INSIDE VALVE SPECIAL EDITION

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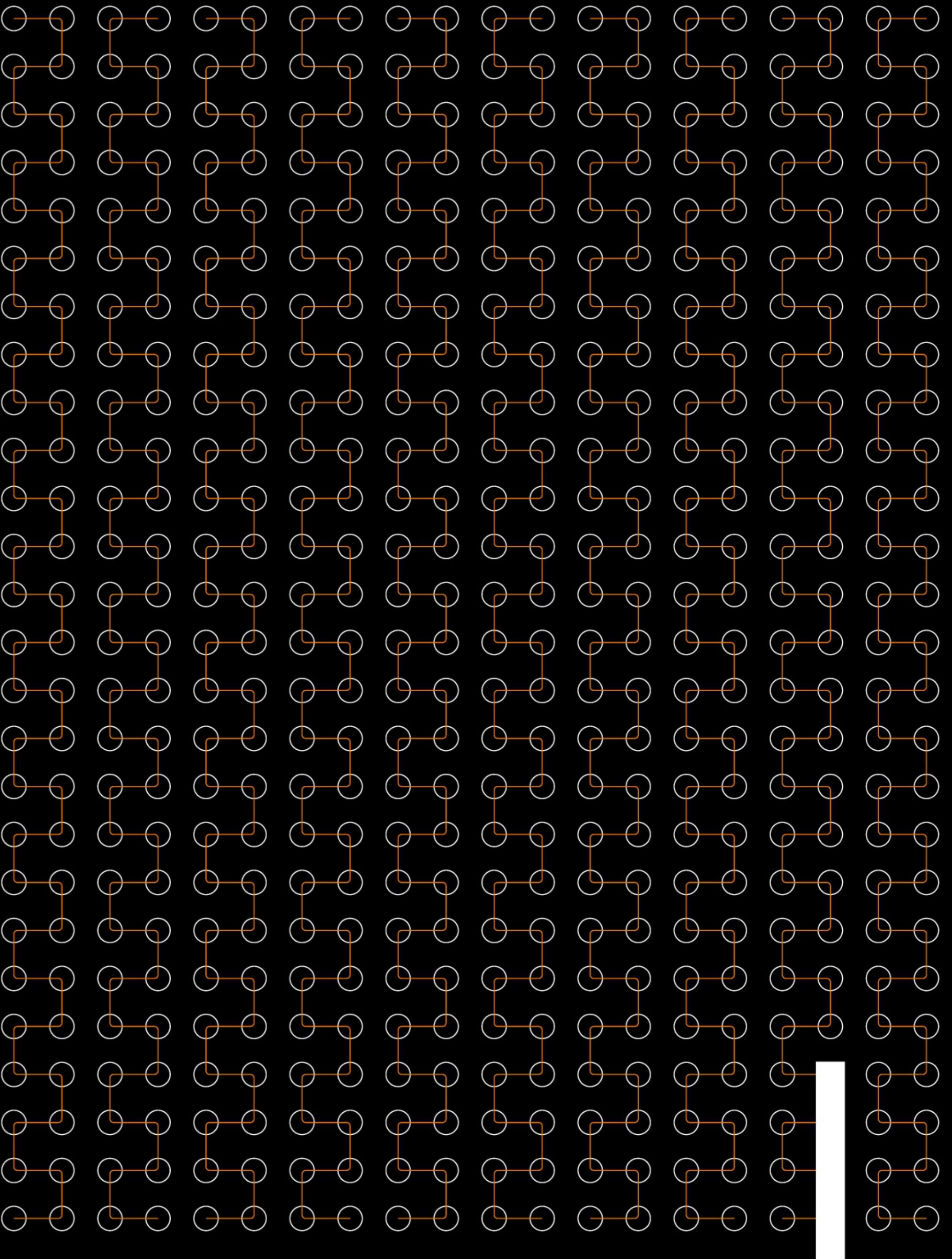
THE FUTURE OF INTERACTIVE ENTERTAINMENT

HALF LIFE ALYX

REVIEWED
VALVE'S STUNNING RETURN TO CITY 17

PLUS
GABE NEWELL
STEAM INDEX
ARTIFACT
DOTA UNDERLORDS

#344
MARCH 2020



Kept you waiting, huh?

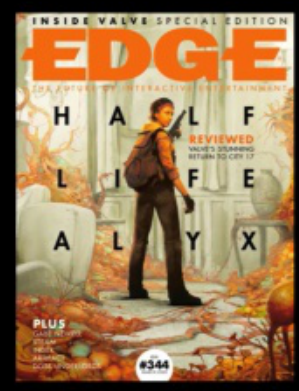
We've been feeling a little nostalgic of late – the natural consequence, we suppose, of an era coming to an end. Flicking through old issues of **Edge**, we stumble across **E**244's Manifesto, in which representatives from the Nordic territories' development community discussed the pressing issues of the day. Valve's staff handbook had recently leaked, detailing the *Half-Life* maker's unique structure: it had no traditional hierarchy or even job titles, with desks on wheels so staff could move between projects as they liked.

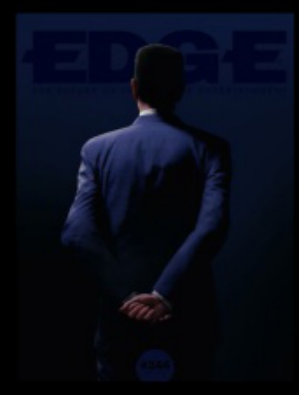
We asked the room for their thoughts. David Polfeldt, head of Ubisoft Massive, offered this: "I believe creativity needs boundaries. The Valve thing is a very expensive way to make people creative – by having a lot of people doing more or less what they want. Eventually you'll get something really creative from that, but I'm not sure it's the most efficient way."

An insightful comment back in 2013, it's been further flattered by time. Since that day in Malmö, Polfeldt's studio has announced, made and shipped two games in *The Division* series, moved to new offices, opened a secondary studio in Stockholm and won the licence to James Cameron's Avatar. This month, 13 years on from *Half-Life 2: Episode Two*, Valve finally releases a new game in the series that made it famous.

To focus solely on *Half-Life* is to ignore everything else Valve represents. Originally merely a brilliant game developer, the Valve of today is also shopkeeper of the industry's biggest download store, owner of some of the most popular games on the planet, and has moved from software to services into hardware, making the most powerful VR headset available.

As such this isn't merely an issue about *Half-Life: Alyx*. It's also a chance to check in on one of the most secretive companies in the industry, to talk not only about its new VR game but the headset around which it is built, the platform through which it will be sold, and the games and initiatives whose success have helped fund it. And yes, to get Gabe Newell on tape, because it's been far too long. The story begins on p60.





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HALF-LIFE: ALYX

Dario Casali, level designer

Let's start by addressing the inevitable: Valve has spent a very long time not making (or, at least, not releasing) *Half-Life* games. A dozen years have passed since *Half-Life 2: Episode Two*'s cliffhanger ending gave birth to an Internet rallying cry and established the studio's reputation for being allergic to the number three. So what exactly happened to *Half-Life* during those years?

"I don't think *Half-Life* really left our minds over that whole period of time," Valve's **Dario Casali** tells us. "It was always there, it was always, 'Well, what are we going to do, how are we going to push it forward?' – and those are difficult questions to answer. I guess there weren't any projects that put forward a really viable claim to, 'This is the idea for the next *Half-Life*.'"

"We did actually start some efforts that were *Half-Life*-oriented," **Greg Coomer** adds. Small teams gathered around these ideas, as happens with any new project at Valve – and then, unconvinced they had something worthy of the name, fell away. "Those experiments didn't ever reach critical mass."

Casali and Coomer are designers (Valve's freeform, nonhierarchical structure means exact job titles don't really exist) who have both worked on the series from its original incarnation through to the present day, with *Half-Life: Alyx*. And after that long absence, they're clearly glad to be back. "Valve has done a bunch of things in the 20 years since we made our first *Half-Life* game, and of course we're proud of all that stuff, but everybody has their favourites," Coomer says. "And to me, it feels like Valve has *Half-Life* in its DNA somehow – so when we're back to doing that, it does feel like we're coming home, to the thing we know better than anything else."

It's a sentiment shared by many of the other Valve veterans we speak to. Take **Robin Walker**, a designer who joined the studio back in 1997 when it bought up the team behind the Team Fortress mod. "For all the years we weren't shipping new *Half-Life* products, there was no lack of desire here," Walker says. "There was definitely a concern: 'Do we still know how to do it?'"

Various obstacles stood in their way. There was the growing pressure from fans, and – because the studio's structure means employees are free to choose what projects they work on – a swathe of other enticing games they could join instead. And not just games, either. According to Coomer, "a significant fraction of the people at the company" took the opportunity to hop the fence from games to work on the development of Steam or even Valve's hardware efforts. Those obstacles are all still there today, however. Why, then, is *Half-Life* resurfacing now?

The answer lies in that hardware business. By 2016, Valve had taken the plunge into virtual reality – working with HTC on Vive and beginning R&D efforts on what would eventually become Valve Index – and realised that technology would need software support. It needed a reason, in short, why someone would

LEFT **The Vault is a new addition to City 17's skyline. To get there, Alyx has to pass through the Xen-infested Quarantine Zone**
BELOW **The way players move and inspect their surroundings in VR has led Valve to create tighter and more densely packed levels**

Greg Coomer, designer

actually buy one of these headsets. And so small teams started to explore options for virtual-reality games, reaching right back into Valve's longest-running franchises and looking for something that would be a good fit for the medium.

"It wasn't actually super-obvious on day one when we had those conversations that it should be a *Half-Life* game," Coomer says. Competitive multiplayer games were rejected because of their reliance on player numbers, something that VR wouldn't be able to provide. Casali briefly worked on a *Left 4 Dead* VR prototype (it was "creepy as hell", he says, but was missing some essential *Left 4 Dead*-ness). *Portal* was considered until the team realised how heavily its puzzles leant on momentum and, not wanting to make players vomit, put the idea aside.

"Then we put together a *Half-Life* prototype, and it was just like, 'Oh wow, we can easily see how this is going to work,'" Casali says. That first version was pulled together within a week using old *Half-Life 2* assets. It was "very rudimentary", a 15-minute experience that didn't add up to much more than a shooting gallery – but people were sold on it immediately. "It was clear pretty quickly that there were a set of things about *Half-Life*'s DNA that worked really well in VR," Walker says.

Not only that, but it gave the team a solid reason to return to the series. "VR was exactly the thing that dragged *Half-Life* from the back of my mind to the forefront – 'Oh, I can see why this is going to make *Half-Life* interesting and novel again,'" Casali says. He makes the comparison to *HL2*'s Gravity Gun and physics engine: the big idea upon which the rest of the game could be anchored.

"I think that VR let us get to work on it to some extent," Walker says. "We understood *Half-Life*, and this project was about 'How does VR change *Half-Life*?'. That's very tractable. We could start work on that very quickly. So, to some extent, we didn't have to worry a lot about the larger questions. We could just focus on, 'Let's build a really good *Half-Life* game'. And we know how to do that."

As *Half-Life Alyx* came into focus, the slowly growing team – "There were less than 20 of us for the first couple of years," Walker says – found other ways to help it feel less like they were labouring in the shadow of that looming '3'. Like, to pick one

BELOW **The Combine soldiers are back, with slightly tweaked designs to help differentiate the wide array of units you'll be fighting this time**

particularly pertinent example, dropping the number entirely. *Alyx* is simultaneously sequel and prequel, sitting between the first and second games – and that was enough to free Valve from some of the expectations that had been holding it back for so long.

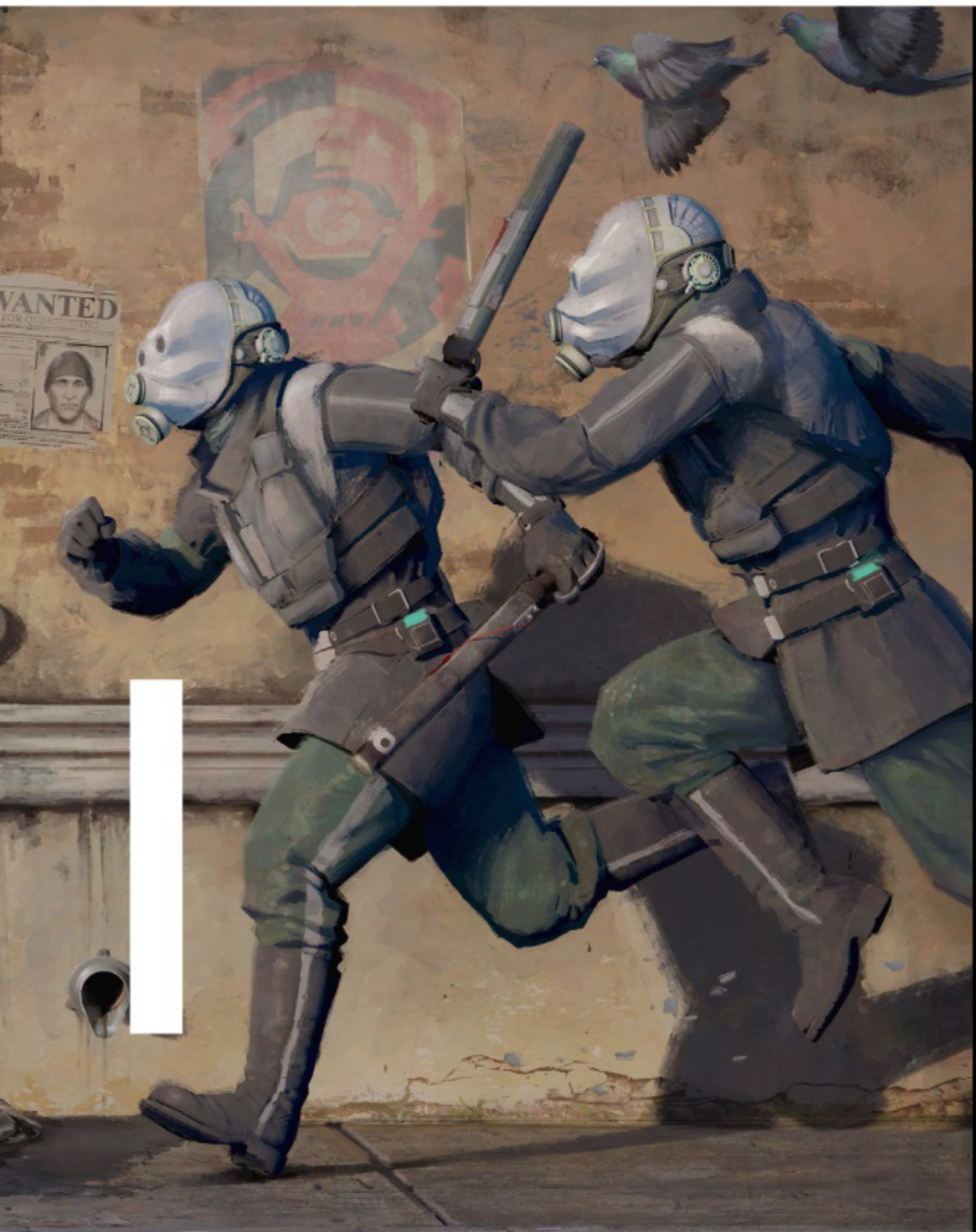
"There was a reason we decided to make it a prequel," Casali says. "We recognised that the VR platform was limited in audience – and we also recognised that this was not *Half-Life 3*. We didn't want to put out a product not every *Half-Life* fan could play that would advance the storyline beyond where *HL2* was, and leave all these people without VR headsets saying, 'Hey, why can't we participate in this?'"

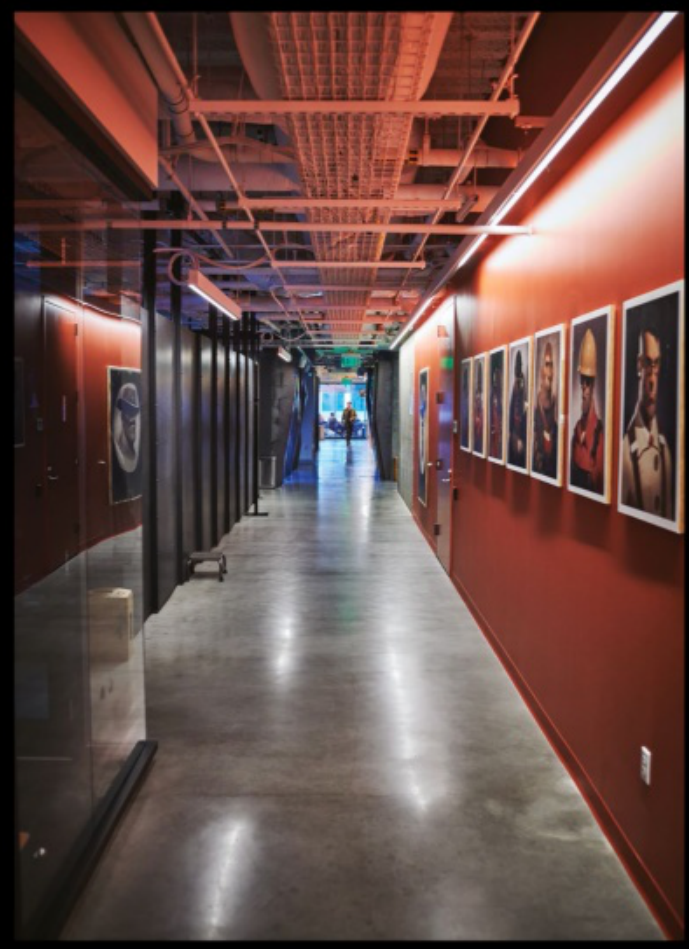
We sense that *Alyx* being a prequel lets Valve treat it as something hermetically sealed – that if the game fails in any way, it won't spill out and tarnish the broader series. But as more staff joined the project, they found their work defined by this decision, for good or ill. "There's this space between *Half-Life 1* and *2* which was completely unexplored," says **Rob Briscoe**, an artist who joined Valve after making *Dear Esther*. "That was super-exciting to me because, as a fan, I was always into the lore side of things." The art team found ways of connecting the two games aesthetically and narratively. Briscoe uses the example of Xen flora, which after infecting the world in the first *Half-Life* is absent from its sequel. The art team looked at *HL2*'s unexplained canals of toxic waste, reasoned that the Combine could have been dissolving it down to chemicals, and worked the logical midpoint into *Alyx*'s environmental art. The game never tells you any of this, but it's there for anyone who goes looking.

This work all happened before any of the game's credited writers joined the project. When *Portal 2* co-writers **Jay Pinkerton** and Erik Wolpaw began work on *Alyx* – alongside Sean Vanaman, who'd recently joined Valve along with the rest of the team at Campo Santo – they inherited a world and a rough structure. "When we came in, we had a lot of the where but we didn't have any of the why," Pinkerton says. Which meant they also inherited the problem of writing a prequel, and all the difficulties inherent to it. "If you know where all the characters end up, where's the drama, where's the conflict?"

Part of the solution they came up with was the introduction of Russell, a new character played by Rhys Darby (Flight Of The Conchords). Russell provided the writers with someone whose fate was uncertain,

Jay Pinkerton, writer





The majority of the *Half-Life: Alyx* team is located off to one side of this corridor – a tiny birthplace for a project of such vital significance

a character they could put in peril, and let them move beyond just filling in the gaps of, as Pinkerton puts it, "here's how Eli lost his leg". The rest of the solution – well, that would be spoiling things. We'll leave it at this enigmatic hint from Coomer: "In ways that prequels often do, *Alyx* actually does advance the storyline – just not directly, chronologically, past *Half-Life 2*."

With the game's shape nailed down, it was just a matter of getting the thing completed. This was aided by the fact that the team on *Alyx* kept growing – as Walker says, "there's this sort of gravitational pull" to a project nearing completion, and a company-wide playtest last December attracted a few more people who, spotting areas of the game that could benefit from their expertise, wheeled their desks over to lend a hand. The final *Alyx* team numbers somewhere over 80, the single biggest unit Valve has ever assembled, but still relatively tiny compared to most modern games of this size. The final product is just over 15 hours long, and feels just as packed as any *Half-Life* campaign.

After relentless playtesting (a process that has spanned almost the entire length of development), Valve has finetuned *Alyx* to a place it seems to be happy with. Everyone we speak to is convinced that VR brings something new to the *Half-Life* formula, whether it's encouraging players to pay more attention to the environments, longer battles that create more tension and give enemy AI a chance to shine, or just an unprecedented sense of scale to its spectacle. The question that can't be answered by any number of playtests, though, is whether the world will agree.

"In some ways, it was a tough decision to make this instalment one that is, in terms of hardware, not accessible to a huge number of people who would really like to play it," Coomer says. "That was a thing we wrestled with, and one of the things that we're still going to wrestle with down the road. It's not our goal to only make *Half-Life* games for a relatively small audience."

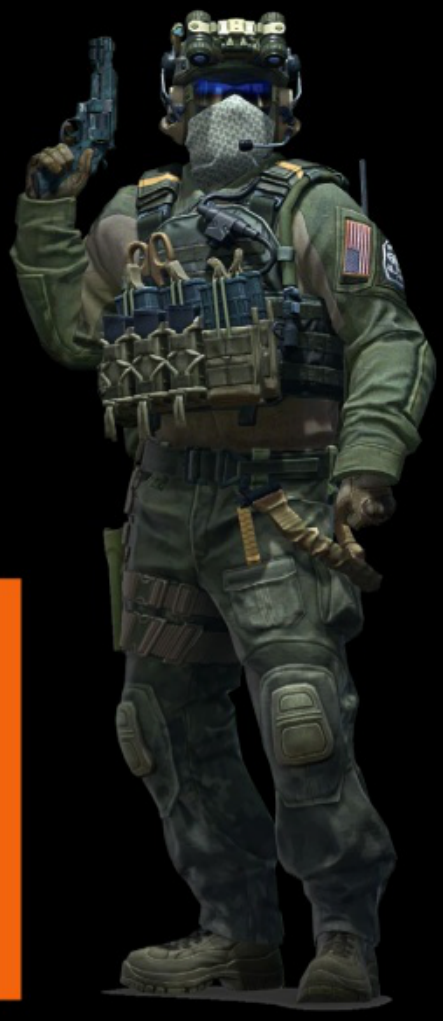
So the intention is to make more *Half-Life* games? Understandably, we struggle to get a solid answer to that question. "We're trying not to put a stake in the ground that's way down the road for the future of *Half-Life*. We're purposely not letting ourselves do that," Coomer says. What happens, we hear over and over, depends on the player response. Not so much on *Alyx*'s sales figures – the constraints of the platform mean it can't possibly live up to past *Half-Life* titles there – but the team is eager to start reading reviews, scouring Reddit and – something they've not been able to do for this series before – watching streams and Let's Plays.

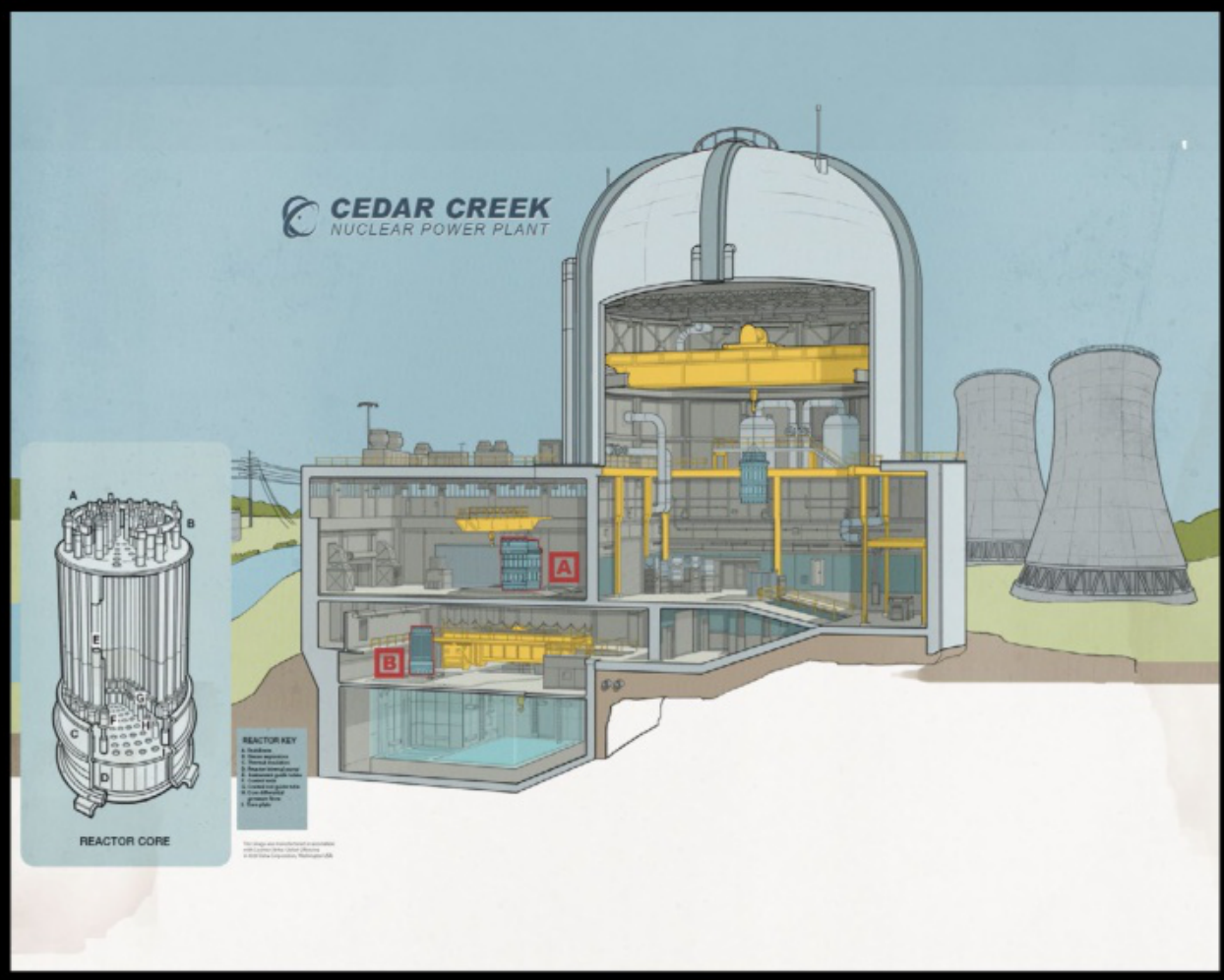
"We've done our best to craft an experience that takes advantage of [VR]," Coomer says. "And then we're enormously anxious to find out how the world perceives that – and whether we should make more *Half-Life*, whether we should take it in multiple directions, whether we get a clear answer about the VR-ness of this project." True to form for a studio fixated on playtesting, Valve is waiting for the data to tell it where to go next.

Rob Briscoe, artist

FAR RIGHT **The secret lab where you first meet new character Russell. Not pictured: the unexplained quantity of bare mannequins.** BELOW **An architect and some of the designers who worked on the *Portal* games designed Valve's offices, we're told**


EXIT
LANDFILL
RECYCLING
COMPO




CEDAR CREEK
NUCLEAR POWER PLANT
A
B
REACTOR CORE
REACTOR KEY

ABOVE **Weapon skins were introduced in 2013's Arms Deal update.**
LEFT **Cedar Creek Nuclear Power Plant, designed in 1999 by Jo Bieg. It's still in *CS:GO* today**

Bronwen Grimes, technical artist; Gautam Babbar, designer

COUNTER-STRIKE: GLOBAL OFFENSIVE

There's no better example of Valve's penchant for taking the long view than *Counter-Strike: Global Offensive*. The original *Counter-Strike* mod turned 20 last year, and *GO* itself has been running for over seven of them. And yet there's a sense that it is only now blossoming. As we write, it's the single biggest title on Steam, having peaked at close to a million concurrent players – an all-time record for the game, which has seen its player count climbing steadily since last August.

When it first arrived in 2012, though, many established *Counter-Strike* players viewed *CS:GO* as another unworthy successor to the original, following in the footsteps of *CS: Source* and the now-almost-completely-erased-from-series-history *Condition Zero*. The problem is, when you've spent years learning every frame of a reload, every pixel of recoil, the hard reboot of a sequel isn't necessarily welcome. Many in the competitive scene clung to *Counter-Strike 1.6*, the game's final major update from 2003.

As late as mid-2013, *GO* was being consistently outperformed by this version of the game (and by *Source*, which by then had found its own audience). Valve gradually turned things around – with various gameplay tweaks, with its first sponsorship of a Major Championship and with the addition of the weapon skins that would become *GO*'s currency. And now? Well. "We've doubled our player base from around 11 million to 20 million players," technical artist **Bronwen Grimes** tells us. Contributing to this explosive growth are two main factors. In September 2017, a new version of the game was released via Chinese publisher Perfect World, opening it up to a whole new market for the first time (at least officially). Then, in December 2018, *CS:GO* went free-to-play.

"We have three million players in China now, and are learning a bunch about what those players want and expect versus our other audiences," Grimes says. But given that process started more than two years ago, why is *CS:GO* only now hitting its peak? "It wasn't like we shipped in China, flipped some switch and a bunch of people showed up. We shipped in China, and then we had to go to work," designer **Gautam Babbar** says. "We had to remove a bunch of barriers for Chinese users that were getting in the way of them enjoying this game, and that's taken time."

These include meeting server demand, ensuring they've got the infrastructure in place as close to players as possible, and using machine learning to improve matchmaking so that new players aren't being dashed against the rocks of *CS:GO* veterans. More notable, though, are the changes made ahead of launch – due to Chinese censorship regulations, red blood is banned, and certain flags and logos (including a hammer and sickle) have been stripped out of its maps. And then there's the single biggest change of all: dropping the price of entry completely, at least for those willing to verify their identity with an AliPay account. It's a measure intended to discourage banned players from simply making a new account and getting right back to whatever it was that got them kicked out in the first place.

In the rest of the world, though, the now free-to-play game doesn't have that same barrier to entry. Players need to link a public Steam account, but that's not enough to dissuade hardened cheaters, abusers and even fraudsters. "As you grow, the problems grow in scale," Babbar says – he's speaking more broadly, but it certainly applies to the number of bad actors within the game.

The team has a variety of solutions in place. There are the old reliables: the peer-reviewed Overwatch system and Valve Anti-Cheat, which saw huge spikes in ban numbers after *CS:GO* went F2P – it dished out a record 600,000 bans in December 2018, then immediately smashed that record by banning another million players the following month. And Valve is increasingly turning to machine learning solutions to help weed out problems. In August 2019, it teamed up with competitive gaming platform FACEIT to help test Minerva, an AI designed to root out toxic players – within a month and a half, Minerva had issued 90,000 warnings and 20,000 bans for verbal abuse and spam – and in February the studio announced a new algorithm-driven system for automatically muting players who "receive significantly more abuse reports than other players". *CS:GO* players also have the option of purchasing a Prime upgrade, which requires a phone number to register if they're new, and will limit their matchmaking to other Prime players.

"It's a balance," Babbar says. "You don't want players to feel isolated, because it's a multiplayer game, but you also want to protect them from abuse, so we're always trying to figure out the best tools. It's a continual effort, and a worthwhile one." The truth is that *CS:GO* will probably be eternally locked in this arms race with the darker corners of its player base, especially if it continues growing. Not that this is about to dissuade the team. Grimes cites the challenge of an ever-expanding playerbase as one of the reasons she's stayed on the project since launch, rather than wheeling her desk elsewhere in the office, and she believes there's still room for the game to grow. "We don't think that everyone who would enjoy the game is currently playing," Grimes says. "There are more people out there that should try it." ▶

DOTA UNDERLORDS

The original *Auto Chess* – a fan-made mod for Valve's *Dota 2* that caught fire at the beginning of 2019, amassing millions of players and essentially spawning a new genre in the process – is exactly the kind of thing you'd expect the studio to poach. After all, Valve has a proud history of hiring modding teams, from the original *Team Fortress* to *Counter-Strike* to *Dota* itself. And it did try: last February, Valve flew Drodo Studio, the five-person Chinese team behind *Auto Chess*, to these very offices for a chat. It's not hard to spot parallels with the way it bought TF Software a plane ticket from Australia back in 1997 – but unlike on that occasion, the conversation with Drodo Studio ended with both parties concluding, apparently amicably, that they couldn't work together.

A little more than a year later, *Dota Underlords* has just reached version 1.0. After the Drodo conversation, Valve didn't hang around. Development began the same month, and it was a sprint from the outset. It took the newly formed team two months to pull together their first prototype – just in time for the company's annual trip to Hawaii.

"By the time people went on holidays in April, they all had a game to play on their phones," gameplay programmer **Adrian Finol** tells us. Note the last word there – *Underlords* is Valve's first game to come to mobile. "When we first got it working, we were amazed it even ran," product designer **Lawrence Yang** says. "The phones got really hot and it looked sort of shitty, but it was working – and that was enough to say, 'As a proof of concept, this is something we can totally go after.'"

Around this time, Drodo was releasing *Auto Chess* – a version of its game with all the *Dota* serial numbers filed off, the same way *Dota* itself did years ago with all those *Warcraft 3* heroes – on mobile. And again, *Underlords* wasn't far behind, opening up a beta across Steam, Android and iOS in June. This couldn't be further away from Valve's reputation for leisurely development.

The development process doesn't sound all that different to the ones we hear about from other teams: try, test, iterate. It's just that normally it happens behind closed doors. "It's exactly the kind of thing we would have done internally if we were trying new features," Finol says. "We just decided we were okay getting egg on our face in public." As for why this was the game to do that on, Finol's answer is simple: "We didn't know which kind of game we were making."

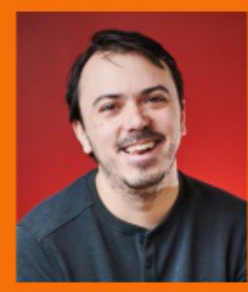
"We were really kind of leaning on the community to help us understand," Yang adds. "We also tried to be very experimental, to see how far we could push things," Finol says. "And I think the only way you can properly do that is with actual people playing the game and providing feedback. Because it's easy internally to be like, 'We are all geniuses, this is the greatest feature' – and then you ship it and the customers say, 'Eh, we don't we like it'… and you just spent three months working on this thing that you thought was great."

The beta was a huge success. In its first week, it attracted a peak of 200,000 concurrent users on PC, according to SteamDB, and, per Sensor Tower's figures, was downloaded 1.5 million times on mobile. Player feedback was mixed, but that was the point. Ideas were generated, pulled together as quickly as possible and then tossed out into the world. "If it didn't work out, it was okay for us to say, 'Just rip it out' – there's not a lot of ego there," Finol says. "Let's just try it. If it works, it works."

We meet the team at the end of this year-long sprint, a couple of days after the game has left beta. They're clearly happy with what they've made, and are excited to get stuck into the second season. But while launch has given *Underlords*' player count a significant boost – Steam concurrents doubled from a peak of around 15,000 in January to just over 30,000 – that's still an order of magnitude smaller than the numbers it was attracting at the beginning of the beta.

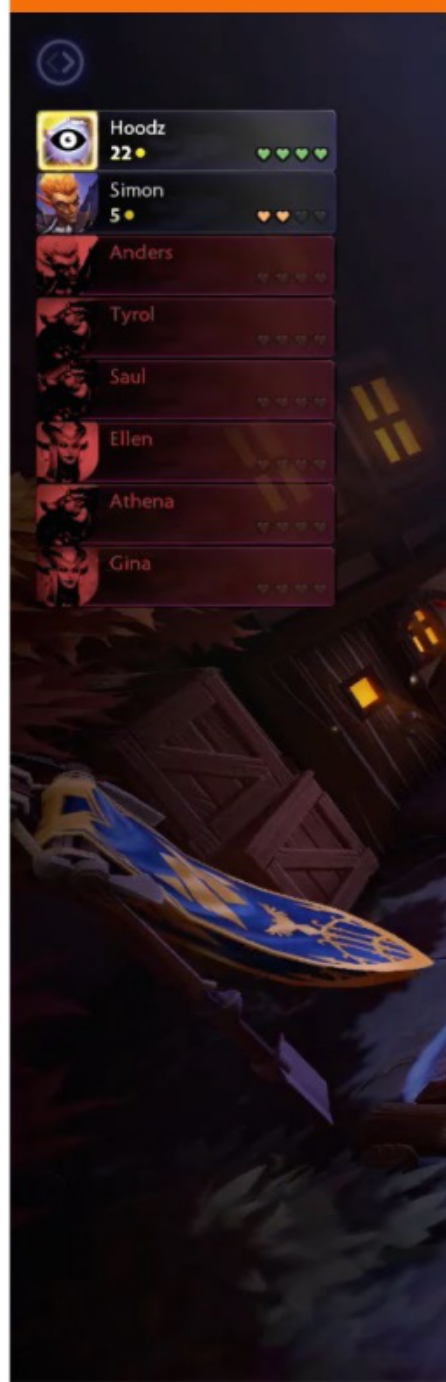
The team don't seem too perturbed: for now their focus is on making the game as good as it can be. "It's the same advice that we give any developer who comes to Steam and asks, 'How do I sell more stuff?'" Yang says. "Make a good game, and the rest will just happen. The company is really good to us: there's no external pressures to meet this quota or hit these numbers – just do your work, just do the best thing you can. And that's what we're doing right now."

And perhaps it doesn't really matter what the fate of *Underlords* is. That's short-term thinking, and Valve is able to take the long view. "We create new projects and games, and every time there's a technical step forward the rest of the company can then branch off it and use it for their own things," Yang says. "In this case, it's Source 2 on mobile, and learning how to work with the App Store and Google Play, and think about what cross-platform looks like for our games." *Underlords* has helped Valve iron out the kinks of an entirely different gaming ecosystem, and find a new way of working, making its mistakes in public right from the beginning. And it has done it all within the space of a single year – which, in traditional Valve Time, is no time at all.



Adrian Finol, gameplay programmer; Lawrence Yang, product designer

BELOW **The mobile and PC versions of *Underlords* use different UI layouts, tweaking the size of the board and amount of on-screen information**

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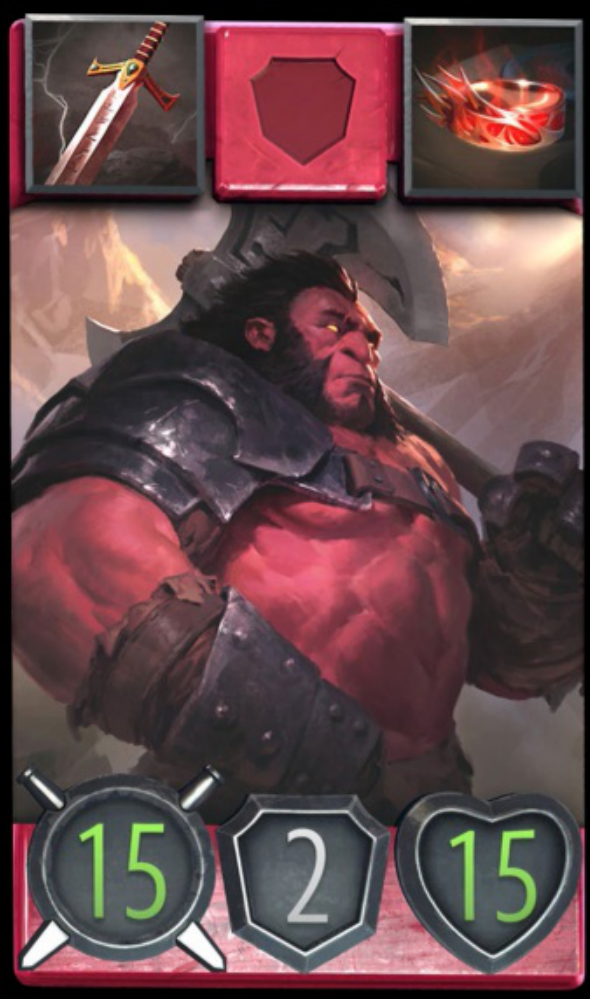
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ARTIFACT

Gabe Newell, CEO and co-founder

CS:GO, *Dota Underlords*, *Half-Life: Alyx* – these are the games Valve is most keen to discuss during our visit, but they're not the only games being worked on across those nine floors. There's also *Dota 2*, the former heavyweight champion of Steam, recently knocked off its perch by the rise of *CS:GO* – but when you own both competitors and the platform they're duking it out on, you're probably not too bothered. Of greater concern is *Artifact*, a digital card game spinning out of *Dota 2* that launched in November 2018 and, within a few months, had all but disappeared.

On paper, the game had a lot going for it. There was the *Dota* connection; the popularity of similar games such as *Hearthstone* and *Gwent*; the involvement of legendary card game designer, Mr Magic: The Gathering himself, Richard Garfield. And yet, less than a year-and-a-half from launch, the game's concurrent player count peaks at around 160. No, we're not missing a zero. For all the talk we've heard during our visit about numbers not mattering, *Artifact* has been a disaster for a studio that's used to pumping out hits – and Valve hasn't been shy to admit it.

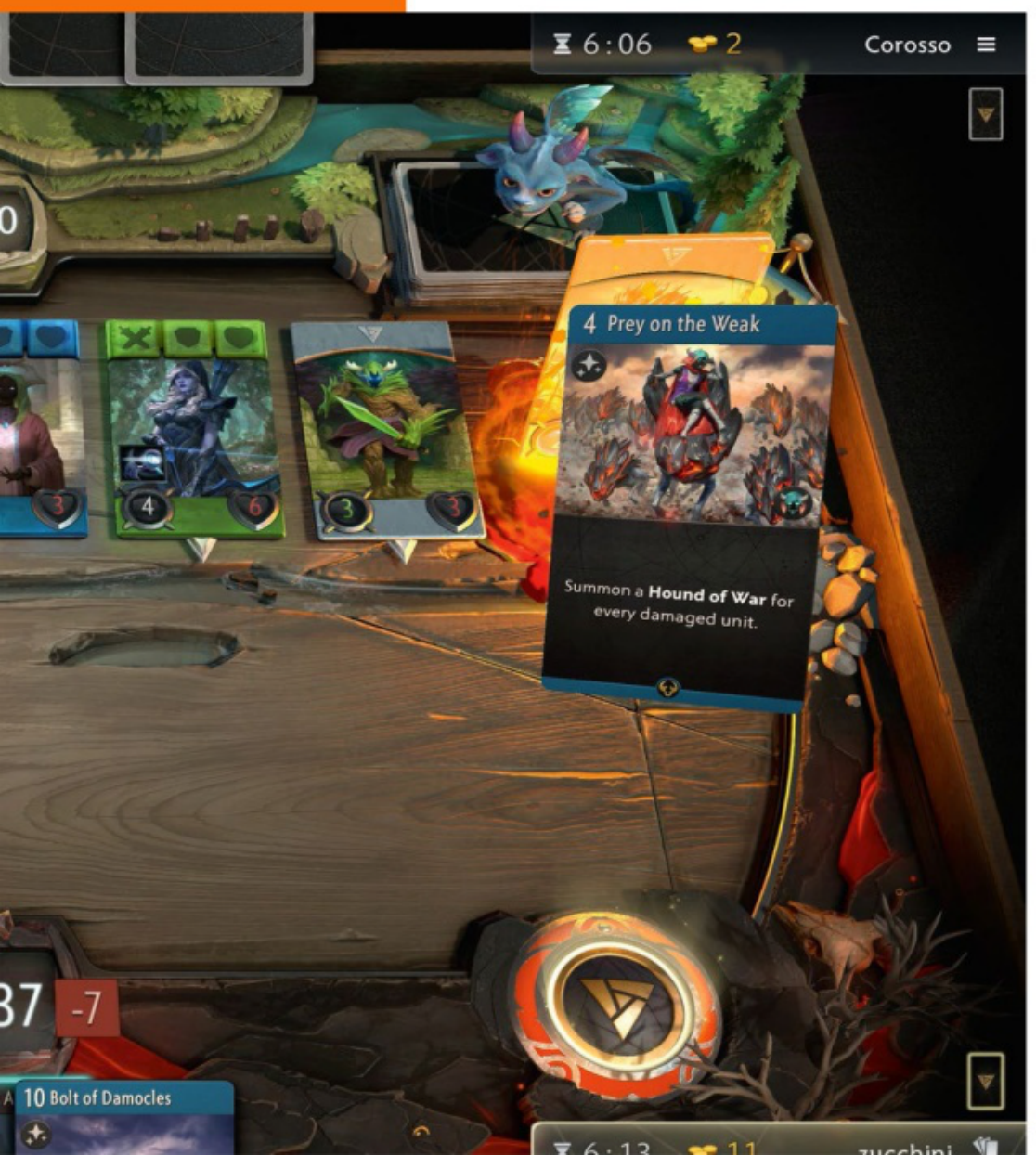
"*Artifact* was an interesting failure in its first go-round," Valve CEO and president **Gabe Newell** tells us. "We were surprised. We thought that it was a really strong product." The question now, as Newell puts it, is: "What the hell. Where did we go wrong?" That's what the studio is currently trying to find out. Last March, after a few months of updates that failed to turn things around, Valve announced it was taking *Artifact* back behind closed doors. It hasn't been updated since while Valve, as Newell puts it, "does some soul-searching" and works on a revamped version.

"We ran an experiment, we got a negative result, and now we need to see if we've learned anything from that, so let's try again," he says. "And that's what [the *Artifact* team] have been doing and that's what they're getting ready to release. Based on the reaction to it, what was wrong with the product? How did we get there? Let's fix those things and take another run at it."

The problem is, with a lot of variables at play, it's hard to isolate the exact reasons *Artifact* failed. Perhaps it was the game's reputation for being overly complex – you don't play just one game of cards in *Artifact* but three, simultaneously, across *Dota*-style lanes. Or it could have been down to the business model: unlike the aforementioned *Hearthstone* and *Gwent*, it's not free-to-play, but players still had to buy extra cards, whether in random booster packs, through ticketed events or individually on the Steam Marketplace. Valve's love of free-market economics meant that single sought-after cards soon rose to prices higher than the game itself. (That's no longer the case – you can now pick up a full set for just over £30.)

"That was the biggest source of arguments: what went wrong?" Newell says. "You have a list of 50 different things, so let's say you change 20 of those things. What are you going to learn? Not much – you could have made both positive and negative changes to the design." Those initial updates were an attempt at more controlled experiments, but it became clear that wasn't going to be enough. "With *Artifact*, we have to do a larger reboot in order to justify its existence to customers and to markets," Newell says. This second go-around is referred to internally as *Artifact 2*, he says, though it's not clear yet (even to Valve itself, apparently) whether this will be presented as a full-blown sequel, an expansion, or just a big update after a long gap.

Valve isn't talking about what exactly this reinvention will involve, but given the cross-pollination at the company, a good bet is to look at what its other games are doing. Free-to-play seems likely, given what it's done for the fortunes of *CS:GO*. Following *Gwent* and *Hearthstone* onto mobile is possible, since the *Underlords* team have shown that Source 2 (the engine that also powers *Artifact*) can be squeezed onto the smaller screen. For a studio whose development process tends towards the scientific method, this would be a lot of variables to change at once – but it seems like that's the way Valve is leaning. "It's a lot easier to make small experiments than big experiments," Newell says. "But occasionally, you're in a situation where you have no choice, the experiment you're running has to be really big – and then you just hope you're right." ▶



LEFT **The game's would-be mascots, Lux and Nox – two imps that sit on the virtual table dealing out cards and reacting to the game state with lovingly crafted animations.** BELOW LEFT **The Axe card, which was considered such an essential cornerstone of *Artifact* decks that in the days following the game's release, its Market value peaked at close to £20**

STEAM

Steam is the solid foundation beneath everything Valve does – not just the way the studio delivers games to customers, but also a font of pretty-much-guaranteed revenue that allows it to weather failures. With 95 million monthly active users, and Valve taking a cut of every purchase, it can afford to push its own titles through their difficult first years and make the kind of bigger bets it's hoping will shape the company's future.

Unlike most foundations, however, Steam is constantly moving. There's always some new tweak – to the algorithms that decide which games are pushed in recommendations, to the influence of user reviews, to the ways search results are filtered, to the space developers have to sell their games on the storefront. For the most part, these efforts are all dedicated to solving the same problem: the frankly ridiculous number of games available on the store.

In the beginning, Steam was a closed platform with just a handful of titles on it. Then there was Greenlight, an attempt to democratise the selection process, which was eventually replaced by Steam Direct, which opened the doors to any developer who could pay the $100 submission fee. Now, nothing illegal and no "straight-up trolling" is the whole of the law, and new games arrive on the store with headache-inducing frequency.

A total of 8,290 games launched on Steam in 2019 – a figure that has been rising for every year of the platform's existence, although the number of games that can possibly come out in the space of a year does finally seem to be reaching a plateau. That's about one game an hour. Finding a way for users to sift through all that, and making sure that worthy games can make themselves known amid the asset flips and hentai visual novels, is a tough challenge, to put it mildly.

Valve appears to be tackling this problem the same way it would in any of its games: through constant iteration, watching the results and adjusting. "Steam is a lot more of a game-design problem than I think most people realise," Robin Walker says. But whereas fiddling with a *CS:GO* weapon might lead to an uproar from the community, tweaks to Steam's algorithms have the potential to damage developers' livelihoods. Walker acknowledges the added weight of these decisions: "With games, we feel really comfortable having a conversation about what would happen if we tried this or that, then banging something together and putting in front of people. With Steam, we definitely have a responsibility to make sure that we aren't just toying with other people's products in a way that can hurt them – so we often use our own products for experimentation."

There's also Steam Labs, introduced last year as a way of letting Valve add experimental features to the store without committing to including them longterm. Under the Labs umbrella, Valve has tested out everything from a recommendation engine for helping you work through your pile of shame to a half-hour video tour of what's currently popular on Steam, something like an AI-produced shopping channel. It's an initiative which grew out of a desire to "move

Robin Walker, designer

faster," Walker says, without breaking too many things in the process.

Developers releasing their games on the platform might disagree with that. Because Steam isn't just the foundation of Valve's business. For over a decade, it's been the terra firma of pretty much the entire PC gaming market, and when it moves… well, no one likes to feel a tremor underfoot. When Steam changed its recommendations algorithm last September, several indie developers reported that their games suffered as a result. Thomas Altenburger of Flying Oaks Games, currently working on the Roguelike *Scourgebringer*, tweeted at the time, "The new Steam algorithm is not better, it's a catastrophe," citing a 66 per cent drop in wishlist adds as a result.

Then there are even broader concerns, such as the approaching launch of Steam China. It'll be an entirely separate version of the platform that's only available in the country, with content changed to meet local regulations, akin to what Valve has done with *CS:GO*. (Along with a similar initiative for *Dota 2*, *CS:GO* seems to have served as the forward team for this project – Valve is even working with the same partner, Perfect World.)

The problem is, Steam is already available in China, and flourishing – Simplified Chinese is the most common language on the platform, making up 37.8 per cent of Steam users (at least the ones who responded to Valve's hardware survey). And it's been a lifeline for Chinese game developers, widely viewed as one of the few loopholes in government censorship. Steam China would change that, offering a tightly regulated version of the store that will reportedly launch with 40 or fewer games, compared to the 30,000-odd on Steam. Which will at least solve that discovery problem, we suppose.

The China situation is an exaggerated version of the role Steam plays in PC gaming globally. For all intents and purposes, it's been the only game in town since the early 2010s – a situation that, for all the money it brings in, even Valve seems uncomfortable with. When Steam relaxed its content regulations in 2018, an announcement blog said that "Valve shouldn't be the ones deciding… what content you can or can't buy". A year earlier, at the launch of Steam Direct, product designer Alden Kroll said: "We don't want to be in that position".

It's starting to get its wish, with the rise of Steam's first solid competitor. In December 2018, capitalising on the success of *Fortnite*, Epic launched a storefront that has since amassed over 100 million registered users, drawing them in with platform exclusives and weekly free games, and appealing to developers with a 12 per cent revenue split. Valve doesn't seem too perturbed by it all – we hear a lot of variations on "competition is great!" during our visit. Perhaps this sentiment is genuine, but even if it's not, Valve doesn't appear to have much reason to be worried: as we visit the studio, it's setting new records for the number of users concurrently logged into Steam, peaking at around the 19 million mark. Those foundations look set to remain solid for at least a little longer. ▶

ABOVE **Steam's seasonal sales have evolved into major productions, often with their own metagame. That isn't always a good thing – its Grand Prix event last year resulted in players removing games from their wishlists**

HARDWARE

As Valve closes in on a quarter-century in business, you can roughly divide up its history into decade-long eras. The first ten years took it from *Half-Life* to *Half-Life 2*, as it established itself as one of the best game developers on the planet. The next was the rise of Steam, and its evolution from a delivery mechanism for its own products to an open ecosystem for PC gaming. This would put us right in the middle of Valve's third era, best characterised by its move into making hardware. Compared to its track record in both game development and distribution, Valve's hardware efforts to date could be described as an uncharacteristic stumble.

There was Steam Machines, the pre-built gaming PCs running on the Linux-based SteamOS intended to slide neatly into the space normally occupied by consoles under your TV. The accompanying Steam Controllers, which blended the traditional gamepad with a mouse through its twin trackpads. And, attacking the idea of living-room PC gaming from a slightly different angle, Steam Link: a little black box that streamed games from a PC via WiFi so they could be played on a television in another room of the house. One by one, they've all been discontinued.

Instead of pretending these projects never happened and quietly shuffling back to the things it knew it was good at, Valve has embraced them. The headcount of its hardware division – spread over the bottom two floors of its offices in Bellevue – is "by far the largest it's ever been," **Jeremy Selan**, a member of the hardware engineering team, tells us. "It's growing very rapidly. We're hiring – please mention that! We're hiring across all roles."

This growth has been driven by a move into a space that's unproven not only for Valve but for the tech industry as a whole: virtual reality. For its first attempt, Vive, Valve teamed up with the Taiwanese electronics company HTC – but the two have since gone their separate ways. HTC is continuing to produce headsets under the Vive name without any direct involvement from Valve, while the studio has gone solo with the launch of Index. The self-manufactured headset arrived last June, and is one of the high-water marks of VR tech to date.

Its success was hard-won: "Index had a tortured history," Selan says. As Valve's work on Vive was wrapping up, the team started to look ahead to the next generation of VR devices. Following the example of Valve's software teams, it began this process with speedy prototyping, and assembled them into an early 'moonshot' device. "We tried seven new ideas, ideas that had never been done before," Selan tells us. "And, I would say, four of the seven panned out."

One of the ones that didn't concerned the headset's form factor: it was originally intended to be the rough size and shape of a pair of glasses. "One of the ideas we're excited about – and this is still true going forward – is that you want to make the headset as small as possible, because that drives the rest of the ergonomics," Selan says. At that point, though, the technology simply wasn't there to provide a properly immersive VR experience, and so Valve ditched the idea entirely. "Once you make this part bigger, the whole thing needs to change, so we had to go back to the drawing board and start over. That moment when we pulled the ripcord is when we decided, 'Let's do Index.'"

The result is a headset with a more traditional VR form factor, focusing its innovations elsewhere. Like replacing the usual headphones (built-in or otherwise – Vive infamously shipped without any) with off-ear speakers, and controllers (nicknamed 'Knuckles') that strap to the player's hands, leaving their fingers free to move, and be tracked, individually. The emphasis, as much as increasing fidelity and resolution, is on comfort. "Nothing's pressing on your ears, which can give people headaches," Selan says, and having to grip controllers can become tiring over long sessions. Which is the key here. Valve wants to ensure players can stay in VR as long as they like – and making sure that they have a reason to do that is *Half-Life: Alyx*.

"*Alyx* is the type of immersive experience that we find players losing themselves in for hours at a time," Selan says. "That's unheard of in VR, where the traditional game length is more like 30 minutes." To achieve this, game and device were designed alongside one another, with the teams trading ideas throughout the process. "We felt like to build good hardware we needed to intertwine it with software," Robin Walker, currently of the *Alyx* team, says. "The designs of each need to affect each other to really achieve the sort of quality we want to reach."

Valve is structured to let staff move between divisions as they see fit – Walker did some work on the Steam Controller, and Index's speakers were partly designed by Emily Ridgway, who normally works as an audio designer on games including *Alyx* and *CS:GO*. This is the reason, Valve argues, that it needs to be in the hardware space. By owning the whole, it can do things that wouldn't be possible otherwise. "Merely by iterating in the game space, we couldn't have made something like *Alyx*," Selan says.

Alyx gives Index something those early hardware projects lacked: not just a reason for it to exist – the

Jeremy Selan, hardware and software engineer

use case for Machines and Link was perfectly compelling, at least on paper – but for Valve to be the one making it. It seems to be convincing people so far: two-thirds of the 150,000 Index units sold last year were shifted following *Alyx*'s announcement, according to Superdata figures, and that was limited by demand outstripping available inventory.

But even if it fails to maintain that momentum, and ends up following in the footsteps of those earlier hardware efforts, Index won't necessarily be a failure in Valve's book. Selan insists all of these products were stepping stones to get Valve where it is now, and where it's headed next. "Everything's been a lesson," he says. Steam Link laid the groundwork for the Remote Play feature, which lets players stream games without requiring any dedicated hardware. Steam Controller fed into the company's general approach to controller support on Steam, and contributed in some more concrete ways too: "If you think about the Steam Controller, and you cut it in half, it's essentially the design of the Vive wand." As for Steam Machines? Well, the jury is still out on that one. But Valve has more hardware projects in the works, and that old dream of living-room PC gaming might not be as dead as it seems. "We have really exciting things on our trajectory to help expand the places you can play your Steam games that are not VR-related," Selan says. "We're not talking about those today, but there are more things coming." ▶

ABOVE **Assorted prototypes for Valve's hardware. The headset covered in polka dots (for camera tracking) was its very first foray into VR back in 2014.**
LEFT **Index supports an 'experimental' 144Hz refresh rate – something that was only added after it went into manufacturing, via a firmware update**

THE FUTURE

The combination of Valve Index and *Half-Life: Alyx* represents one potential future for the studio – one in which everyone makes the move to playing games in virtual reality, and Valve is there to provide every part of that experience, from the content itself to the way it's delivered to the device you're playing it on. As to whether that's the future we'll actually end up in, the studio is fairly happy to throw up its hands and admit it doesn't know right now. "That's the fundamental experiment and hypothesis [of *Alyx*]," Jeremy Selan says. "What if you put a world-class triple-A game team onto VR and say, 'Go make something interesting'?"

As Valve tries to divine whether VR represents a viable future for gaming, the release of *Alyx* is a way of removing one variable from the equation. Valve's fully aware of VR's imperfections right now – "We know it's a little high-friction; it sucks to have a tether, it's too expensive, ease of use is not where we want it to be," Selan says – but, having brought hardware capabilities in-house, it has the power to work on those problems. But first it wants to rule out any chance that the reason people aren't playing VR is they think there's nothing to play.

"If we can answer the question of, 'Is this an experience that people really want?' I think that other stuff is just a set of problems to solve down the road," Dario Casali says. And if the answer turns out to be no? "We're always prepared for failure," **Jeff Leinbaugh**, a hardware engineer working on Index, tells us. "It's not as if we have a benchmark that we've already decided, 'If this doesn't happen then that's it, we're packing up and going home.'"

So it's not quite as simple as 'if *Alyx* fails, VR fails'. Whatever happens, it seems likely Valve will continue to push towards the next generation of VR tech – making something "smaller, lighter, more comfortable, cheaper," as Selan puts it – in the hopes of eliminating every other variable that could possibly stand in the way of VR adoption. But how hard it pursues making games for VR, and what project the *Alyx* team end up wheeling their desks towards once this one is wrapped, will certainly be guided by the public response to the game. "This is the critical part of all the iteration we've been doing in hardware and software: we release it, and then our fans, our customers, will grade our answers," Leinbaugh says. "We are really excited to learn what worked, and what didn't work as well, to inform what we do next."

As it waits for those results, the future is a little uncertain. Which seems to be business as usual for Valve – something that comes up a lot in our conversations is an unwillingness to plan anything too far ahead. "One of the things we sort of hate doing is making decisions for our future selves," Robin Walker says. "We often say to ourselves: do we have to make this decision today? Because if you assume that you are getting more information every

Jeff Leinbaugh, hardware and software engineer

The 'Sulking Room', designed as a space for any visiting teenagers to hang out in. It's right next to Pyroland, a *Team Fortress 2*-themed playground for staff's younger children, which is furnished with – among other things – a giant Balloonicorn

day, then any decision put off will be a better decision than we can make today."

Walker is specifically talking about one tiny decision in *Alyx*'s development here – the release plan for its SDK, the developer tools which would open the game up to modders. But we hear variations on this theme so often that it starts to feel almost as much a part of the studio philosophy as the flat hierarchy and letting employees pick their own projects. Not wanting to commit too far ahead is something that comes up when we're talking about the possibility of a *Half-Life 3*, and whether the studio will continue to make VR games. It comes up again when we ask *CS:GO*'s Gautam Babbar about the decision to take the game free-to-play. "There was not a lot of strategic planning. It was more like, 'Yeah, I think we're ready'," he tells us. "And that's how we usually work at Valve – we try to just react to the playerbase and use that to make the right decision right now. We don't come at it with a five-year plan. It's more, 'This is what they're telling us now, let's go fix that.'"

It's not that there is no plan, exactly. It's more that there are dozens, all being tested to see if they might represent a viable future for the studio. Until then, the breadth of projects being tackled by its 350 staff means Valve can keep its options open. If esports continues to shine, the work it's been doing with *CS:GO* and *Dota 2* – the two biggest games on Steam – should continue to pay off. If a move into mobile seems worthwhile, then it's already made inroads with *Dota Underlords*. If it no longer makes sense for the company to stay in the hardware market, it's willing to step aside and let others do the work. "Since it isn't really our goal to be in hardware for its own sake, it could be that in the future we just don't need to participate in that," Greg Coomer says. "But that's not the world we think we're in right now."

If that isn't Valve's guiding principle, we have to ask, then what is? "There is a throughline to all these decisions we've made over time, to expand the definition of what we make and do," Coomer tells us. And if anyone would know, it's Coomer, one of the studio's very first hires. He says the moves Valve has made to date, from developing games to forging Steam and eventually manufacturing hardware, all come from the studio asking itself a simple set of questions. "We're not like other companies where we're making decisions like that because we have some diversification goal or shareholders are demanding it. Instead we just ask, 'How can we make customers happy? What are the ways that we are currently not able to do that, what would be a more holistic approach, and what are we constrained from doing right now because we're not participating in [that field]?' And as we look into the future, it really is the same set of decisions." ■

BELOW **Valve is known for its rigorous playtesting – on the eve of *Alyx*'s release, this translates into office after office filled with people wearing VR headsets**

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AN AUDIENCE WITH...

GABE NEWELL

The Valve CEO and co-founder discusses planning for the future and optimising productivity

By Alex Spencer

CV

Gabe Newell's career path is the stuff of legend. He dropped out of Harvard University in 1983 to join Microsoft: the 271st employee through the door at the company, he worked as a producer on early versions of Windows, and later admitted he'd learned more in his first three months there than in his three years at university. Inspired by Michael Abrash, a Microsoft colleague who'd quit to make games at Id Software, he and Mike Harrington left to found Valve in 1996. His numerous accolades include winning the GDC Pioneer Award in 2010, induction into the Academy Of Interactive Arts And Sciences hall of fame in 2012, and being named BAFTA Fellow in 2013; a self-made billionaire, he made his first appearance in Forbes' list of the 100 richest Americans in 2017.

The co-founder and CEO of Valve scarcely needs an introduction. After spending 13 years at Microsoft, **Gabe Newell** quit to set up what would become of the most innovative, and successful, companies in not only the videogame industry, but the entire world. With *Half-Life: Alyx* now released, here Newell reflects on the decisions that have led to Valve being the company it is today – and offers us a tantalising glimpse of what the future might hold.

What does being president of Valve actually mean in 2020, and what do you spend your days doing?
Usually I get pulled in if there's something that's unusual or out of the norm. If there's some disaster, basically. But most of the time, the way the company is designed, it's pretty good at operating without me. But my background thread, the thing I'm always thinking about and working on, separate from being pulled by teams into something that they'd like my help on, is brain-computer interfaces. That's kind of a longer-term thing.

That seems like a long way from Valve's origins, but the company is built on these sorts of changes of tack. What do you consider to be the inflection points that got you here?
We started off with singleplayer, because we thought there were opportunities there that were not being exploited. That was really the design impetus behind *Half-Life*, and we learned a huge amount and that helped inform a bunch of the decisions we made about *Half-Life 2*.

But at the same time as we were high-fiving ourselves over *Half-Life* shipping, we also started thinking about multiplayer games – and that was a point in time when there were no commercially available multiplayer games, there was no business model for them. It seemed like a radical concept, that having games that behaved more like sports and less like movies was a good way of evening out the boom-and-bust cycles for videogame development. It sort of shifted the burden from AI to 'meat' intelligence, where a lot of the entertainment value is created by people all over the world rather than by entities running on your computer. That's why we started getting into *Team Fortress* and *Counter-Strike* and things like that.

The next step after that was we went out and pitched people the ideas for Steam, saying: 'Look, we're a videogame developer, it would be super-helpful if somebody provided these sets of services to us'. It seemed pretty obvious that there was a much better way to provide value for customers and reduce the complexity of distribution, in a way that would also be a really powerful way of improving the development process. That ended up being Steam – but the funny thing is, we originally were just trying to get somebody else to build it, because we desperately needed something like that.

Steam has quickly become much more than just a store, though.
We were always used to thinking about games as entertainment experiences, but then we started thinking of them as productivity platforms. As a sort of proof-of-concept I decided to be a gold farmer in *World Of Warcraft* for a while. I was making $20 an hour farming gold. I was making what was a spectacular wage for most people in most parts of the world.

That's when we started focusing heavily on things like the Workshop, and trying to think of everybody as a content creator. There's this story of the parents that called us up because they thought we were selling their kid drugs. What happened was PayPal pinged the parents and said, 'Your kid is exceeding our limits of how much money they can put into PayPal per month. They're probably selling stolen goods or drugs, because there's no other explanation.' So the parents called us up and I said: "He makes items on the *Team Fortress* Workshop. He's making $500,000 a year." That to us was an indication that this was a helpful way of thinking of games – as *platforms* – and it's informed all of our decisions about multiplayer games subsequently.

All of these points represent certain milestone challenges for the company, and the next big one was thinking about how we could increase our design reach to include hardware components. Steam Machine was an early attempt in that space, which was not successful.

Steam Machine was a big focus of yours when we named Valve the best developer on the planet seven years ago (E250). Why didn't it work out?
We should have been selling those things ourselves. I think we would have been more successful if we had been manufacturing and delivering them. And the other thing was something that happens to people a lot, where you fall in love with your own business plan and then you get annoyed that customers don't understand what would be beneficial to that business plan.

It seemed really clear to me that everybody, including Valve, would benefit if we were moving towards more open-standard hardware. But the hardware we were pushing for was super-incomplete at the time. I thought, 'This is clearly where we all want to end up, and this is a point along the pathway to getting us there'. And people were like, 'Yes, but you're asking me to pay you money for the privilege of being on your roadmap, and I'm not really sure what I'm getting out of this at this time'. We needed to be a lot further along in terms of delivering

"IT SOUNDS LIKE SCIENCE FICTION, BUT I THINK IT'LL BE SURPRISINGLY EASY TO START INTERACTING WITH BRAINS"

polished consumer experiences before we were trying to get people to actually pay money for those things.

I think those mistakes, and the lessons we learned as a result, got us to where we are today, which is our 'kid in Middle America making half a million a year on the Workshop' moment for hardware. The combination of Index and *Half-Life: Alyx*, to my mind, is where we were always hoping we would get to – which is the ability to be designing hardware and software in concert with each other, attacking a problem which would be really difficult to attack in a piecemeal fashion: how do we move that immersive singleplayer experience forward?

I'd love to sit down with Miyamoto and say, 'This is our best work, this is our best thinking, what's your reaction to it?' And to some parts of it he'd say, 'Well of course you have to design the controller at the same time you're designing experiences, because that's what we've been doing forever'. But the other pieces of it, hopefully, he would step away from and say, 'Yes, this is a this is a really good step forward in terms of this genre' – which is what I feel we've traditionally done with *Half-Life*.

When you talk about pushing the genre forward, do you mean firstperson shooters or are you talking about VR games more broadly?

No, I mean immersive firstperson entertainment experiences, whether they're shooters or not. We happen to think that firstperson is one of the best ways to take advantage of that and I think we're making the case why VR is another critical piece in moving those kinds of experiences forward.

But it sounds like you're already looking beyond the current phase of VR, and to the next evolution of technology: brain-computer interfaces. Can you talk us through that future as you see it, and where Valve fits in?

I think they're coming way faster than people realise: there'll be some really interesting announcements that happen this year. And in some ways, they're terrifying, because they change just about everything about not just videogames but about entertainment experiences, and a whole bunch of other stuff. But I'd much rather be ahead of the curve than behind the curve on that transition.

I mean, it sounds like science fiction, but I think it'll be surprisingly easy to start interacting with brains in a way that feels real. I have to be a little bit careful about what I talk about, but it'll be full read/write to your brain. The range of applications that will fall out of that will be tremendous, but a lot of people are going to want entertainment experiences that work by directly reading and writing from areas of your brain.

These kinds of opportunities you're talking about – is this why Valve is so concerned about owning the whole in terms of software and hardware?

If you asked any game designer, 'Do you think your life would be better if you could also change the input method?', I think every one of them would say, 'Oh my god, there's a whole bunch of interesting stuff we could do, even just having a custom mouse for our shooter'. So if we could make hardware more like software in terms of how elastic it is in the design process, everybody would benefit a lot from that.

As it is, you sort of end up with these local minimums. Like, we're still stuck with keyboard and mouse. I mean, I love keyboard and mouse, obviously, but we can't even explore the space in the *neighbourhood* of that, because of the cost. If I came up with this cool new input device and I had no software support, no software developer is going to re-engineer their experience – which is what they'd have to do to take advantage of your device – because you've only sold 2,000 of them. So you end up with the chicken-and-egg problem.

In order to start moving forward in any of these dimensions, you need to be able to deliver value to customers. But now we have that capability, it's starting to impact everybody here at Valve – you know, it's not this special project over here, it's a tool that we now have in our toolkit. You want the *Counter-Strike* team to be thinking, 'How would you create a better *Counter-*

Half-Life launched in 2008, when Steam was but a twinkle in Newell's eye. It averaged a million sales a year in its first decade on shelves

Strike experience if you were also able to start modifying or replacing people's hardware components?'

And on the BCI side, a lot of the stuff that we're doing as a company makes it a lot easier to be involved as those technologies move out of the theoretical, and start looking more and more like actual products.

So *Alyx* is an example right now where you have full control over both sides, and it seems like you're happy with it...
Oh yeah, I'm really proud of it.

The VR installed base is comparatively small, though. What does success for this project look like, in terms of it actually finding an audience?
We're going to be super-interested in what reviewers have to say, and we can engage with a lot of our peers in the industry and see what they're responding and reacting to. And there's a reason that my email address is public, right? If people know that they can speak to you directly, you get pretty unvarnished and accurate signals back from them.

The information flow is good – completely separate from sales, because VR obviously constrains the number of units that you can sell enormously. Even if there's a huge uptick in VR devices as a result of *Alyx*, it's going to be a fraction of what's possible for a non-VR title. We can look at growth rates and attach rates and things like that to get a sense for how we did, but a lot of it will just be the zeitgeist, and what people say after they play it.

We have a track record with *Half-Life*. The expectations for *Half-Life* games are incredibly high, both internally and externally. And if the response to *Alyx* doesn't look like that, then that's going to tell us a lot.

We've talked about the history of Valve and how you developed from the original *Half-Life*. But you've moved progressively further away from singleplayer games. Now *Alyx* is here, but you still maintain a number of multiplayer service titles. What's the balance going to be like moving forward?
So you can think of entertainment experiences as this massively distributed computation problem, right? If you think of lots and lots of people on the Internet as a way of generating entertainment experiences, there was a point in time where it became easier to connect meat than it was artificial intelligence.

We're starting to head towards a period where that's going to reverse again, driven by what's happening with AI. Right now, the OpenAI bots are better than 99-point-some per cent of all the *Dota* players in the world. That's actually a surprisingly narrow challenge for artificial intelligence. Beating humans is easier than entertaining humans. But over the next several years –

"EVENTUALLY [WE'LL] REACH THE POINT WHERE YOU HAVE TEN OR A HUNDRED PEOPLE LIVING IN YOUR COMPUTER"

and if you ask me, my little spreadsheet calculation is it's about nine years – we'll have artificial general intelligence that can do anything a smart person can do.

It'll probably initially take something like a billion dollars to build one of these silicon humans, but then they'll just keep getting cheaper, and it'll get cheaper really quickly, and eventually reach the point where you have ten or a hundred people living in your computer all the time. And harnessing that will mean singleplayer games get a lot more interesting.

Where does that leave multiplayer, and in particular esports, which Valve has got into in a big way over the past ten years?
The way we think of esports competitors is as content creators. They happen to create really great entertainment experiences in the same way the creator of a mod or a level or a cosmetic would. I think that will continue to be super-entertaining. What may change is how their value is captured. The way that [pro *Dota* player] Puppey generates value right now is by creating spectacle, but he will always be a scarce commodity. Right now he monetises himself through tournaments. But there'll probably end up being different ways of generating revenues for these kinds of superfreak game players.

We think esports is great, we love it, it's growing super-fast – and these things take a long time. People have seen us sort of step away from immersive singleplayer experiences for a while, and a lot of that was that we saw more tractable opportunities elsewhere. I mean, a typical gaming company would just keep cranking out sequel after sequel – but the reason people value Valve is that we're supposed to be the ones picking interesting problems and solving them. It's super-exciting to be back in that space.

If you could build a singleplayer game that just never ended, where I could play 20 hours a week and it just keeps growing and getting richer, and I'd be having as much fun 400 hours into this experience as I was in the first 20 hours... I think that is a way more likely scenario

Further proof of Valve's unique status within the industry: somehow making crabs iconic

Team Fortress 2 **was another watershed moment for Valve. After it went free-to-play in 2011, revenue from the game rose twelvefold**

looking forward five years than it would have been looking forward five years ago. That's going to be a tectonic shift in the industry, with AI becoming way more useful, and it shifts the value-optimisation inflection point between multiplayer and singleplayer games.

But also, I don't want to be too prescriptive. One of the things we try really hard to avoid is saying that 'Steam is good for x', because then we'll be tempted to put our thumbs on the scales. Like, if you'd asked me to predict, I would've said that Steam was going to be hugely beneficial to independent games – smaller games that traditionally had a lot of friction were going to benefit – but you don't want to predict that, because you become fond of your own predictions and create self-fulfilling prophecies.

How do you ensure you keep developers happy? The smallest changes to Steam can have a huge impact on their livelihoods.

We spend a lot of time talking to all [kinds of] game developers. We're always saying, 'What can we do better?' And a lot of the decisions we make are steered by the input we get from developers. We could just be authoritative and say, 'This is our platform and this is where we're going', but Steam is at a point where it's way better to ask, 'What should we do next week?' People will say, 'Here's a problem that I have', and we just go and solve that.

Occasionally there'll be some larger-scale thing around, like, 'We need to provide better tools for spectation'. And that tends to be more speculative, so we have to work for longer periods of time before we're delivering that to our partners. But a lot of times it's just them saying, 'For the next sale, we need these three features in our dashboard'.

"COMPETITION IN GAME STORES IS AWESOME… IT KEEPS US HONEST, IT KEEPS EVERYBODY ELSE HONEST"

The accumulation of all those changes over time means it's relatively unlikely… The dangerous thing is when you have to make a big leap, when you have to guess, two to three years in advance, about something where we're going to have no way of knowing if we're doing the right thing until we get there. With Steam right now, we do have those kinds of things, but a lot of times, it's much safer to create value for our partners by simply saying, 'Let us know what would make your life better'.

If somebody calls us up and says, 'You just fucked me', we're going to pay a lot of attention to that really quickly. That gets everybody's attention, because it's very much a service-oriented… you know, we're the concierge at the

hotel. Somebody says something's gone wrong, or 'You made a change and my game has stopped selling overnight' – everybody jumps on that, and there's usually a post-mortem. Let's fix the problem first, but let's also figure out how we ended up doing something that was unintentionally negatively impacting people.

You make the concierge comparison. But now, with the Epic Game Store, there's another concierge across the lobby, shouting, 'Hey, come and speak to me instead'. Does that affect the way that you approach Steam and build this relationship with developers?
First of all, competition is great. That's why we love the PC platform, everybody has to compete on a wide variety of dimensions. Competition in game stores is awesome for everybody. It keeps us honest, it keeps everybody else honest.

But it's ugly in the short term. You're like, 'Argh, they're yelling, they're making us look bad' – but in the long term, everybody benefits from the discipline and the thoughtfulness it means you have to have about your business by having people come in and challenge you. When you're in the service business, your partners may come to you and say, 'We have some additional ideas', and then you say 'Okay', but it doesn't really change the underlying loop very much.

We get a lot more freaked out not by competition, but by people trying to *preclude* competition. If you ask us which is scarier, it's people who are falling in love with Apple's model of controlling everything and having faceless bureaucrats who get to keep your product from entering the market if they don't want it to, or designing a store in a way that minimises software's value-add to experience and stuff like that. That's way scarier to us than competitors. In one case, somebody is challenging you to do a better job. And in the other case somebody is not letting you do your job at all, and that's more unnerving.

You mention corporate facelessness – in many ways you are the face of Valve as a company. How does that sit with you personally?
I mean, I like gamers, I hang out with gamers all the time. The community we're part of, it occasionally has its rough edges – like, 'hey, pig fucker' emails, those kinds of things. The thing that's a little bit weirder to me is... I'm fine with people coming up and talking to me. But there's this thing that happens, where somebody will come up and say, 'can I take a picture with you' and I'm like 'sure' – and then I put my arm on them and they're shaking and that bothers me way more. I like our community. I like our customers. I like the gaming world. And so interacting with them is fine, but I'm less certain about the whole cult-like aspects of it occasionally.

That's what happens when you transcend humanity and become a meme, we suppose.
Yes. I'd much rather be an email address than a meme [laughs].

But the cult of personality around you exists because you're the public face of a company built on, as you say, solving these big, difficult problems. People expect you to make these big, mad bets. How do you deal with the pressure?
Betting that you're right about something that's two to three years – or, god forbid, five years – in the future is very stressful. But I'm more willing to do it than most people in the company, simply because over the course of my history I've made both interesting positive and negative bets, so I'm a little less terrified to go years without being able to test my assumptions. And that's one of the things that I do that's useful for the company.

Like, I'm the only person in the company who can go off and think about brain-computer interfaces, because if somebody else did, they'd all just laugh at them and say, 'Why are you wasting your time on that science fiction?' But with me it's like, well, I was right about Steam, I was right about the connected economy! And then they get to say back: 'Yeah, and you did Steam Machines too' [laughs].

Not everything has worked out, but you've built a company that has not only been tremendously successful but has also been structured, since the

Valve's handbook for new staff leaked in 2011, and revealed how desks have wheels so staff can move freely between projects

beginning, in a very different way. It's easy to look back now and think, sure, the flat, free-wheeling company design has really worked out. But what led you to know it was the right thing to do in the first place?

Way back at the very beginning of my career, The Mythical Man-Month [book by Frederick Brooks] was pretty interesting because it really talked about the design and scale of organisations from an engineering perspective. It used to be that [1980s US computer retailer] Businessland would take 53 per cent of the gross revenue from the sale of a product. Nowadays, retail distribution is like 6 per cent in some cases. That whole progression of various lines of business functions contributing less and less value, and representing less and less of the value of delivering products to customers, was going to have profound impacts on what optimal company design was going to look like.

So the bottom line was that this transformation in how you communicate, market, support and distribute to customers would mean that the design and production of the products was going to matter way more. You were going to go from an era where 10 per cent of the company was R&D to where 95 per cent of the company was R&D. If you took the world's best programmer and you put them into 1984 General Motors, it wouldn't make any difference. Their output to customers would be identical, and very, very low.

Somebody like Yahn [Bernier], who has on many occasions written 4,000 lines of code in a day – and they're really, really good lines of code – means that you really want to optimise for all these super-high-productivity, brainy people. And when you try to figure out how to maximise the productivity of those people, you end up with something that looks very different than a lot of traditional organisations.

That led to this theory of, how do you optimise for the productivity of people like Yahn or Jay [Stelly] or Robin [Walker]? You're as flat as you can be, there's no siloing, all productivity occurs on the boundaries of skillsets, not within silos of skillsets. Robin's great because he's a game designer and a programmer and he can talk to the press. Ken Birdwell could build a level, animate the creatures, skin the creatures and write all the code that the creatures used – and that's why the tentacle sequence in *Half-Life* could even exist. He could solve the different problems by saying, 'Oh, I can fix that problem in code, oh, I'll just change the level, I have no idea how to get the code to do this so I'll just change the level or the monster design'. And at the time, those were kind of radical concepts, certainly coming from Microsoft, which was not optimising or designing its organisation to save money.

"I COULD HAVE RETIRED A LONG TIME AGO... I AM DOING EXACTLY WHAT IS THE MOST FUN AND MOST REWARDING"

The fundamental problem always came down to: how do you attract – and keep – the brightest, most talented people from all over the world? Even at the beginning, we were hiring people from Russia and the UK and Florida, and other really remote foreign countries. Most of those people are still here all these years later, and the productivity has remained high. Near as I can tell, in terms of revenue per employee and profitability per employee, we're in the top ten of all companies in the world. *Ever*. And that's not to say that we're financial-metric-driven, but that is a sign that our design of the company is working the way it should.

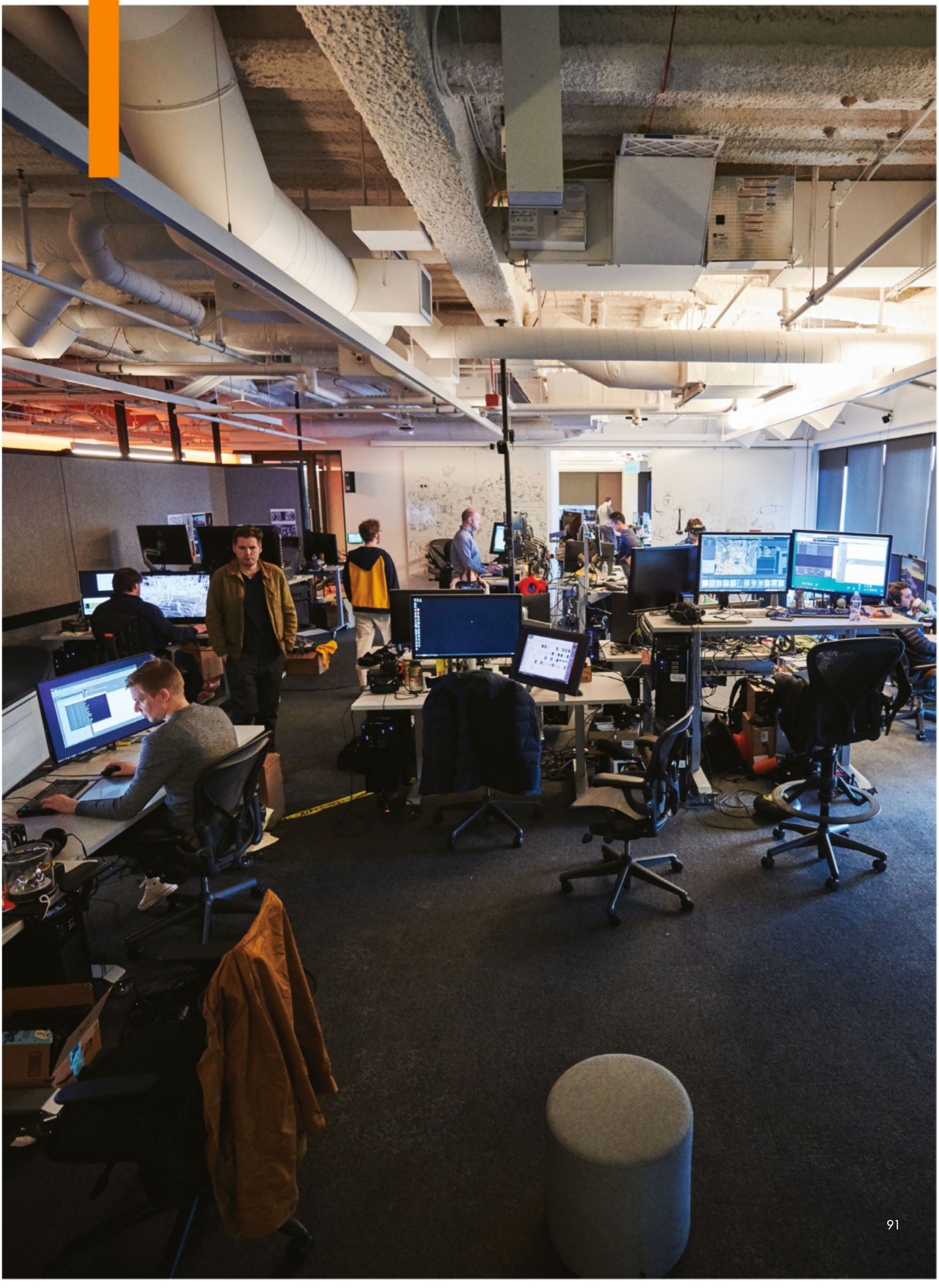
What challenges come with that company design?

I mean, we have to deal with some interesting things. Like one, we're getting older. Our biggest competitors are actually parents. People don't leave Valve because there's a place where they feel like they're going to be more productive or have more personal satisfaction; people leave because their parents have advanced Alzheimer's and they need to go home. We haven't quite figured out how to compete with Alzheimer's yet.

You've built one of the most successful companies on the planet. You don't *need* to come to work any more. What keeps you going?

Personally, for me, I could have retired a long time ago. So the competitor for my time is going and fucking off and doing whatever I want to do... Well, that's what I do. I am doing exactly what is the most fun and most rewarding and most stimulating.

I love working with Robin. It's a blast that Kaci [Aitchison Boyle] is here. I'll come up with excuses to sit in meetings with Erik Wolpaw, because they're some of the most fun I could have right now. Meeting with Wolpaw beats 99 per cent of the comedies that come out of Hollywood. And that's what I think it's like for most of the people who work here. This is a great place. It's a lot of fun. It's a good work environment, not for two years, not for a game project, but for 20 years or for their foreseeable future. ■



Half-Life: Alyx

Developer/publisher Valve
Format Index (tested), Rift, Vive, Windows Mixed Reality
Release Out now

Every *Half-Life* game has had its defining tool. In the original, it was Gordon Freeman's iconic crowbar, as useful for smashing open crates and breaking down obstacles as it was dispatching enemies. *Half-Life 2* had the Gravity Gun, the perfect way to toy with the game's unprecedentedly sophisticated realtime physics. *Portal* – to stretch the definition of a *Half-Life* game a little, though *Alyx* underlines that the two share a universe – introduced the Handheld Portal Device, a space-warping concept so compelling an entire game's worth of puzzles could be built around it.

Half-Life: Alyx has the Gravity Gloves. At first contact, they lack that instant sense of revolution. In fact, the Gloves feel a little underpowered. They don't have much in the way of offensive capabilities, and are fairly ineffective for building steps out of level detritus, try as we might. But during one of these failed barrel-stacking attempts, it finally sinks in: we're thinking of them in entirely the wrong terms. For all the immediate similarities, they're not just a poor man's Gravity Gun. Rather, they're working to an entirely different end.

Here is what the Gloves actually do: they extend out the range of your arms in VR, enabling you to reach any item you can see. Simply point your hand in its general direction and, with a 'get over here' flick of the wrist, bring it tumbling into your palm. The Gloves free you from bending down to investigate every item on the floor, or stretching into weird positions because that one collectible you're trying to grab is sat in a spot of virtual space currently inhabited by the arm of a resolutely non-virtual chair. They're also a neat counter to the inevitable minor inaccuracies of hands reaching for something they can ultimately pass right through.

So the Gloves don't revolutionise interactivity in quite the way their forebears did – they're arguably more solution than invention. But that's all in service of the larger leap in interaction, as *Alyx* removes the keyboard-and-mouse-shaped barrier between you and *Half-Life*'s world, and lets you get your hands dirty. The hole the Gravity Gun was patching over, we start to realise, was that tapping E to grab a crate and hold it in your hands never quite felt satisfying – so instead *HL2* gave you a superpower, the ability to blast objects around as if they were weightless. *Alyx* goes the other way: you don't need to fling objects because, not only can you pick them up and hold them, you can sweep them aside dramatically or prod with one outstretched finger to see if it'll cause them to topple.

These are the nuances of motion *Alyx* is interested in – letting you express yourself in the way you open a door or handle a ragdolled body. Every action comes with added physicality: health is doled out in the form of syringes that you jam into your arm. You must load weapons manually, sliding individual shells into a shotgun, racking the slide atop a pistol to chamber your first bullet. You can steady your aim simply by propping up your gun hand with the other. And in this context, of delicate, almost 1:1 movements, the Gloves *are* a superpower – one that, emerging from long sessions with *Alyx*, we are disappointed to remember we lack in the real world.

Evasion is a matter of blinking instantly from spot to spot rather than strafing and backpedalling

After a few hours, it becomes second nature to use your real hands and the extended Mr-Tickle reach of the Gloves in concert. We glimpse some pistol ammo off in our peripheral vision, bring it tumbling end-over-end towards us, catch it with our left hand, eject the current clip with our right and slam the new one into the base of the pistol – all without looking. We screw ourselves into a tight ball on the carpeted floor so that, inside VR, we're a smaller target than our paltry scrap of cover. We count down the shots as they ping off metal, poke out our head just enough to scoop up that grenade we spotted earlier, prime it, throw it.

The action has a very different rhythm to what you're likely used to as Gordon Freeman. Cover is a much bigger factor, and – if you use the default teleport-based movement system – evasion is a matter of blinking instantly from spot to spot rather than strafing and backpedalling. In every other way, though, this is unmistakably a *Half-Life* game. There are headcrabs, supply crates to smash, and red barrels that make a satisfying boom when you put two pistol rounds into them. What's remarkable is how many of these elements feel custom-made for VR. The traditional *Half-Life* progression of enemies translates perfectly into a training course for fighting with your own hands.

Barnacles, static on the ceiling, provide initial target practice and teach careful spot-to-spot movement as you dodge their lolling tongues. Next, the zombies introduce human-shaped targets that give you time to study them before engaging – and even then, don't move too much, or too fast. By the time headcrabs start launching themselves at your face, you should be proficient enough to pick them out of the air, or at least know how to sidestep. Not that this makes encountering them for the first time any less horrifying. Headcrabs are, after all, essentially a fleshy VR headset, so the threat of them enveloping your skull is uncomfortably real. VR is great at scares, and *Alyx* frequently dials up the horror elements, especially in a couple of sections that are seemingly waiting to be branded 'the new Ravenholm'.

Like the other *Half-Life* games before it, the campaign is built out of this kind of set-piece, each introducing a new spin on the formula then riffing on it for half an hour, before dropping it entirely and moving onto the next idea. The whole thing is strung together into a story, but for the most part it just feels like an excuse to move you between set-pieces. You rescue the ▶

ABOVE Antlions are back, though there's no equivalent here to the bug bait grenades that let you control them in the chronologically later *Half-Life 2*. You'll need to focus on blasting off their legs instead

TOP Combine units are made up of a handful of soldier types, each with different weapons, abilities and rewards you can pull off their cooling corpses.
MAIN Stay in cover for too long, and AI enemies will try to flush you out. This shotgun-wielding charger simply advances on you, while one of its colleagues looses manhacks to seek you out.
RIGHT In moments like these, with a zombie approaching, it's easy to fumble. More than once, we drop an ammo clip into the darkness underfoot and beat a hasty retreat

princess, Eli Vance, who at this point is so accomplished at getting captured you rather suspect he's on a one-man crusade to gender-balance the damsel trope. You make preparations for an attack on your own personal Death Star (the Vault, a floating hunk of angular metal architecture that looms over City 17, home to some kind of Combine superweapon). The plot beats of *Alyx* don't stray far from the rails of videogame action storytelling (with the exception of the final movements, which are breathtaking) but what really matters here isn't the story as much as the way it's told.

This is, by far, the chattiest *Half-Life* game you've ever played. Unlike her predecessor, Alyx Vance is a far from silent protagonist, and she has almost constant company from a voice in her ear — provided by Russell, a would-be Black Mesa scientist and inventor of the Gravity Gloves. Through conversation, the pair fill out their personalities, and the backstory of this world, but most of all they make jokes. Honest-to-god funny jokes. There's a large helping of *Portal* in *Alyx*'s script — no surprise, given the game shares two-thirds of its writing staff with *Portal 2*. Russell, played by Rhys 'Murray from Flight Of The Conchords' Darby, recalls Stephen Merchant's role as Wheatley in that game. He's a safe pair of comedy hands that make sure every line lands. Who needs complex plotting when a game can consistently make you laugh?

And then there's the world itself, which is immaculately realised. *Alyx*, sitting between *Half-Life 1* and *2* in the timeline, does a good job of not only updating the visuals of both games but also harmonising their aesthetics by demonstrating the effects of Xen infestation on the world we know from *HL2*. As you explore, the hard Antonovian lines of City 17 blend smoothly into the buboes of the Quarantine Zone. These spaces, overtaken by otherworldly flora, are the star: *The Last Of Us* by way of the Upside Down, fungal motes drifting in front of your vision, walls seeming to breathe, the gap between inanimate and alive blurring.

There's the occasional bit of platforming, though it's far less frustrating than in previous *Half-Life* games thanks to the stomach-saving ability to simply point where you want to go and teleport there

RESIN-ANCE CASCADE

One of *Alyx*'s biggest tweaks to the *Half-Life* formula is the inclusion of collectibles that you can spend to upgrade your weapon. Scattered throughout levels you'll find Resin: squat little cylinders of corroded ore, every chunk swiss-cheesed in a slightly different way, with soft white light leaking out of the holes. It's an immediate contender for the game-collectible hall of fame, worthy of sitting alongside Mario's red coins and power stars. Resin gives off a faint glow, so in darkened rooms you can spot it even at the back of a littered shelf, but collecting every last cylinder means engaging with the game's physics for some neat mini-puzzles. And the upgrades? Oh, yeah, they're pretty good too.

Alyx gives you time to take in these environments. For a shooter, the pacing is relatively contemplative, with gunfights portioned out sparingly. It's a long while before you go head-to-head with your first Combine soldier. But once those battles do arrive, they're some of the most thrilling we've ever experienced: a mad dash of ducking shots and unexpected flanking manoeuvres. We learn the true meaning of 'blindfire', squeezing off shots over one shoulder until the clip is dry, then praying for that telltale flatline sound. Using the Gloves, we pull an incoming grenade off its trajectory and toss it right back. We press our spine straight against some imagined cover, waiting with the shotgun at chest level for a Combine to round the corner.

And, once it's all over, we take a moment to catch our breath. In part because fights are physically demanding — at least the way we play — but also because it's an opportunity to admire our handiwork. What the game asks of you might be fairly standard shooter stuff, but the act of playing it out with your own hands lends it a fresh magic. That's *Alyx* in a nutshell: this is a *Half-Life* game almost to a fault, the old formula polished to a 2020 shine, made new again by the way you manipulate it. The Gloves aren't the new crowbar or Gravity Gun, the defining tool of *Half-Life: Alyx*. Your own hands are.

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Post Script

Can Half-Life: Alyx make the case for consumer VR?

The odd thing about reviewing *Half-Life: Alyx* is that it isn't just a game. It isn't even a system-seller, in the traditional sense of that term. It has been specifically designed to make the argument for an entire medium, to do for capital-V-virtual capital-R-reality what *Super Mario 64* did for 3D. So asking if it's the best VR experience we've ever had isn't quite enough. (For the record, though: allowing for the fact that *Tetris Effect* is almost as good on a TV as it is inside a headset, while *Alyx* is completely VR-native, yes, it is.) The question instead becomes: is that enough?

When *Alyx* was first revealed, it was accompanied by a sense that even the fans who've spent the last decade clamouring loudly for another *Half-Life* game were resigning themselves to not being able to play this one – largely due to the sheer cost. *Alyx* not only has to sell people on the dream of VR, it has to sell them to the tune of almost £1,000 (plus a sufficiently brawny PC to do it justice). This is, admittedly, only if you want the best possible experience. Valve is supporting pretty much every PC VR platform you could possibly name (which for most of us is a pretty short list). We play through *Alyx* on an Index, but also test it on the considerably cheaper Oculus Quest (linked to a PC) and HTC Vive. While the visual downgrade is noticeable, it doesn't hurt the game too much. The bigger constraint, for our money, isn't a technical one at all. It has to do with space.

Valve is trying to solve this by making *Alyx* as flexible as possible in terms of how it's played. You can play at full room-scale, free to wander as far as your physical walls will allow – but, as long as you've got enough room to swing a headcrab, there's also the option to play it standing up or even sitting at your desk. (In this case, crouching and standing is handled with a button press, and as long as you're not too prone to motion sickness, we'd recommend switching to the stick-based 'continuous motion' mode, which means the whole thing controls more like a traditional FPS.) These are important accessibility considerations, and though it hasn't been implemented in the build we play, Valve is working on a single-handed controller scheme.

But provided you are able to play the game at room-scale, it's clearly the best option. The freedom of movement opens up so much of what makes *Half-Life: Alyx* great, letting you duck and dive and occasionally lose all sense of your position in the real world. And with that in mind, here's the ugly truth: your enjoyment of this game is going to be directly proportional to the amount of space you have to play it in. Being able to potter around freely without fear of destroying furniture or squashing beloved pets is hugely important.

Alyx not only has to sell people on the dream of VR, it has to sell them to the tune of almost £1,000

With VR, physical space becomes an extra system requirement to take into consideration – and even those of us who find the allure of *Alyx* enough to drop a grand on an Index are unlikely to also shell out for a new living room. And even that might not be enough. We play in optimal conditions – a spacious room, all but cleared of obstacles – and still frequently find ourselves brushing up against the translucent boundary wall in-game.

Some of *Alyx*'s best moments involve you being in the dark, or a tightly enclosed space, and often both. VR is excellent at creating tension in these moments, wrapping you in the absence of light, squeezing on your sense of claustrophobia. But the effect is somewhat marred by the presence, if you happen to be stood in the wrong place, of a gridded cage that cuts through the darkness. It's far from a deal-breaker – clearly, given how much we enjoy *Alyx* – but they are the kind of things you need to be willing to shrug off as a limitation of the technology. Which, when you're trying to convert people to the joys of virtual reality, is not the greatest sales pitch. Worse, it's a problem we can't see a solution to, at least not from a technical perspective – and warehouse-sized VR arcades, much as we'd love to see them, don't feel like a realistic prospect.

This all gets to the strange contradiction that's right at the heart of VR. The common argument for the technology is immersion: that with this virtual world wrapped all around you, it's easier to convince your brain it's real. But there's also more that can wrench you out of it – the occasional tug of a cable, or the occasional itchiness of foam pressed firmly against your forehead. These are the kinds of problems currently sat at the top of Valve's to-do list, hardware-wise, but the simple fact of simultaneously existing in two overlapping spaces means you're playing not just playing the game itself but often a second metagame, as you try to reason where you are outside of the headset and whether you're about to bump into something.

Occasionally, even with the presence of that gridded wall, we manage to let go of that second layer. The game envelops us entirely, and it's a magical moment – until we bump shin-first into a chair, or punch a wall. Honestly, the experience of playing *Alyx* is worth these minor battle scars, but VR more broadly? We're not sure whether it ever will be. ■