is making this mechanic OP? How would you fix it? If you can't find something, then check out some speed running to see how players exploit mechanics.

MONETISATION

The exchange of gems to time in *Clash of Clans* is based on a piecewise function (see part 1), where longer timers are cheaper per second than shorter equivalents. See Wolfgang Graebner's Gamasutra article, *Clash of Clans: Time Monetisation Formulas Demystified* (**wfmag.cc/lolntu**) for a great explanation.
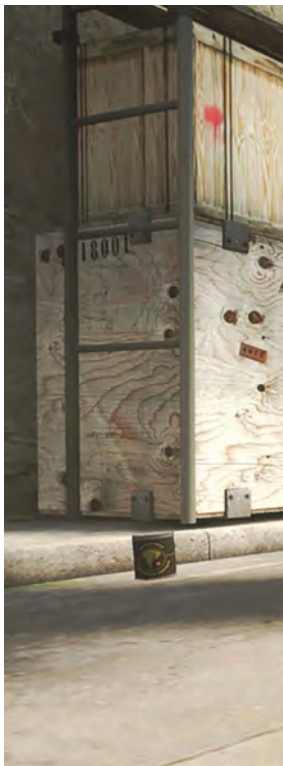
MATCHMAKING

WHAT IS IT?

Matchmaking is the process of finding any given player a fair opponent. Here, 'fair' means all players have a reasonably close chance of winning a match. Algorithms, often with one or more tracking variables, are used to place various opponents together into a match.

WHY IS IT IMPORTANT?

Playing a game where you frequently lose to better players really sucks. So finding good matches between players is essential to good balance in PvP.

In 1975, psychologist Mihaly Csikszentmihalyi described a pleasurable mental state known as flow. It's reached when a given task is not too difficult and not too easy. Everyone who plays games knows this feeling, and every designer knows how hard it is to achieve this Goldilocks balance. Getting players matched to other players who offer the right challenge is, therefore, essential.

But how do we achieve fair matchmaking? It's an old question in game design, but luckily there are two main answers:

Tournament: A set of various matching algorithms, from simple to complex, for self-contained events.

Historic Results: Players are matched to other players based on their historic performance.

Each of these approaches has its advantages and drawbacks, as well as several different possible implementations within it. Let's look at what those are.

> **Figure 3: A knockout tournament structure. The winner of each round progresses through to the next.**

TOURNAMENT

Tournaments are the oldest and easiest matchmaking system going. They're great for self-contained events, especially if you want to find a winner. The simplest tournament structure is a round-robin event where everyone plays everyone else at least once. Some form of points based on the outcomes will create a final standing. League soccer works this way, but with the addition of various leagues that teams can be promoted and relegated to.

The major drawback of the round-robin is that it dictates the number of matches to be played. Alternatively, the Swiss system, used in many trading card tournaments and some sports, matches players based on their current tournament score while avoiding repeat matches.

Players are randomly paired for their first match, then are paired in the second and beyond based on their previous results. So winners of the first round will be paired in the second round, and so on. While rather elegant, the Swiss system doesn't handle draws particularly well, resulting in players being paired

"Finding good matches between players is essential to good balance in PvP"

up or down. Additionally, it can be difficult for players to follow and, due to the short number of rounds, can effectively work as a knockout tournament.

Knockout tournaments have players randomly assigned in pairs, with only the winner progressing to the next round (**Figure 3**). The final winner is placed first, while the loser is assigned second place and those who were

eliminated in the semi-finals are matched to decide third place.

This structure is super-simple to understand, and the brutal elimination leads to an everything-on-the-line level of tension. However, as initial pairing is random, the best two players may meet in the first round while other less skilful players get an easy path to the final. Additionally, being eliminated puts players out on the sidelines, bored and dejected. The major problem for tournaments, though, is that they're based on a tiny snapshot of time, not factoring historic information of the player, such as the player's historic skill.

HISTORIC RESULTS

Probably the most popular way of matchmaking in modern games is the Elo rating system. Elo is a simple piece of maths originally intended to rank chess players with a rating value which could be used to predict the outcomes of a match.

The beauty of the system is that at the end of the match, the winning player takes a number of rating points from the loser based on the rating delta of each. So a lower rated player beating a higher rated one will gain more rating points than if the higher player wins. Ultimately, this creates a self-correcting system where only the best players rise to the top. Today, variations of the system are used across lots of competitive sports and games, including *Counter-Strike: Global Offensive* and *Team Fortress 2*. However, while simple, the maths behind Elo isn't widely understood. ➡

‹ *Destiny*'s Gjallarhorn is satisfying, partly because the game's designers put a pinch point on the supply of rockets.

HOW ELO WORKS

Let's use a worked example of two players, A and B, who are matched. In Elo, players must start with a number of rating points, which could be any number, including zero. Here we'll use 1,000. So player A, who is new, has 1,000 points but player B is ranked higher with 1,100. We can calculate each player's chance of winning with the following formulas:

$$E_A = \frac{1}{1+10^{(R_B - R_A)/400}} \quad \& \quad E_B = \frac{1}{1+10^{(R_A - R_B)/400}}$$

...where E is the probability of winning and R is the player's rating points. From this we can calculate player A's chances of winning.

$$E_A = \frac{1}{1 + 10^{(1,100 - 1,000)/400}}$$
$$E_A = \frac{1}{1 + 10^{100/400}}$$
$$E_A = \frac{1}{1 + 1.778}$$
$$E_A = \frac{1}{2.778}$$
$$E_A = 0.36$$

0.36 is the expected result, which is to say she'll win 36 of 100 matches against player B. Another way to think of this is a 36% chance of winning. The two play and player A is victorious, so gains some of player B's points according to the following formula:

$$R'_A = R_A + K(S_A - E_A)$$

...where K is the K-factor and sets the maximum possible adjustment per game, and S is the score (-1 for a loss, 1 for a win, and 0.5 for a draw). Let's set a K-factor of 32.

$$R'_A = 1,000 + 32(1 - 0.36)$$
$$R'_A = 1,000 + 32(0.64)$$
$$R'_A = 1,000 + 20$$
$$R'_A = 1,020$$

Meanwhile, player B loses the same number of points, leaving them at a rating of 1,080. The players then go on their way to play some more games via a matching algorithm, of which there are two common approaches:

Pool: Players are placed in a pool while an algorithm seeks the lowest rating delta (difference between highest and lowest value) in matches. This is best for group games.

Live: Once a player readies up, the game seeks all other ready players, and if there is one within a specified rating range (for example ±10%) then a match is made. Else they wait until another player matches them. This is best for one-versus-one games.

Alongside player Elo ratings, these algorithms give you a complete skill-based matchmaking system. However, before you rush off to implement one, it's worth understanding the problems of the Elo system.

THE PROBLEMS OF ELO

Elo has some well-documented issues:

Confusing maths: Having your average player pull out a calculator and work the equations is unlikely. This can lead to mistrust.

Ranking down: When Elo rankings are uncovered to players, in leaderboards for example, a loss can feel doubly punishing as the player ranks down, creating a disincentive for play. In extreme cases, a top player's best defence of position is to not play.

First rankings: All starting players are considered of equal skill, when in reality there will be huge disparities. To overcome this issue,

⌄ **Behind the scenes, Valve is constantly trying to update and improve *Team Fortress 2*'s matchmaking algorithms.**
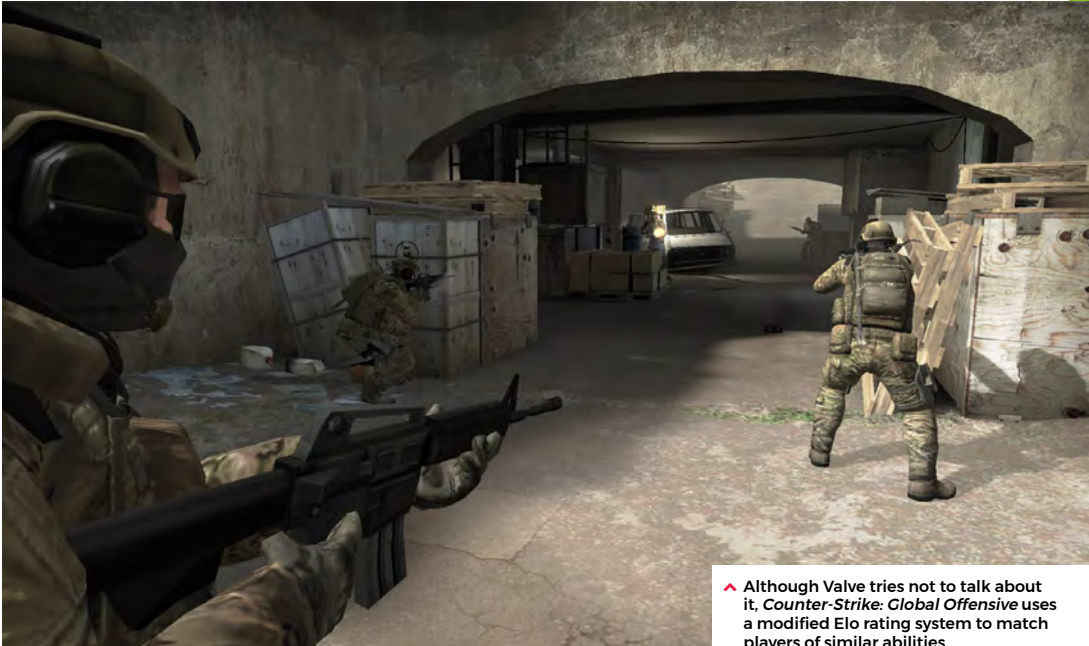
▲ Although Valve tries not to talk about it, *Counter-Strike: Global Offensive* uses a modified Elo rating system to match players of similar abilities.

some games force new players into a series of sorting matches that use a high K-factor for rapid adjustment.

Group games: Although a team ranking point average can be created to allow for group matchmaking, when it comes to adding and removing ranking points, the Elo system has no specific way of doing so, other than evenly. So players who don't pull their weight are rewarded in the same way as those who do.

"While you will never get matchmaking perfect, you can get very close"

All of these problems lead designers to modify Elo in various ways: some add tournament-like structures, others factor non-skill values such as troop count, while many seek to fix the maths flaws with further calculations. You will need to look at the pros and cons of different matchmaking approaches and create your own to fit your needs.

The importance of a good matchmaking system can't be overstated. The difference is between players flipping from frustration to boredom, and players finding the perfect challenge in every match to keep them coming back to your game. While you will never get matchmaking perfect, you can get very close – and that's a challenge well worth pursuing!

Let's recap

Across these two parts, we've investigated some huge mathematical concepts, from curves and probability in the last issue through economics and matchmaking in this issue. Having read both parts, you are now equipped with tools that will allow you to better understand a game's inner workings. The more games you design and apply these concepts to, the more your mathematical toolbox will grow. If you want to learn more about these topics, then try your local library, take a look at YouTube, or talk with other game designers and analysts about their approaches. Wherever you get your knowledge from, keep growing it. I've been designing games for over a decade, and in the process of writing these two parts, I've realised both how much I know and how much there is still to learn. Ⓦ

TRY THIS:

Put together your skills from these two articles by designing a board game that features the following: the random chance of a dice, an exponential curve, three resources that can each be exchanged through some mechanic, and a way of matchmaking players. Then play it, observe the problems, and iterate the design! Keep going until you're happy.

Level design: online courses

If you want to sharpen up your level design skills, you'll find a number of useful courses at Udemy and Coursera

> **Learn level design with Blender and Unity 3D**
> This course takes you from 2D level layouts to building assets in Blender and constructing your finished environments in Unity.
> **wfmag.cc/yUXfoR**

> **CryENGINE 3 SDK level design**
> From setting up the software to working with sound, particles, and lighting, this two-hour Udemy course helps beginners with their first level design in CryENGINE 3.
> **wfmag.cc/izfZoU**

> **Game level design for Unreal 4**
> It's possible to create some incredibly realistic landscapes and environments in Unreal 4. This two-hour course on Udemy shows you how.
> **wfmag.cc/oDdWZn**

> **Environments with ZBrush, Substance Painter, and Unity**
> Create your own organic, atmospheric environments by creating assets in ZBrush and Substance Painter and then importing them into Unity.
> **wfmag.cc/AlUGds**

> **Programming for level design**
> Aimed at experienced Unity users, this online course uses a 3D twin-stick shooter game as the basis for teaching physics, scripting, events, and level logic.
> **wfmag.cc/pPCXMH**

> **World design for video games**
> By showing examples from existing games, this course teaches you how to create more convincing, immersive environments in your own projects.
> **wfmag.cc/lXjJwx**

> **Environment design in Unreal 4**
> Learn how to create an atmospheric jungle with foliage, weather effects, and realistic lighting by getting to grips with UE4 and World Machine.
> **wfmag.cc/vFyQCH**

> **Game prototyping without code**
> The ability to quickly test out level layouts and game ideas is a vital part of development. This course shows you how to rapidly build a prototype shooter in Unity using visual scripting.
> **wfmag.cc/LjhJDh**

WOULD LIKE TO MEET...

Are you a programmer looking for a level designer? Do you have an amazing game but no music to go with it? Then let Wireframe help you find a collaborator. Send details of your project and who you're looking for to **wfmag.cc/hello**

⌄ **Get to grips with CryENGINE 3 SDK and create your first level layout with Udemy's two-hour course.**
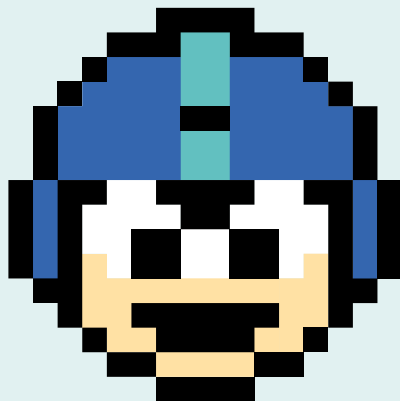
THE CHANGING FACE OF

MEGA MAN

Back after an eight-year break, Mega Man remains one of gaming's most recognisable characters. Dan Root charts the Blue Bomber's changing art and animation
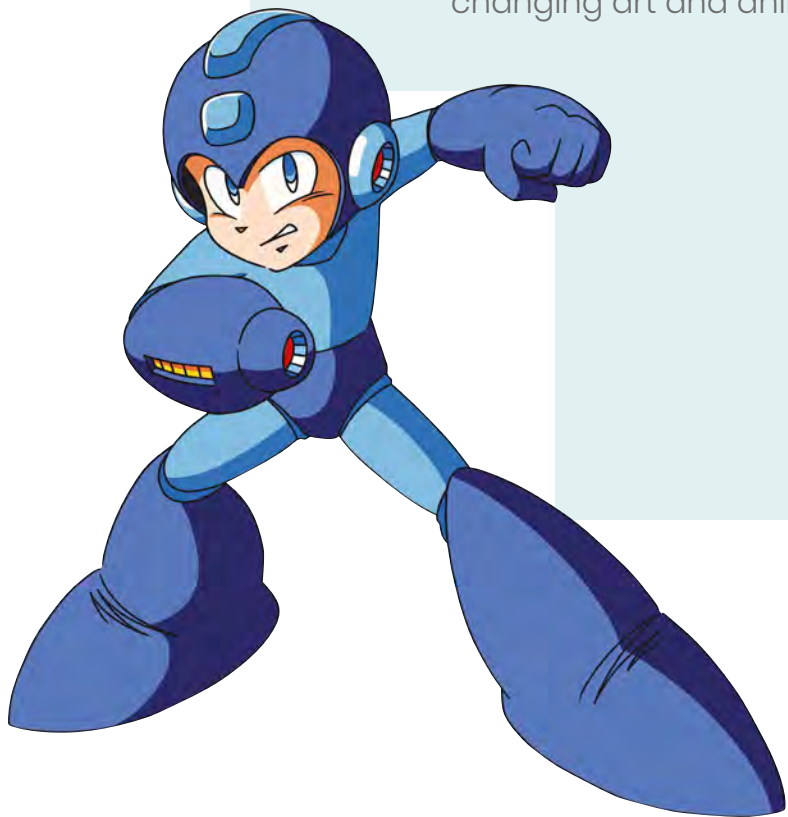
Through the 1980s and 1990s, Mega Man was the smiling face at the front of one of Japan's most recognisable franchises. Distinguished by its bright, colourful, graphics and tough jump-and-shoot action that positively demanded skill and precision, Capcom's *Mega Man* series was something of a games industry mainstay: through successive generations of consoles and changing fashions, *Mega Man* kept moving and changing with the times. That is, until 2010, when the series went through its own miniature version of the Dark Ages: Keiji Inafune, one of the key figures in the franchise's creation, suddenly left Capcom when several *Mega Man* projects were abruptly cancelled.

For eight years, a once prolific series seemed to be in danger of vanishing altogether, but now the Blue Bomber is back in a new adventure: *Mega Man 11*, a much-anticipated sequel that emerged to solid reviews in October 2018. The tough, precise platforming of old is present and correct, but now the action's realised in fluid 2.5D running on Capcom's proprietary MT Framework engine. It's the latest example of a franchise that has changed its visual style and approach, even as the action has, at

WHAT'S IN A NAME?

We may know him as Mega Man in the West, but for Japanese gamers he'll always be Rockman. The Rockman name was originally coined as a tribute to its creators' affection for rock 'n' roll music, as well as a reference to the game's power-up system, which was inspired by rock-paper-scissors. Capcom USA later changed Rockman to Mega Man, but curiously left the name of his sidekick, Roll, unchanged, thus rendering his creators' original pun (Rock and Roll) meaningless.

least in the main series entries, largely remained true to its roots.

So how has *Mega Man* changed since 1987, and how does *Mega Man 11* reinterpret the series' style for a new generation? To find out, let's start by going right back to the beginning to see how *Mega Man*'s themes and ideas were first established.

THE 1980S BIRTH OF MEGA MAN

The original *Mega Man* was cleverly designed around the technical limitations of the Nintendo Entertainment System. Given the task of making an original game tailored for the 8-bit console, director Akira Kitamura and artist Keiji Inafune, then fresh out of college, took inspiration from Japanese anime for both *Mega Man*'s design and story. Specifically, they were inspired by *Astro Boy* (or *Tetsuwan Atom*), a hugely popular manga/anime series created by legendary artist and animator Osamu Tezuka. Like *Astro Boy*, *Mega Man* is a sci-fi reworking of *Pinocchio*: set in a future where robots exist alongside humans, it relates the story of an artificially intelligent boy created by a good-hearted scientist. Tezuka's signature style of appealing, large-eyed characters was also a clear influence on *Mega Man*, both in the lead character and the army of enemies he encounters on his adventures. Even the Robot Masters, the game's area bosses, are distinctive and likeable, although they are determined to brutally thwart the player's progress at every turn.

What's most impressive is just how well Kitamura and his small team of young artists and programmers managed to capture the style of anime on the NES

▲ **The original *Mega Man* game: with his detailed sprite and movement, the Blue Bomber was one of the first anime-style console heroes.**
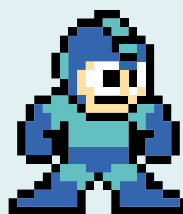
hardware. Mega Man himself is an expressive, determined little character, with his facial expressions changing as he runs, jumps, or reacts painfully to enemy attacks.

"The [Mega Man] character is really based on Japanese animation," Keiji Inafune told Play magazine in 2004. "And when we were making him, at the time, Nintendo games really did not have a huge focus on the characters. We wanted to make sure that the animation and the motion was realistic and actually made sense."

Such a level of detail was quite unusual for the time, partly because of the NES's colour limitations; each sprite could only contain three colours (with a fourth reserved for transparency), which is why Mario, in his first outing in 1985, is comprised entirely of red, brown and beige pixels. (Note how in *Super Mario Bros*, the Italian plumber's face remains unchanged whether he's running or jumping.)

In *Mega Man*, on the other hand, programmer Nobuyuki Matsushima cleverly got around this limitation by building the hero out of two sprites: his body is one sprite, and comprises two shades of blue and black. His face, meanwhile, is a separate sprite, drawn from white, black, and beige pixels. This workaround, plus Kitamura's simple yet dynamic four-frame run cycle, helped make Mega Man stand out from the other platform game heroes crowding onto the NES in the late 1980s. Indeed, the design and animation in the first *Mega Man* game was so successful that it remained almost unchanged in the franchise's initial salvo of five sequels, released on the NES between 1988 and 1993. ➡
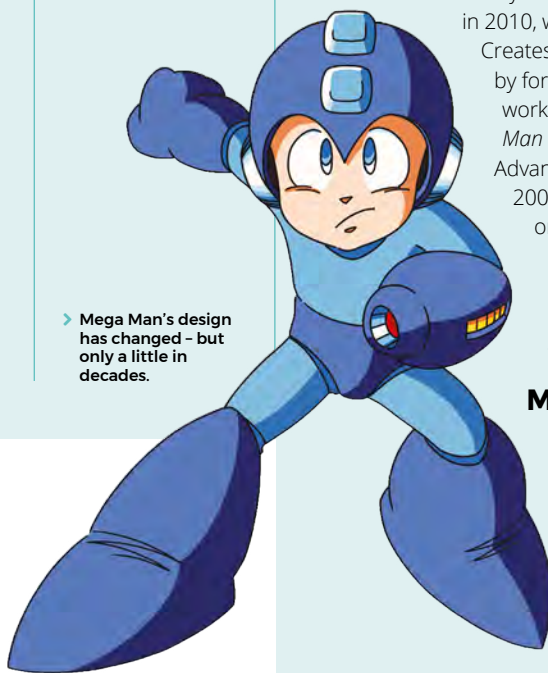
THE BLUE BOMBER IN THE 16-BIT ERA

Despite the departure of Akira Kitamura in 1988, following the completion of *Mega Man 2*, the series continued to grow in popularity under the guidance of producer Tokuro Fujiwara and artist Keiji Inafune. Indeed, the franchise began to expand to a quite bewildering extent through the early 1990s, with the mainline series joined by a number of spin-off strands and remakes. One of the most notable spin-offs was *Mega Man X*, first released for the Super Nintendo in 1993. Set long after the classic series, it took a much harder-edged and darker approach to its design.

As planner and artist, Keiji Inafune set about creating a new look that would fit with the expanded colour palette on the Super Nintendo: gone was the squat, chunky sprite design of the 8-bit *Mega Man* games; in their place, *Mega Man X* went for taller characters with more detailed shading and aggressively-styled animation. By contrast, *Mega Man 7*, released on the SNES one year later, seemed to go further down the bright, colourful route established by the mainline series. Colours were more vivid thanks to the 16-bit hardware, and background designs contained more detail than ever. Earlier *Mega Man* games relied heavily on colour contrasts to help lift the sprites from the background; in *Mega Man 7*, the backgrounds have depth, texture, and a colour scheme of their own, contrasting cleanly

MEGA MAN MAKERS

When veteran *Mega Man* director Keiji Inafune departed Capcom in 2010, development and production duties were handed over to director Koji Oda, producer Kazuhiro Tsuchiya, and art director Yuji Ishihara, all of whom had hands-on experience with earlier titles, including *Mega Man 7* and *Mega Man Legends*.

with the foreground characters. Whereas *Mega Man X* represented a conscious attempt to break with tradition, *Mega Man 8* felt like a more natural evolution of the main series' cheerful identity.

The franchise landed on the PlayStation and Saturn in 1996, with the beautiful-looking but sluggishly paced *Mega Man 8*. In terms of gameplay it was nothing spectacular, but aesthetically it was stunning. All the details that defined the earlier games in the series were present, but polished by newcomer artist Hayato Kaji to a captivating degree: those big, expressive eyes were back; colours were vivid but not garish, while the animation had a likeably elastic, toy-like quality. After *Mega Man 8*, later *Mega Man* games made the transition to 3D, most notably *Mega Man Legends* for the PSone and *Mega Man X7* for the PS2 — though the less said about the latter, the better.

While *Mega Man* spin-offs rolled out of Capcom at a steady rate, the main series didn't receive a numbered sequel for almost a decade. Released as a download-only title for the Nintendo Wii in 2009, *Mega Man 9* was unapologetic in its retro styling, with its 8-bit graphics, sound, and tough gameplay all taking direct inspiration from *Mega Man 2*. It was a decent enough sequel, but it removed a number of the skills Mega Man had built up over the previous 20 years, as well as restricting its design and animation to the limitations of the 8-bit era.

Tellingly, both *Mega Man 9* and the similarly retro *Mega Man 10*, released in 2010, were co-developed by Inti Creates – an external studio set up by former Capcom staff. Inti had worked on a number of *Mega Man* spin-offs for the Game Boy Advance and DS earlier in the 2000s; as Capcom concentrated on bigger, newer franchises like *Resident Evil* and *Street Fighter*, its interest in the ageing *Mega Man* series appeared to be on the wane.

MEGA MAN 11

So here we are 30 years later with *Mega Man 11*, the latest instalment in the original series, and it retains the earlier games' sense of cartoon-like style remarkably well. As we've already seen,

THE ILLUSTRATED MAN

A survey of *Mega Man*'s changing style wouldn't be complete without a brief mention of the games' cover art. In Japan, Keiji Inafune designed the covers and manuals for the first few games himself; in the US, Capcom's anime-averse marketers opted to commission an artist to create some new artwork. The cover for the first *Mega Man* has long since gone down in history as one of the worst ever. It wasn't until *Mega Man 8* that Westerners got to see a true, anime-style representation of the Mega Man character.

Capcom's previous attempts to create an anime-style look using polygons were mixed, but as time has gone by and techniques have improved, so too has the use of cel-shaded graphics. The character designs were drawn by Yuji Ishihara, who originally worked on *Mega Man Legends* in the mid-1990s, and his 2D illustrations have been sympathetically rendered into 3D. The majority of shading and lighting on the character models is reduced to a simple dark edge or a small light spot, and although the animation is much smoother than it was in the 1980s and 1990s, it retains much of the same stripped-down charm. While it's no secret that some critics have expressed displeasure at a few of the game's animated elements – *Mega Man*'s run cycle appears to be particularly controversial in some online quarters – they're relatively minor flaws when weighed against the game as a whole.

Mega Man 11 uses 3D models instead of hand-drawn sprites, so movement can be tightened and
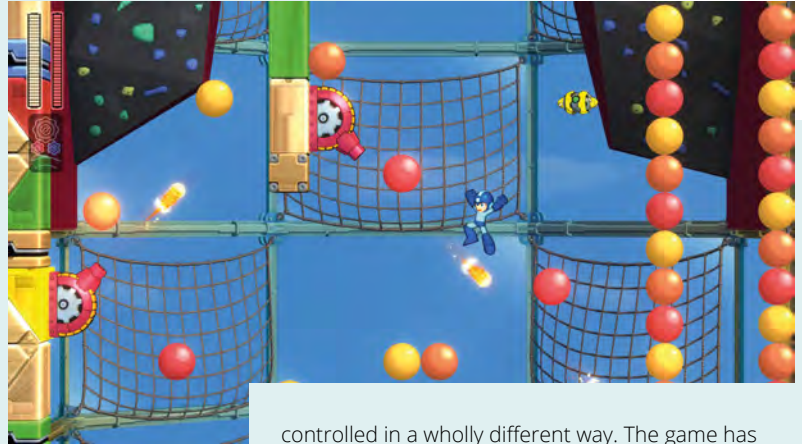
This year's eagerly awaited *Mega Man 11* sympathetically updates the sprites of the early games into cel-shaded 3D.

controlled in a wholly different way. The game has a precise feel, and flows as nicely as any of the NES games – rather unlike *Mega Man 7* or *8* – and this is down to tight animation timing. As the game runs at 60 frames per second, the designers have been able to fit in some really concise information into a small amount of time without the need for labour-saving techniques like smearing. This doesn't mean that all the classic charm is absent – quite the contrary, in fact. The Robot Masters feel as cartoony and playful as ever, striking exaggerated poses and generally moving with weight and purpose.

Mega Man's use of visual effects are also worth singling out. Even though the whole game is made up of 3D models, effects like blast impacts and explosions are all animated in 2D and at a slower frame rate, which serves to heighten the illusion that what we're seeing is all hand-drawn. It's an example of how *Mega Man 11*'s creators are looking back to the series' roots and the language of anime that first inspired it.

Mega Man 11 may not be perfect, but it at least feels like a bold new chapter in the series: in touch with the running, jumping, and blasting action of the past, sure, but also keenly aware that so much of the franchise's charm lies in the quality of its character designs. *Mega Man* simply wouldn't be the same without those feeble yet tenacious enemies, or the imposing, charismatic Robot Masters. And then, of course, there's Mega Man himself: a hero whose personality was so perfectly captured in that first run-cycle from 1987. Feisty, optimistic, and determined to reach his goal no matter how often he's knocked down. ⓦ
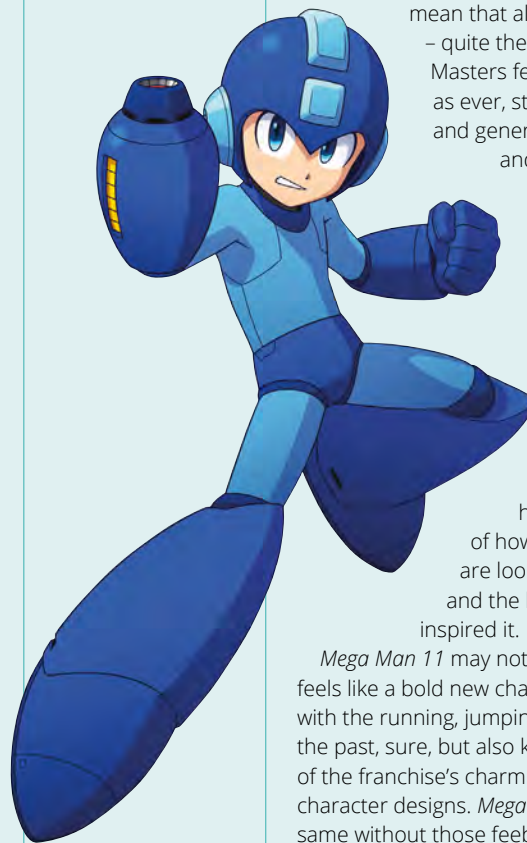
The games may be in his name, but without the rest of the cast, *Mega Man* wouldn't be as loved as it is.

How I made...
Save me Mr Tako!

Here's how a Parisian teenager's dinnertime inspiration led to his debut indie game

n 2004, Christophe Galati was sitting in a Paris restaurant eating fried octopus when he first began to daydream about an eight-legged video game hero. What Galati didn't know at the time was that this idle reverie was the start of his own adventure one that would lead to a publishing deal and trips to game shows on the other side of the planet.

"I began thinking about how octopuses are often portrayed as enemies and how it would be cool to show a different side and have a nice, friendly octopus for once," Galati tells us. "So I started building my game concept around the idea of an octopus saving abducted people."

That initial daydream would eventually become *Save me Mr Tako!* – a 2D platform-RPG born in large part from Galati's memories of playing classic Nintendo games of the early nineties. Its four-colour pixel graphics and chiptune soundtrack were inspired by the distinctive look and feel of the Nintendo's

monochrome Game Boy; Galati even gave his game a Japanese subtitle – *Tasukete Tako-San* – to make it sound more authentically like a forgotten handheld classic from the Far East.

Galati was still a 19-year-old student when he began work on *Tako*, and his octopus game concept was essentially a hobby – something he worked on in his spare time to flex his budding development skills. At the time, he wasn't thinking about it becoming a commercially released title.

"When I started to work on *Tako*, I was in my second year of study and wasn't very excited about my internship. So *Tako* became a way for me to have fun and relax after long and boring days, even though it started to take up all my nights and weekends."

Having dabbled in RPG Maker as a child, Galati later began studying game design at Isart Digital in Paris. *Mr Tako* was developed in Unity, the platform he'd learned at school; the pixel graphics were drawn in MS Paint, while Tiled Map Editor was used to design the levels. At a game jam, Galati later met Marc-Antoine Archier, who composed the music.

A HANDHELD TRIBUTE
By September of 2014, Galati had put together a working demo. It was little more than a side-scrolling runner at the time, and when Galati uploaded his code to IndieDB, he might have thought the game's journey would end here. But Galati's timing was impeccable: his monochrome platformer was pitched as a tribute to the Game Boy, which was then celebrating its 25th anniversary. To Galati's surprise, word of *Mr Tako* quickly began to spread, particularly on social media. It was the positive feedback that prompted Galati to turn his demo into a fully featured game.
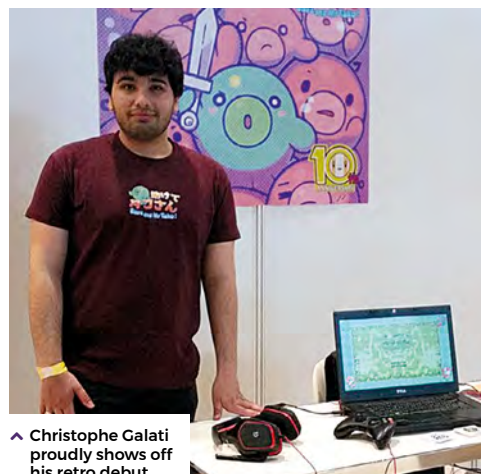
▲ **Christophe Galati proudly shows off his retro debut.**

⌃ **Galati's Game Boy-inspired graphics are small yet perfectly formed.**

Canny timing aside, it's easy to see why *Tako* created a ripple of attention. Its 8-bit sprites are simple yet beautifully constructed; its platforming action – which involves using jets of ink to stun enemies and use them as platforms – is a charming riff on a similar mechanic in *Metroid II*. Even in its early state, *Tako* felt like a game stuffed to bursting with ideas – and as Galati continued work on his game, and showed it off at events, it gradually evolved into a deeper action-adventure with a hub-world and a detailed back story inspired by *Final Fantasy*.

> ### "Galati's octopus game concept was essentially a hobby – something to flex his development skills"

"It was pure joy to see it all come to life," Galati recalls. "As development continued, I applied to many different indie game events, where I could show off what I was working on to more people and hear what they thought. Staying motivated during a long project can be difficult to do, but loving the game I was creating and following my own vision always helped steer me in the right direction."

The next big turning point for both Galati and his game came in January 2016, when he quit his job at Persistant Studios to work on *Tako* full-time. To save money, he moved out of Paris and back in with his parents in the south of

France – a gamble that soon paid off. Later that year, Galati applied for a spot at the Tokyo Game Show – and was somewhat shocked when his application was accepted.

Galati scrambled to crowdfund the money for his plane ticket, but the journey soon proved to be a crucial one: at TGS, *Tako* caught the eye of Nicalis, the publisher behind such acclaimed indie games as *The Binding of Isaac* and *Cave Story+*. Unexpectedly, *Save me Mr Tako* had found its perfect home.

THE MAIN EVENT

"Attending gave me credibility as a developer and also changed my life," Galati says. "It was at this event where I met with Nicalis to discuss the possibility of bringing the game to Nintendo Switch, and it led me to sign with them just a few months after TGS. I've learned that it's very important to attend game events as a developer. You're not only able to see how players react to your game, but participating also helps you feel like you're a part of the community."

Save me Mr Tako made its debut on the Nintendo Switch eShop on 30 October, marking the end of four long years of development, and the moment where Galati's youthful dream finally became video game reality. Ⓦ
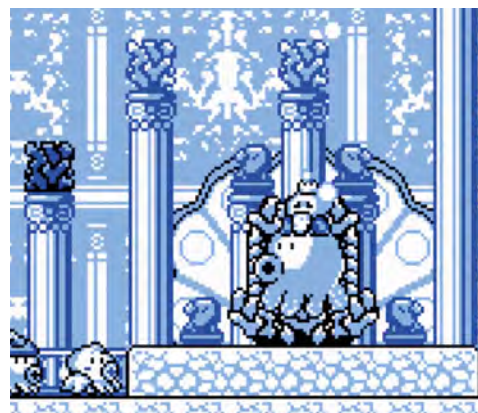
A Link to the Past

Born in 1994, Galati was far too young to have lived through the 8-bit era himself, but his formative gaming experiences came from his older brother's collection of Japanese classics such as *Kirby's Dream Land*, *Final Fantasy VI*, and *The Legend of Zelda: Link's Awakening*.

"There is something simple and magical about these types of retro games," Galati says. "They had so many limitations, but they still gave us so many things to experience and allowed us to use our imagination more. During the Game Boy era, you never knew what you were going to get; everything was new and there was a lot of experimentation, since the system seemed to be 'less serious' than home consoles."
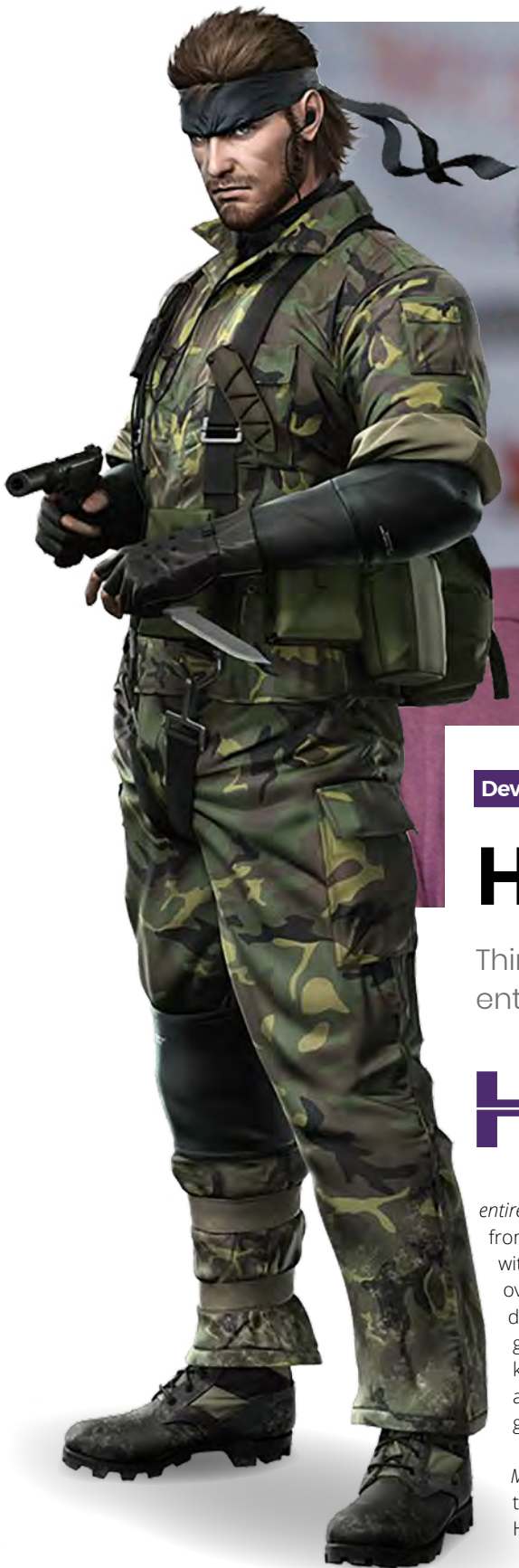
Hideo Kojima

Thirty-plus years and we're still not entirely sure what's going on

Hideo Kojima is an auteur. It's obvious, and certainly not a unique thought to open with, but it has to be said because it's *entirely* true. You know a Kojima game from how it feels, from how it toys with conventions, from how it's often overburdened, to put it politely, with dense storylines. There are very few game makers out there with that kind of distinctiveness, and there are even fewer with the kind of gameography Kojima has.

He's the man behind the entire *Metal Gear* series, from the originals, through to the more recent *Solid*s. He brought a switch from pure action to considered, careful approaches to combat for the PlayStation generation. He wedged in gigantic cutscenes riddled with references and influences to the world of movies when most other devs were still thinking about how many polygons they could use to render a character. Kojima knocked gaming out of its rut of trying to emulate the arcades at home, and was one of the few at the forefront of a push to make games about more than just high scores and running out of continues.

And this didn't just come from the *Metal Gear* series – Kojima's fingerprints are all over the likes of *Snatcher* and *Policenauts*, both telling deep (convoluted) stories and, in the case of the former,
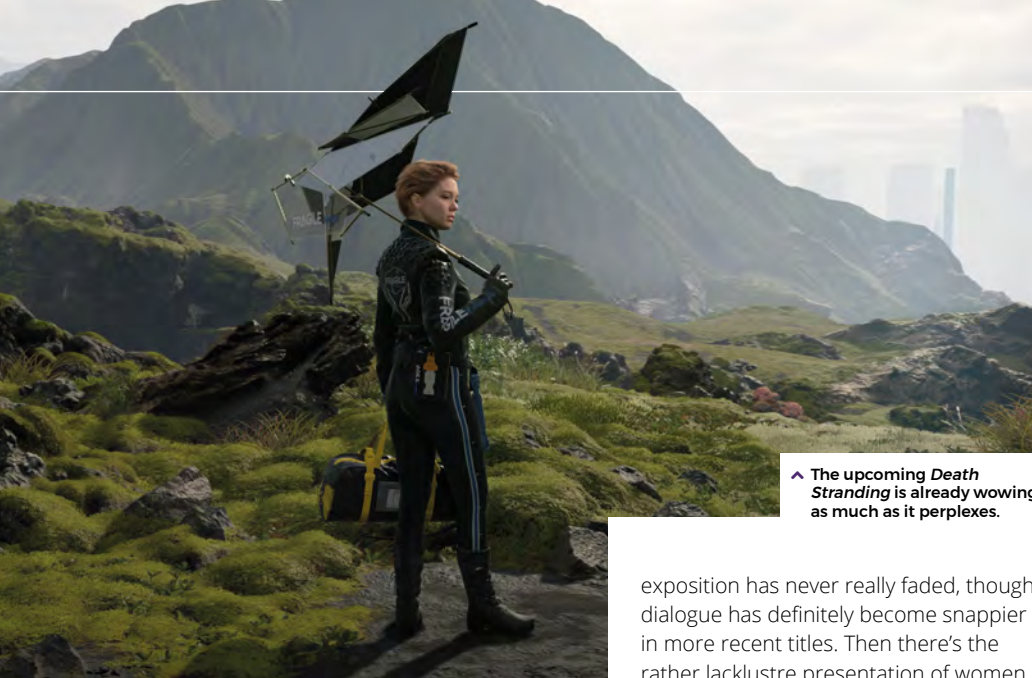
^ The upcoming *Death Stranding* is already wowing as much as it perplexes.

being one of the only visual novels available in the West for a long time. *Boktai* made players think about where they were in the world when playing the game long before *Pokémon Go* was a thing. *P.T.* redefined what a demo could, or should be, while at the same time giving the entire horror game genre a kick up the backside. Unfettered creative control won't always be a great thing – it really depends on who's holding the reins – but Hideo Kojima's output for the last three decades-plus has been nothing other than extraordinary.

STEALTH AND QUIET

The man isn't free of criticisms, and plenty lend themselves to continued discussion of how they impact Kojima's work. His reliance on long-winded exposition has never really faded, though dialogue has definitely become snappier in more recent titles. Then there's the rather lacklustre presentation of women throughout Kojima's games. He manages to avoid damsels in any particular distress, but his games do have a glaring habit of objectifying most of their female characters. Quiet in *Metal Gear Solid V* might have had an in-universe explanation for her lack of clothes, but it's not good enough, it's exclusionary, and it rightly puts some people off Kojima's games.

That said, there's no understating the impact this auteur's vision has had on the entire games industry. Opinions about the man himself are all over the place, and you'll find an even wider selection of viewpoints on the games Kojima has had a hand in. But nobody can ever accuse a Hideo Kojima game of lacking invention, and nobody can ever accuse the man himself of lacking in ideas. So how do you sum the man up? 'A problematic treasure'? Let's go with that. Ⓦ

> **"There's no understating the impact this auteur's vision has had on the entire games industry"**

Stranded

What's next for Kojima and the reformed Kojima Productions is… well, it's very Kojima. *Death Stranding* is an as yet impenetrable wall of peculiar and beguiling elements, starring Norman Reedus, Lindsay Wagner, Léa Seydoux, Mads Mikkelsen, and plenty of other talent. Set in a post-apocalyptic world, there are nudges of horror, of exploration, classic Kojima exposition, and a general feeling that none of us out here guessing have any real idea what's going on right now. A cameo appearance from Guillermo del Toro, co-conspirator with Kojima for the cancelled *Silent Hills*, points to *Death Stranding* being the project Kojima and co wanted to get out the door back in the Konami era. Freed from the difficult working conditions under his previous paymasters and under the wing of the – publicly, at least – friendly neighbourhood of Sony Interactive Entertainment, there's the potential for *Death Stranding* to be something genuinely special. And even if it were to be a bit lacking in the whole game bit, we're near enough guaranteed a fair few talking points from it. It's a win-win.

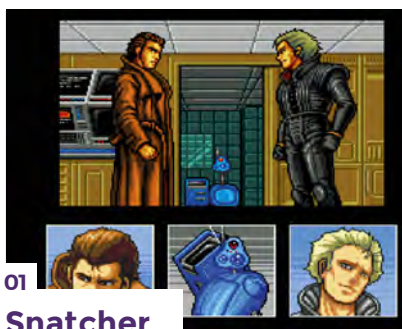⌄ The sheer effort that went into *P.T.* was bewildering.

^ We were supposed to be 'ashamed of our words and deeds' around Quiet's appearance. We were not.
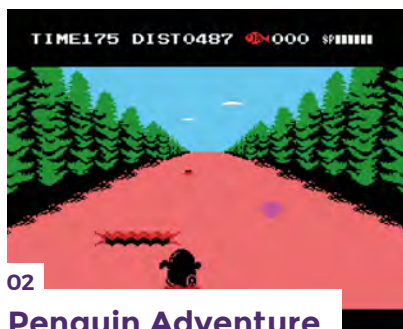
Kojima's
10 Essential Games

Surprisingly, it's not just Metal Gear games throughout Kojima's history

01
Snatcher
**PC-8801 / Mega-CD / PS / various − 1988**

A cyberpunk visual novel with light-gun shooting sections, featuring a convoluted/engaging storyline and mentions of 'Metal Gear'? *Snatcher* was and is an oddity in gaming history. While certainly not his best work, it's definitely worth a go. 1994's *Policenauts* carried on a similar theme, though failed to pick up traction.

02
Penguin Adventure
MSX − 1986

The first game Kojima worked on for Konami – and his career – was a sequel, a twee little platformer, and featured a distinctly cartoonish story. Kojima's role as assistant director meant it wasn't his game, but there are elements carried through his career present – a mixture of genres (including RPG elements), memorable boss battles, and multiple endings.
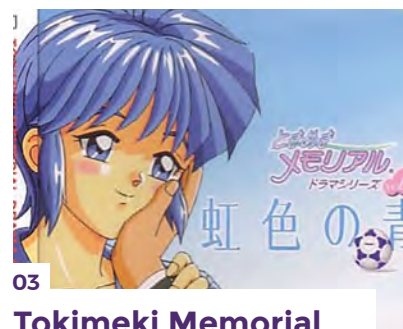
03
Tokimeki Memorial Drama Series Vol. 1-3
PS / Saturn − 1997

In the *Metal Gear Solid* years, Kojima was busy at Konami on this spin-off dating sim series. His role changed through the sequels, working across planning, directing, producing, and drama directing. Naturally. While incredibly niche in their appeal, the *Tokimeki* spin-offs certainly contributed to Kojima's dramatic nous.

04
P.T.
PlayStation 4 − 2014

Oh what could have been. *P.T.* was no more than a teaser, released when Kojima was still at Konami. Presenting itself as unrelated to anything, a bit of digging soon showed this terrifying repeated walk through a hallway was a proof of concept for what *Silent Hills* – the planned sequel from Kojima Productions and Guillermo del Toro – could have been.

05
Zone of the Enders series
PlayStation 2 − 2001-03

It's strange the hype around an early PS2 Kojima game was actually for *Zone of the Enders*' robo-anime-combat rather than the next *Metal Gear*. Both PS2 games were OK, though lukewarm mechanically, but the first game saw solid sales numbers across the world. Mainly down to it being sold with a *Metal Gear Solid 2* demo.
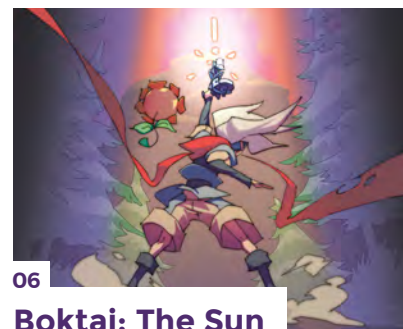
06
Boktai: The Sun is in Your Hand
GBA − 2003

You should go outside rather than play games… or perhaps you should go outside and play games, as action-RPG *Boktai* demanded of its owners. The first game's very Kojima gimmick of a photometric light sensor built in to the GBA cartridge didn't carry on beyond the initial instalment, but it was inventive, and good fun.

07

Metal Gear

MSX2 / NES — 1988

Not his first game, but where it all began – Kojima's first jab at *Metal Gear*, Solid Snake, and tactical espionage action was some 30 years ago. Making the most of limited hardware, the original *Metal Gear* featured stealth mechanics, an in-depth storyline, and the first steps towards a behemoth of a franchise. Oh, and a handy dose of melodrama – mustn't forget that.
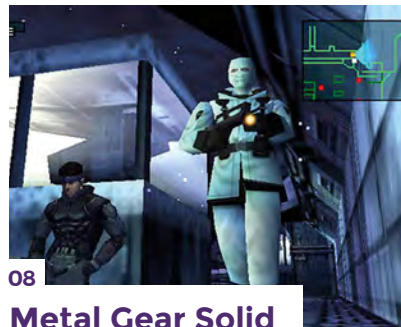
08

Metal Gear Solid

PlayStation / PC — 1998

It's safe to say the majority of players weren't aware of *Metal Gear Solid*'s heritage when it arrived in 1998, but the media of the day did a good job of working up a frenzy. It was fair: *MGS* was a bar-raiser for gaming. It's not just that it was an atmospheric, fun action-stealth game: it's that it felt new, and was littered with genuine creativity from start to finish.
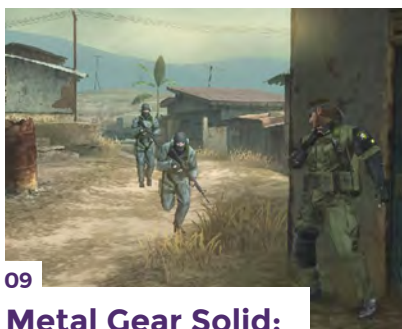
09

Metal Gear Solid: Peace Walker

PlayStation Portable — 2010

Superb sequels and spin-offs followed *Metal Gear Solid*, but it was *Peace Walker* that did something truly different for the core series. Building on the fundamentals, Kojima and co made a game that wasn't just a perfect fit for the handheld – it was one of the absolute best entries in the entire *MGS* series.
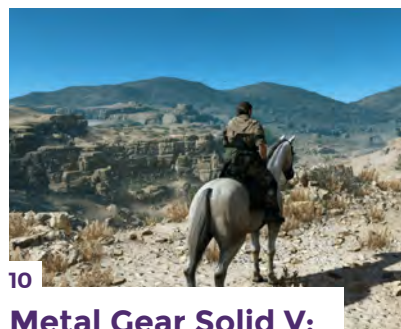
10

Metal Gear Solid V: The Phantom Pain

PS4 / XBO / PC / various — 2015

Kojima's magnum opus, *Metal Gear Solid V* took years to make and was still released too soon. Even so, it ended up as one of the finest games of its generation, mixing a creative approach to open-world mechanics and setting the player completely free. Kojima's final *Metal Gear*, and final title for Konami, was genuinely his best.
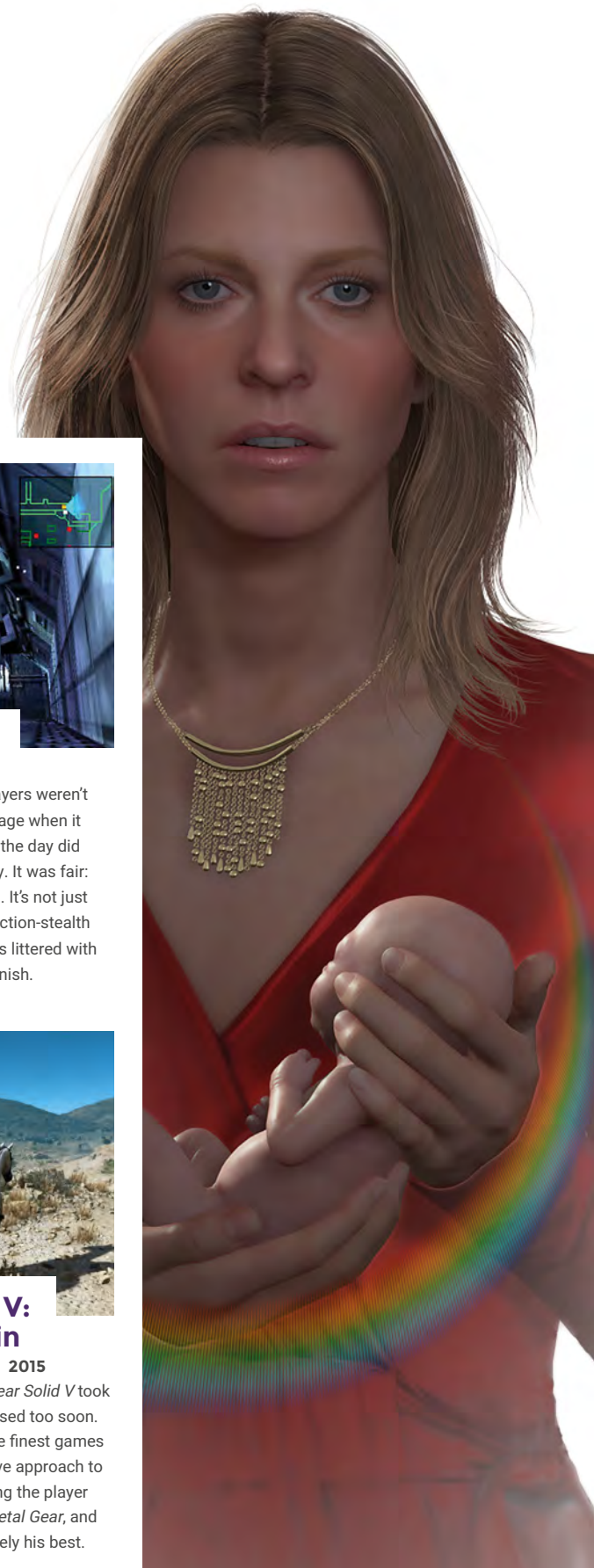
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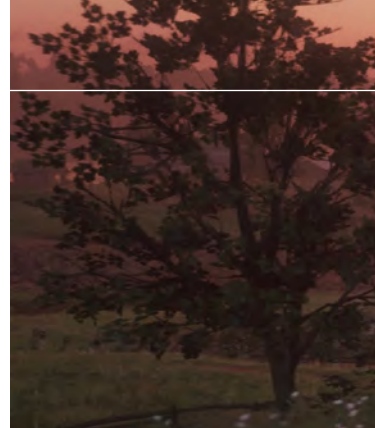
Review

Red Dead Redemption 2

Rockstar returns with a mechanically old-fashioned horse opera

⌄ **Your gang is your life, and each member is pretty well fleshed out.**

T he split between what a game can offer you in its mechanics versus what it brings to the table in terms of story, artistry, and scope has never been more pronounced than it is in *Red Dead Redemption 2*, Rockstar's epic prequel to its first spin of the lasso in 2010. This is a stunningly realised world – not just visually and aurally, but in the people who live there, the vague townships they inhabit, and the untamed wilds that surround them. It's gorgeous, it envelops you, and it's the sort of thing you're absolutely fine with overwhelming you.

Mechanically, *Red Dead Redemption 2* is stuck in 2010. For those not paying attention, we've had eight years of refinements and improvements to the open-world genre and its nitty-gritty fundamentals. In the most part this is ignored by *Red Dead Redemption 2*, and you're left with a game where most main missions boil down to a shoot-out, side missions are pointless to the extent you just won't bother with them, and controls just don't work as well as they should for a title coming from gaming royalty like Rockstar. It's a split that's impossible to ignore, and is utterly jarring from start to (50-plus hours later) finish.

When *Red Dead Redemption 2* is – intentionally – slow-paced and contemplative, it borders on the magnificent. It draws you into a world where

> **"I want to buy a nice hat, watch the sun set, and soak in all the detail"**

life is hard, and just getting by is a challenge to overcome. It perfectly communicates an imagined history of Wild West glory fading as the inevitability of industry – and civilisation – catches up, and the convincing troubles those stuck in the old ways have to face up to. For all the melodrama and grandiose story beats, it's a very human tale about a man not knowing his place in the world any more, and trying in any way he can to just figure this new world out.

But you're constantly dragged out of that tale by the nuts and bolts clanking away under the surface – with the odd spanner thrown in the works, if only to complete the metaphor. To find out what happens next in this journey of self-discovery (and gang warfare, of course), you'll need to do missions. In doing missions, you're made to take extended, unskippable horse rides riddled with incessant exposition; you do The Key Thing for the mission; and at some point invariably there's combat in which dozens of enemies will appear from nowhere and you will, once again, murder your way to victory. You'll wrestle with idiotic steeds determined to seriously injure themselves, battle against a cover system seemingly from a pre-*Gears of War* era, and slowly-slowly make your way through the aftermath, holding a single button to loot corpses, drawers, and wardrobes in what can politely be described as a 'leisurely' pace.

To talk about the story and the in-game action separately and in such stark, straightforward terms would be to miss the point of the overall package, you might think. But I just can't get past the split; I want to return to the game so much, to play it for hours on end – but as soon as I load it up, I'm required to slowly ride halfway across the map to my home camp (limited fast travel does exist), then am presented with an intriguingly set-up story mission that, for no discernible reason, quickly becomes another
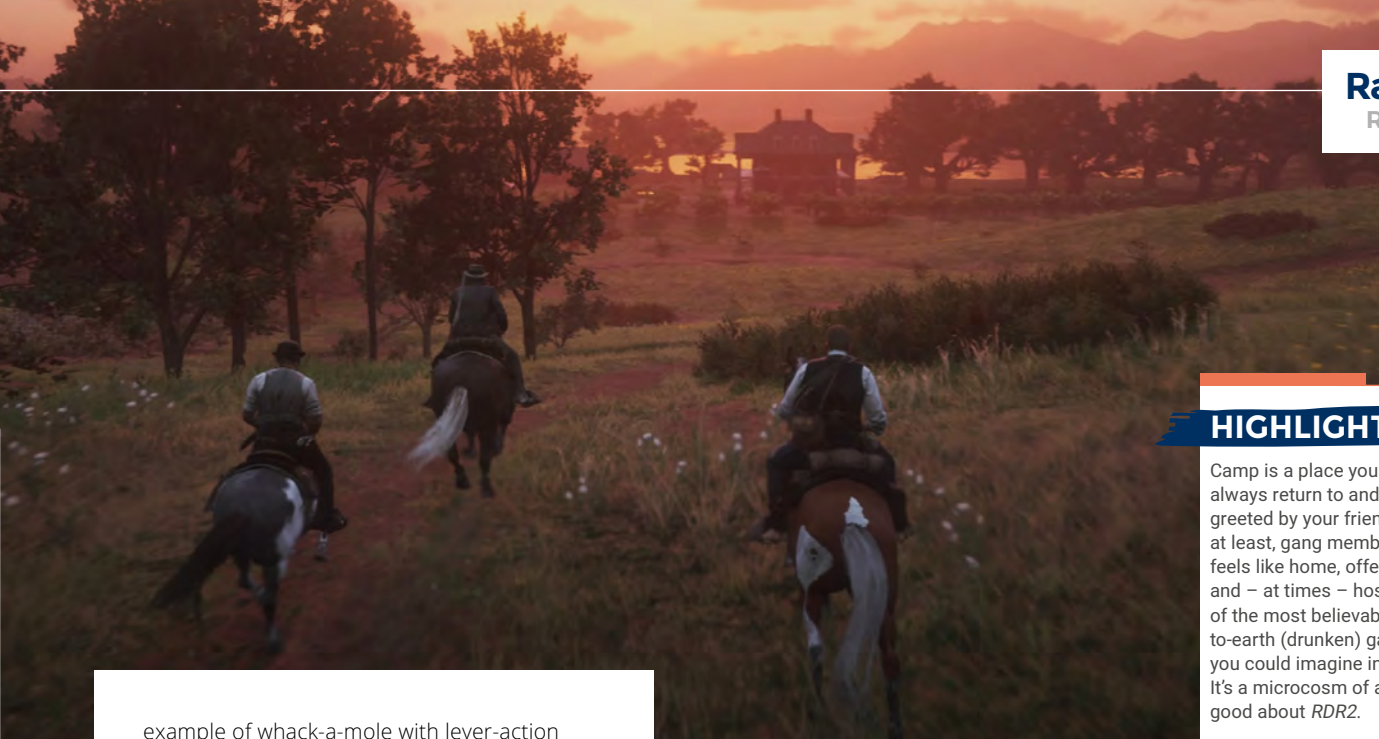
Camp is a place you can always return to and be greeted by your friends – or, at least, gang members. It feels like home, offers respite, and – at times – hosts some of the most believable, down-to-earth (drunken) gatherings you could imagine in a game. It's a microcosm of all that's good about *RDR2*.

example of whack-a-mole with lever-action rifles. To be so lost in and utterly in love with the world one second, to being so frustrated and uninterested with the dated, genuinely boring action the next – it's impossible to see past it.

It's bizarre – there's so much busywork in *Red Dead Redemption 2*; a pace that doesn't lend itself to spots of play every now and then; a massive over-reliance on the *intensely* dull solution of 'end the mission with a shoot-out'; controls clunky to the point of irritation (just try to snap in and out of cover with ease); and generally speaking, there's very little in this follow-up that hasn't been done far better elsewhere since 2010's original *Redemption*.

I want to exist in this world; to take it all in and just go for an aimless ride on my trusty steed – the ninth I've owned, with three previous oatcake-nibblers hit by trains. I want to ignore the story missions, which tell a slow-burn, compelling tale but focus far too much on interminably dull fetch quests and tedious (though mechanically sound) gunfights. I want to snub the cries for help from random passers-by on the wagon trails, knowing full well their mini-mission distraction will prove unfulfilling. I just want to buy a nice hat and watch the sun set, and soak in all of the incredible detail Rockstar has lavished on this world.

But I don't want to play *Red Dead Redemption 2*, because it's simply not a lot of fun compared to contemporaries like *The Witcher 3*, *Breath of the Wild*, *Assassin's Creed Odyssey*, or even Rockstar's own *Grand Theft Auto V*. At the same time, I absolutely do want to live the life of protagonist Arthur Morgan; I want to hear more from the characters he meets and let the ambience crawl deeper under my skin. You'll find it's not possible to have one without the other, though, so for all its great elements, *Red Dead Redemption 2* ultimately leaves me feeling a tad disappointed. ⓦ

⌃ **Capable of sounding as good as it looks,** *RDR2* **never fails aesthetically.**

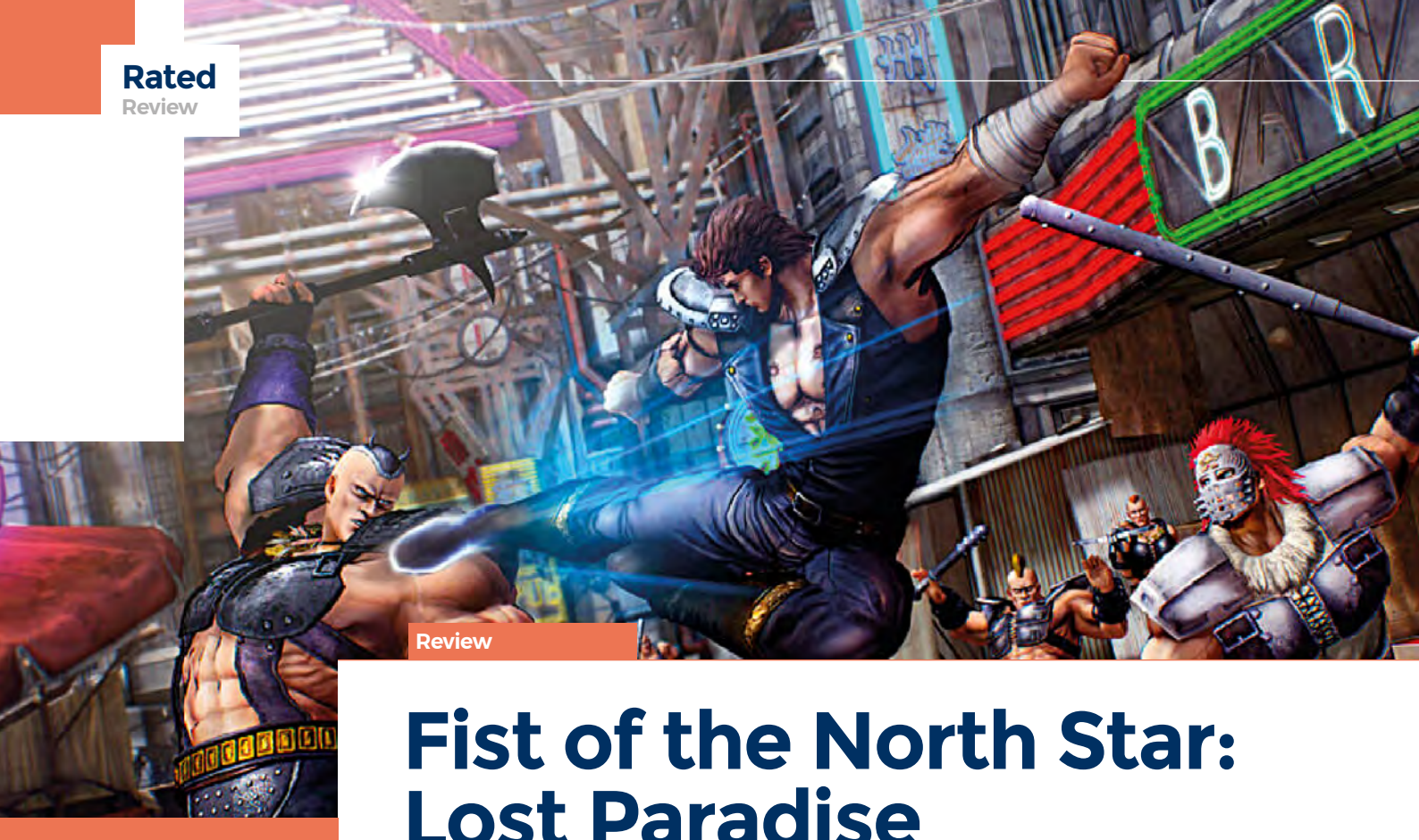⌃ **A high percentage of story missions start or end like this: a gunfight against dozens.**
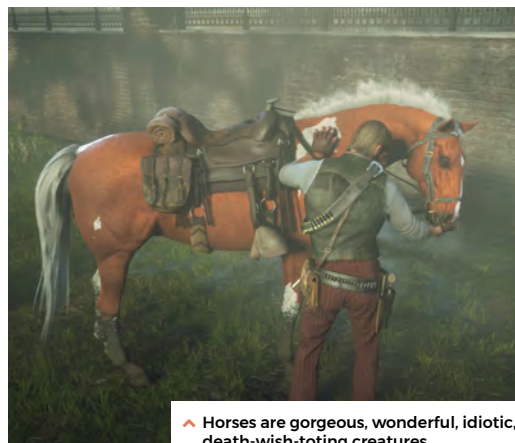
⌃ **Horses are gorgeous, wonderful, idiotic, death-wish-toting creatures.**

VERDICT

Breathtakingly vast and beautiful, *RDR2* **nonetheless relies on decade-old mechanics in a world that has, quite frankly, moved on.**

76%

Review

Fist of the North Star: Lost Paradise

It's Yakuza: the exploding heads edition

▲ Bored with bloodshed? Then retreat to the local bar where you can suit up and serve cocktails.

The thing you have to understand about *Fist of the North Star* is that it's dumb – gloriously dumb. For those who haven't heard of the original manga, it stars Kenshiro – officially the hardest bloke in the world – who travels around post-apocalyptic Earth and punches thugs until they explode. That's it. That's the entire premise.

The heady mix of *Mad Max*, Bruce Lee, and extreme gore made *Fist of the North Star* an enduring classic in Japan. Serialised in the legendary *Shonen Jump* (the weekly manga anthology) back in 1981, it was an instant hit, and led to a long-running TV series, movies, and video games. *Lost Paradise* isn't even Sega's first attempt at adapting the series, with entries gracing numerous 8-bit and 16-bit systems. What makes this incarnation of *Fist of the North Star* special, though, is that it comes from the team behind Sega's cult hit, *Yakuza*.

Like *Yakuza*, *Lost Paradise* features an open-world-like structure of a main quest, complete with side stories and minigames, all largely taking place within an enclosed area. Though at first this may seem like a random approach to

> **"The colourful cast and irreverent tone are a much needed break from the pomposity of triple-A games"**

what's essentially a basic spin-off from a well-loved series, it actually proves to be a perfect match. *Fist of the North Star*'s Kenshiro and *Yakuza*'s Kazuma Kiryu have tons in common: both are brooding anti-heroes with a strong code of honour; both love nothing more than kicking seven bells out of thugs who prey on the defenceless.

After a brief intro setting the scene, Kenshiro is thrown into the town of Eden. A literal desert oasis, it's plentiful in food and water – two commodities far more precious than money. Constantly under attack from various roaming bandit armies, Kenshiro sets out to prove himself to the people of Eden by single-handedly defending them while simultaneously searching for his lost love Yuria. What follows is a remix of the original manga saga, as bigger and more powerful enemies line up to take on Kenshiro's mighty fists of doom. Again, that's the entire premise.

For a game that's chock full of fighting, *Lost Paradise*'s combat is a bit stiff and simplistic. While plenty of moves can be unlocked, inevitably it boils down to button mashing when you're facing off against 20 foes. The one-on-one boss battles all follow a similar pattern of

↑ Kenshiro's absurdly fast fist rush move from the anime and manga is present and correct.

blocking your foe's attacks then retaliating with your own, wearing their life down until you're able to pull off a special move. It feels like a step backwards after recent *Yakuza* titles, and you never really feel completely in control of what you're doing. All the same, it's incredibly satisfying pulling off one of Kenshiro's extremely bloody techniques with its accompanying, ridiculous, flourish.

It's not all punch-punch-punch for Kenshiro, though. Throughout the game there are quests involving upgrading a jeep you find and taking it out for races. And, like stablemate *Yakuza*, there's a few minigames providing welcome diversions. Becoming a temporary barman or nightclub manager, trying your luck at the casino, or – in a unique twist on baseball – defending Eden by batting away would-be invaders with a giant steel girder.

The world of Eden itself is well realised with plenty to discover; substories pop up with regularity, helping to flesh out both the world and Kenshiro's stoic character. Despite all this, there's not much here to challenge the likes of *Assassin's Creed* or *GTA*. *Lost Paradise* exists on a smaller scale and – most likely because of its post-apocalyptic setting – lacks *Yakuza*'s intricate detail.
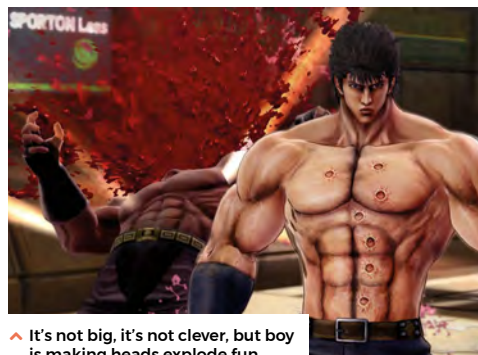
Pacing is another big problem: the first few chapters are irritatingly linear, and it wasn't until I was about two-thirds of the way through that I felt I had full freedom to explore Eden as much as I actually wanted. It's not just the story that suffers, though – there are four skill trees to unlock, but progress is frustratingly slow when you only earn one orb per level. Upgrading the car is bogged down by having to find repair materials placed at random points around the wasteland. Even on a technical level, there are a lot of awkward pauses for loading, which really add up as you're playing.

While I can't hand on heart recommend *Fist of the North Star: Lost Paradise*, I can't deny there's a lot of fun to be had with it. The colourful cast and irreverent tone are a much needed break from the pomposity of triple-A games. Like *Yakuza*, *Lost Paradise* refuses to take itself seriously no matter how melodramatic it can get. And, frankly, nothing can beat the base thrill of seeing your opponents swell up and explode in a shower of gore that would make *Mortal Kombat* blush.

What makes *Fist of the North Star*, though, is the dev team's clear and obvious affection for the source material. Character models look exactly like their manga counterparts, and the whole package serves as a remix of Kenshiro's greatest battles with his best-known opponents. There'll be caution from the uninitiated and elation from *North Star* fans – but one thing there won't be is a shortage of daft, over-the-top fun. ⓦ

↑ It's not big, it's not clever, but boy is making heads explode fun.

HIGHLIGHT

As a manga, anime, or game, *Fist of the North Star*'s appeal lies in its copious amounts of gore. Kenshiro's martial arts skills involve attacking pressure points to make his foes' heads explode – and this latest outing gets this part hilariously, gruesomely right.

VERDICT

A shallow-but-fun spin-off that's ideal for fans of *Yakuza* and the original *Fist of the North Star* manga.

77%

⌃ The environments are grim and oppressive, yet somehow beautiful nonetheless.

Review

Call of Cthulhu

Cyanide's Lovecraft RPG offers a glimpse of cosmic horror

Be it *Bloodborne* or *Sunless Sea*, Lovecraft-inspired cosmic horror is back in vogue. Despite this, games directly based on the Cthulhu Mythos are uncommon, with developers opting to make their own horrific universes instead. Enter *Call of Cthulhu*, Cyanide Studio's adaptation of the popular tabletop RPG series. While it's not without its problems, this take on Lovecraft's mythology is a tense and ingenious descent into insanity.

Call of Cthulhu is centred around Edward Pierce, a troubled private detective sent to investigate the death of one of the richest families on Darkwater Island. He's quickly pulled into a world of conspiracy, human experimentation, and cultism as he tries to figure who's responsible for the deaths, and whether those culprits are even from this dimension.

Anyone even vaguely aware of Lovecraftian horror will appreciate how true to the genre Cyanide's adaptation is. It pins down that foreboding, threatening atmosphere and doesn't let it go no matter what: creepy dock workers who revere an antagonistic ocean; disturbed antique dealers carving notes about monsters on their flesh; books bound in human skin. *Call of Cthulhu* knows what makes the genre so much more than just tentacle creatures.

Rather than running and fighting, Pierce takes on the cults of Darkwater Island with logic, questioning the inhabitants and using his own knowledge to put the pieces of the puzzle together. Interestingly, there are light RPG mechanics to encourage lateral thinking, as good investigative work and clever use of the dialogue system rewards you with character points that can be used to improve Pierce's various attributes. He can become more persuasive, better at finding hidden clues, and stronger at intimidating others. It's even more impressive when you realise this engaging system isn't contrasted with distracting combat sequences.

Sadly, *Call of Cthulhu* could've done with more polish. While the animations and voice acting are inconsistent – ranging from alright, through endearingly cheesy, to downright bad in some places – it's the few stealth sections where things really fall apart. At its worst, one section heavily suggests using stealth to avoid an enemy, except the easier option is just running straight past it consequence-free, breaking any air of tension the moment could've had. The stealth feels like a holdover from other horror games like *Amnesia*, but only serves to take time away from the stellar investigative gameplay the rest of the game presents.

Call of Cthulhu is a surprisingly good adaptation of a widely loved mythology. Despite a lack of overall polish, its atmosphere is perfect, the story is gripping, and the main meat of the game – its investigation – is better than most other games like it. If you want something spooky for a dark evening (as long as you just power through the stealth sections), you can't go wrong here. ⓦ

VERDICT

Despite a lack of polish, this is a fantastic adventure game set in a gruesome world.

75%

Review

Space Hulk: Tactics

A tactics game that doesn't quite hit the mark

▲ The corridors might look big here, but for the most part you're going to be stomping around in far more claustrophobic spaces.

F or anyone who didn't spend their youth playing the tabletop game, here's a *Space Hulk* primer: on one side you have Terminators, huge Space Marines bristling with armour and guns. On the other there's the Genestealers, an alien race that skulk around crippled spaceships. You pick a side, then try and kill the other.

Except it's not quite that simple, especially not in *Space Hulk: Tactics*. Every mission you play, whether it's in the campaign, skirmish, or multiplayer mode, has its own set of victory conditions. The Space Marine player might need to get three of their characters to safety within a set number of turns, while the Genestealer player might have a specific target to take down in the same length of time. Play as the Marines and you'll have a small squad of slow-moving, heavily armoured giants at your disposal. You can equip different weapons and buffs as you play through the campaign, giving your marines new ways of mowing down xeno scum. For all the armaments and thick shoulder pads, though, your squad is actually pretty vulnerable.

▼ When the action happens it's bloody and brutal, but it gets repetitive quite quickly. Especially when your attacks keep missing.

Genestealers are faster, stronger, and if they get too close then a team member will almost certainly die. Plus, you can't see the aliens all the time: they're represented by blips until they come into your line of sight, in typical turn-based tactics style. It's all fairly competent, at least until you get to the presentation: characters move slowly and robotically, so every time you have to sit through an animated scene of one of them walking, or watch a Genestealer spring out of a vent, you'll probably find yourself mashing buttons to get back into the violence.

Balance is also a bit off. This is a game where every shot counts, and a lot of them are going to miss. You might be standing in front of an alien target, you might play a special card to improve your attack, but if the game decides you're going to miss, there's nothing you can do about it.

There are moments when *Space Hulk: Tactics* manages to capture some of the horror inherent in its premise. Outnumbered, on the verge of death, and only a few steps away from your goal, the next move you make is life-or-death. But then you'll press the wrong button and end up with a squad of enhanced superhumans all facing in different directions as they're torn apart.

There are better turn-based strategy games, better horror games, and better *Warhammer 40K* games out there. *Space Hulk: Tactics* might be the finest *Space Hulk* video game we've had in a while, but the slow pace and frustrations still keep it from greatness. ⓦ

Info

GENRE
RPG, Turn-based tactics

FORMAT
PS4 (tested) / PC

DEVELOPER
Cyanide

PUBLISHER
Focus Home Interactive

PRICE
£34.99

RELEASE
Out now

REVIEWED BY
Harry Slater

VERDICT

A game that captures some of the best, but also a lot of the worst, about its board game inspiration.

55%

Review

Soulcalibur VI

The sixth tale of souls and swords arrives

^ You could spend hours in character creation.

^ *Soulcalibur VI* sees *The Witcher*'s Geralt join the fray – surprisingly, he fits in well.

After *Soulcalibur IV* and *V*'s respective train-wrecks, it's surprising that *Soulcalibur VI* is even a thing, let alone that it's good. While it feels at times austere, this is easily the best instalment since the heyday of the second and third games, and well worth recommending to any fan of fighting games, really big swords, or both.

Retelling the story of the first *Soulcalibur*, *VI* follows the conflict surrounding the corrupt blade duo 'Soul Edge': the manifestation of evil itself. Warriors from across the world hunt for the blade, and every encounter inevitably ends in them crossing their swords, nunchaku, staffs, whips, claws, axes, and various other weapons from the 16th century.

It's not just the story going back to basics, as *VI* backtracks on *V*'s almost complete cast replacement by bringing back many of the series' most popular characters. Talim, Kilik, Mitsurugi, Nightmare, Voldo, and more are all back for a tussle. Unfortunately, where *V* stumbled by experimenting too much with the characters people know and love, *VI* holds back. With a paltry 16 characters (*V* had 28), and with only two debuts (Grøh and Azwel, who are both excellent additions) and one guest character in *The Witcher*'s Geralt, *Soulcalibur VI*'s roster feels woefully small.

Much like the roster, the two main single-player modes feel restrained, especially when compared to the fully animated and voiced *Tekken 7* story mode. The Libra of Soul mode is a choose-your-own-adventure through the world, while Soul Chronicle is a more traditional linear tale, yet both are told through static images, text, and some goofy voice acting. With arcade and online play letting you get to the action quicker, there's little reason to touch these modes.

Soulcalibur differentiates itself from *Tekken* in other, more positive ways, such as its freedom of movement. Whereas *Tekken* has side-stepping, *Soulcalibur* features the ability to run in all eight directions, pushing the fight around the stage as players run to and launch away from each other. The result is an involved fighting system with as much emphasis on positional awareness as on learning every character's huge move list.

But the true star of the show is character creation: making your own fighters from the plethora of cosmetic items to battle with online is endlessly fun. Even more fun is seeing weird and wonderful fighters other players have made, be they recreations of characters like Ronald McDonald or *Nier: Automata*'s 2B, or original, grotesque horrors. Taking the fight online can be a journey to a very creative and bizarre place.

While sparse in some areas, *Soulcalibur VI* manages to get straight to the heart of what makes the series so great – its fighting – and brings it to the modern generation in stunning detail. Though it could do with a few more updates, this is arguably the best *Soulcalibur* in a long time. ⓦ

VERDICT

An excellent fighting game let down by a distinct lack of risk-taking.

71 %

< Certain enemy types found on planets are vulnerable to certain weapon types. Naturally, ice attacks do great damage to fire.

Review

Starlink: Battle for Atlas

Epic space battles collide with astronomically priced toys

Not content with ignoring the supposed demise of the toys-to-life genre, *Starlink: Battle for Atlas* dishes up a tempting concept: modular spaceships built in real-life, before appearing in-game as digital recreations of the toy. Theoretically, it's enough to set pulses racing – at least until they glance at the price tag attached. Enjoyable though the game is, an oddly confusing pricing structure and repetitive mission design holds *Starlink: Battle for Atlas* back.

Starlink's vision of space is an optimistic one. Full of vibrant planets to discover and intergalactic spaceways to navigate as a member of the eponymous Starlink initiative, you get the true impression while playing that the universe you're presented with is an endless one. In actual fact, there are a total of seven planets available; each one feeling distinct enough from the last that it's easy to become distracted with the odd side mission or two. And this being a Ubisoft game, there are plenty of those.

Sooner or later, though, you'll want to stop scanning that weird-looking alien creature on the horizon and dive into the main story. In a distant future where humanity has cracked interstellar travel, your mission to explore the Atlas star system is swiftly cut short after your captain finds himself kidnapped. By whom and for what purpose? Only by jumping in your craft and thwarting the alien menace spread throughout the galaxy might you find out. It's standard sci-fi stuff, made slightly better by endearing characters and some decent voice work.

Touching down on a planet will see multiple options laid out before you. There's the campaign's regular stream of story missions, enemy outposts to reclaim, as well as instanced side objectives that can pop up at any time. Almost all of them will at some point force you into combat, which, thanks to you always being in the cockpit of a starship, is fun, frantic, and immensely satisfying – especially when unloading flurries of fire from whatever cannon you have attached. Dogfights in space give you greater freedom of movement due to being in a 360-degree space, but planet-level battles equally require you to always stay conscious of enemy positioning to not get swarmed.

Sadly, the act of purchasing *Starlink: Battle for Atlas* is perhaps more problematic than it should be, with various options to consider. Physical, digital, or even platform-specific versions can easily confuse – just know that if you have a Nintendo Switch, the exclusive *Star Fox* content is meaty enough to make this the preferred way to play. Then there's the game's sense of 'been there, done that' some missions start to suffer from roughly two-thirds in.

These are slight blemishes on an otherwise joyous space adventure. In a year clogged with franchises, sequels, and multiplayer blow-outs, *Starlink: Battle for Atlas* is a nice change of pace, further backed up by beautiful worlds, flexible combat, and a welcome sense of discovery. ⓦ

Info

GENRE
Action-adventure

FORMAT
SWITCH (tested) / PS4 / XBO

DEVELOPER
Ubisoft Toronto

PUBLISHER
Ubisoft

PRICE
£69.99

RELEASE
Out now

REVIEWED BY
Aaron Potter

VERDICT

Its toys-to-life roots might cause some reticence, but *Starlink: Battle for Atlas* is ultimately a solid open-world space soirée.

70%

Review

▲ Despite how intimidating many of the boss foes appear, most take very little effort to take on unless playing at the highest difficulty.

Warriors Orochi 4

A hack-and-slash with a somewhat blunt edge

Info

GENRE
Hack-and-slash

FORMAT
PS4 (tested)
/ SWITCH /
XBO / PC

DEVELOPER
Omega Force

PUBLISHER
Koei Tecmo

PRICE
£54.99

RELEASE
Out now

REVIEWED BY
Aaron Potter

VERDICT

Short term thrills and a lack of innovation make *Warriors Orochi 4* a disappointing hack-and-slasher that fails to push the genre forward.

50%

Whatever complexities lie ahead, there are few certainties in life we'll know to always be true: the sky is blue, the grass is green, and Koei Tecmo *Warriors* games will never not make it fun to execute 50-plus enemies in one swoop of a blade. This fourth instalment in *Dynasty Warriors / Samurai Warriors* mash-up series *Orochi* delivers the same sense of short-burst action we've come to expect; but a severe lack of challenge means it soon grows tedious, despite a variety of systems and playable characters.

Somewhat unsurprisingly, the story in *Warriors Orochi 4* is a jumbled mess. There are Greek gods reigning down on you, alternative worlds colliding, and plenty of other wild stuff that's sure to pass you by. Narrative has never been the strong point of any prior *Warriors* game, but this one misses its chance to engross you more so than any other thanks to its mixture of pre-rendered cutscenes, text boxes during gameplay, and static character portraits between the action. *Warriors Orochi 4*'s narrative is told completely straight, but this inconsistency makes it difficult for you to take it as such.

Thankfully, *Warriors Orochi 4* manages to deliver in all the ways you want it to, in the most part. Each chapter sees you slashing and trampling through hundreds of enemies, making your way from base to base throughout each map, gaining new allies and holding back ancient enemy forces. Combat is a mixture of light and heavy attacks, with magic attacks thrown in that see your selected team of three execute some devastating and outlandish finishers.

Orochi 4's little spin on this tried-and-tested formula comes from how your party members interact. Rather than just wail away at enemies individually, they can be switched between during attack animations, resulting in some impressive combos. Any excitement you get from pulling them off successfully is soon curtailed, though, when it becomes apparent that enemy challenge is so low on both Easy and Medium difficulties that tactics don't really matter. Other than base captains and named warriors who crop up in the midst of battle, creativity in combat soon becomes for your own satisfaction rather than any sense of strategy.

It could be said *Warriors Orochi 4* is a return to form after the stark disappointment *Dynasty Warriors 9* presented with its open-world structure – but two steps forward, one step back, isn't cause for celebration. Despite featuring 50 story chapters and 170 characters, the breadth of content here isn't enough to make up for the lack of innovation and absence of personality compared to other Koei Tecmo spin-off games like *Hyrule Warriors* and *Fire Emblem Warriors*.

It's almost like *Warriors Orochi 4* has opted for egregious scope in place of any real depth or genuine innovation. While it can be fun to take on increasingly larger hordes of enemies, the short-term satisfaction from doing so only lasts so long. ⓦ

Trying to stand the heat in Overcooked 2

Too many cooks? Too many cooks.

We shall sit, oh family of mine, and we shall play a game together. We shall choose something co-operative so it is enriching and avoids conflict. And we shall choose a title based on an innocent, bloodshed-free theme, such as cooking. Dishes shall be dished, fun shall be had, and nary a murmur of complaint shall be heard.

At least, that was the plan. *Overcooked 2* might look cutesy and calm, like *Cooking Mama* in multiplayer – the sort of thing used as a palate cleanser between main courses of 'proper gaming'. It's not. *Overcooked 2* – like its predecessor – is absolutely brutal, and results in screaming and slanging matches the likes of which would make a group of football hooligans remark is 'a bit too much'.

But it's worth it. Every single prediction for our family time with the game was wrong bar one: fun was had, because *Overcooked 2 is fun*. It's the joy of learning simple new skills together and figuring out how to efficiently get your kitchen running. 'You get that, you do this, you go here, I'll

> **"By the fourth missed burger, the pressure is on"**

sort those' – and when it comes together, there's a pang of satisfaction you just don't expect to feel.

Where *Overcooked 2* comes into its own, though, is in the inevitable chaos – and subsequent conflict – that arises. The simple fact is things will go wrong: you'll fail an order; a pan will catch on fire; the hot air balloon your kitchen is located in will crash into a sushi restaurant, thus doubling the number of dishes you're required to serve. The usual sort of stuff.

At first it's a mild panic, but everyone pulls together and you prevail. Then it gets harder, and the cracks begin to show. The true self under the human façade begins to emerge, and the snide comments start coming. At first it's all 'don't say that to her, she's trying her best', but by the fourth missed burger in a row, the pressure is on and the stress levels rocket. And that's when *Overcooked 2* gets *really* good.

Not because of arguments, not because of bitterness or resentment – but because you start to pull it together again. You stumble through missions by the skin of your teeth. You work together, whether smoothly or not, because that's what the game wants of you, and even with all that self-imposed pressure, that's what ends up being done.

There are plenty of arguments to be had as to whether the game should even have come out to begin with, given that it acts as more of an expansion pack to the original than any sort of full-blown sequel. But that's something for another day.

For today, let's just focus on the fact that you – *yes, you* – didn't chop that *sodding* cucumber I asked for *three minutes ago*. Y'know, the important things. ⓦ
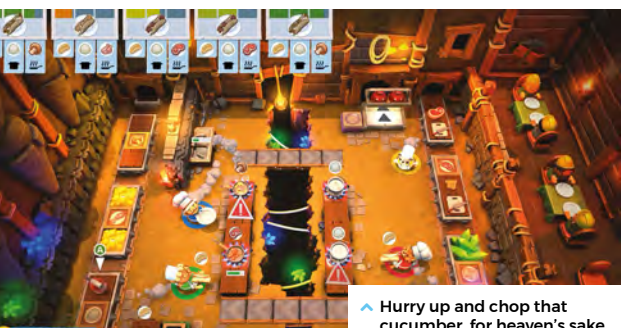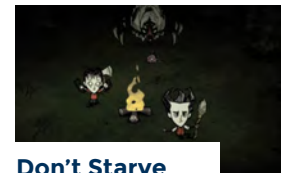

▲ Hurry up and chop that cucumber, for heaven's sake.

Wireframe Recommends

Football Manager 2019
PC / MAC
For more than a quarter of a century it's been bewildering people with its popularity, but the fact remains: *Football* (née *Championship*) *Manager* is utterly beguiling. Still.

Don't Starve Together
PC / PS4 / XBO
Dying alone is never fun, so bring a friend or loved one along for the ride! In a game, we mean. Hmm. Anyway, *Don't Starve Together* remains superb co-op survival fun.

Silent Bomber
PS1
The PlayStation Classic is about to release, but there are some surprising omissions. Still, there's nothing stopping us going back and enjoying tight arcade action like this, sans mini-console.

Prince of Persia: Sands of Time

Rather than just a showy title, the Sands of Time made
for a killer feature over and over again

UBISOFT MONTREAL / **2003** / **MULTI**

The good thing about being able to rewind and
try again is thut you...
The good thing about being able to rewind
and try again is that you can errase...
The good thing about being able to rewind
and try again is that you can erase past mistakes, and
continue as if nothing went wrong to begin with. Video games
have been employing this tactic since the advent of lives –
you make a mistake, you go back a ways, you try again.

But in 2003, an unexpected new entry
to the *Prince of Persia* series, *The Sands
of Time*, toyed with that established
foundation of gaming. If you slipped up,
it wouldn't push you back an arbitrary
way to make you redo entire sections: it
would let you rewind time a few seconds
and have another go almost immediately. A lot has been
said in the past 15 years about how special *The Sands of Time*
was; a critical darling that took years to take off sales-wise,
it reinvented a classic character few of us knew needed
reinventing, and led to sequels, spin-offs – even a major
movie starring Jake Gyllenhaal. None of this would have
happened were it not for Patrice Désilets' novel reboot,
and while riddled with other creative, unique touches, the
love for *The Sands of Time* would have been nowhere near
as enduring were it not for its clock-fiddling killer feature.
It wasn't the first game to use rewinding and other time-

> ## "If you slipped up, it wouldn't push you back an arbitrary way to make you redo entire sections"

bending features to the player's advantage – *The Sands
of Time* was beaten to the punch (ha!) by Hideki Kamiya's
Viewtiful Joe by a matter of months – but the entire package
was such an unassuming one; politely narrated by the titular
prince, with cute little nods to the absurdity of gaming's
desire to kill players over and again ("no, that's not how it
happened," he would say after the player fell to their death).

It was a concept we had to get to grips with, but Désilets
and his team made it feel like it had always been with us.
Combat flowed in a balletic fashion,
enemies could be slowed and stunned with
time powers, and missed jumps could be
attempted again immediately – so long as
the sand(s of time) meter wasn't empty...
it was still a game, after all.

As central gimmicks go, it was one of
the best, lifting what could have otherwise been a me-too
action-platformer to a whole other level. And that shows
in how *The Sands of Time* was initially ignored by the public
at large (as was Ubisoft's other 2003 classic, *Beyond Good
& Evil*) – people expected it to be the same as everything
else. It wasn't.

The good thing about being able to rewind time and
try again is that you can erase past mistakes. The good
thing about not being able to rewind time is that you can
see progress made through killer features: implemented,
imperfect, improved, and always impressive. ⓦ

Next Issue

ON SALE 6 DEC

PHOENIX POINT

X-COM's Julian Gollop returns
with a new sci-fi RTS

Also

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> Create your first 3D shooter in Unity

> The fur flies in Super Animal Royale

> How Thrunt XL was made without a line of code

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