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Virtual Reality Fails Its Way to Success

By VIRGINIA HEFFERNAN NOV. 14, 2014

Of all the praise heaped upon Oculus, the virtual-reality company that Facebook acquired for $2 billion earlier this year, perhaps the most significant has been this: *non-nauseating*. I can testify to that after my visit last month to the groovy downtown Manhattan offices of Relevent, a marketing agency that has created a virtual-reality demo for HBO to help promote its hit series "Game of Thrones." Without much small talk, Ian Cleary, Relevent's vice president of "innovation and ideation," escorted me into a steampunk cage the size of a phone booth, made of iron and wood. He fitted me with headphones and the Oculus Rift, as the company's flagship product is called, a blocky set of black maxigoggles with an internal screen positioned inches from the eyes. I promptly lost awareness of the screen, and after a few seconds, a bass speaker under the floorboards began to boom. All I knew next was that I was shooting up, as in an outdoor elevator, to a windy summit and then trudging through lightly packed snow — crunch, crunch, crunch — onto a vertiginous ledge of ice.

I didn't turn my head. I felt paralyzed and choiceless, simultaneously propelled and enfeebled, as if I were being walked in a Baby Bjorn. Nervously laughing, I spoke aloud, shouting as if over wind: "I am in an office in Manhattan. Everything is fine. It is a workday!" I did this because I was fooled, profoundly fooled, and I needed to remind myself — and the P.R. team I half-remembered was watching me — that I wasn't six inches from extinction.

Immersive, transporting, revolutionary. But most of all, non-nauseating. That's the term that sets the Oculus Rift apart from the long line of demoralizing virtual-reality Edsels that preceded it. The chief asset of the Rift — more than its dazzling specs, more than Facebook's sizable investment in it — is its dignified, non-emetic quality. All hail: the Oculus Rift doesn't make you vomit.

And for this particular technology, that's a crowning achievement. In 2012, when Palmer Luckey, Oculus's founder, presented his homemade V.R. headset at the New Frontier program at the Sundance Film Festival, I was eager to try it. After donning the D.I.Y. unit — which was held together with gaffer's tape and loaded up with "Hunger in Los Angeles," a haunting immersive-journalism project by a writer named Nonny de la Peña — I fell sick. Sick unto death, or so it seemed. The first thing that deserted me was interest in the spectacle; my own biological crisis monopolized my curiosity. The word "rift" thrummed in my swimming head. Uncanny illusions produced by the Oculus headset had indeed cleaved an unbridgeable rift between the evidence of my senses and an awareness of space and time deeper in my body.

This was not good. In seconds, cognitive dissonance turned into something existential: bona fide Sartrian *nausée*. To hell with politeness. I ripped off my helmet and speed-walked, sheet white, past the art crowd at Sundance, in panicked search of a place to vomit. It took me several days to get my equilibrium back. And two years to try virtual reality again.

From the academic experiments and aerospace simulators of the 1960s to the Sega VR headset, Nintendo's Virtual Boy and the Virtuality arcade games of the 1990s, virtual reality has always sounded fantastic in theory but felt in practice like brain poison. No wonder the progress of V.R. technology went more or less dark between 1998, when V.R. arcade games petered out, and 2012, when Oculus started to make Kickstarter rounds. Virtual reality was an abject failure right up to the moment it wasn't. In this way, it has followed the course charted by a few other breakout technologies. They don't evolve in an iterative way, gradually gaining usefulness. Instead, they seem hardly to advance at all, moving forward in fits and starts, through shame spirals and bankruptcies and hype and defensive crouches — until one day, in a sudden about-face, they utterly, totally win.

Virtual reality — the digital production, in a headset, of an immersive and convincing audiovisual illusion — is a dream that dates to at least 1968. That was the year Ivan Sutherland at M.I.T. unveiled his "head-mounted display," which quickly earned the ominous nickname Sword of Damocles: a terrifying room-size V.R. machine, with a helmet so spine-crushingly heavy that it needed to be supported by a mechanical arm suspended from the ceiling. During the ensuing decades, the military and NASA each seized on the V.R. concept in the hope of creating flight and

combat simulations. But invariably these led to “sim sickness,” a nausea so bad that it traumatized the people it was designed to train.

Forays into consumer V.R. hardly fared better. Jaron Lanier, the artist and computer scientist, popularized the term “virtual reality” in the mid-'80s, when he left Atari to sell V.R. goggles and gloves at the short-lived VPL Research. (VPL filed for bankruptcy in 1990.) Recreational virtual reality flamed out in the 1990s with a handful of unfun, overhyped and physically sickening arcade games by a company called Virtuality. Developers like eMagin, Vuzix and Nintendo still quietly plugged along, but the persistent nausea problem turned V.R. development into a grim, frustrating, even embarrassing business. Even just a year ago, if you asked most rank-and-file gamers about virtual reality, they might have said it was a nice old sci-fi idea but too expensive and far too stomach-churning to pursue seriously.

It’s hard to remember, but the same skepticism once dogged the two devices that now define the sea change known as “mobile”: the smartphone and the tablet. In the 1990s, the Apple Newton, a tablet and a “personal digital assistant,” was considered a marvel by the specs. A single-surface networked personal computer, it came with an impressive screen and plenty of memory. But consumers rejected it. A hand-held device that didn’t fit in pockets, play music, display photos or even make phone calls? The somber Newton didn’t thrill anyone, so users didn’t bother to make room for it in their everyday lives. Instead, they roundly mocked it for its price and its many bugs. Merely debugging it seemed out of the question, though; its failure was taken as proof that nobody wanted a tablet computer. After the Newton’s disgrace, Steve Jobs declared the tablet categorically discredited. “It turns out people want keyboards,” he said in 2003.

And he seemed to be right — that is, until people couldn’t care less about keyboards. Starting in 2007, when Jobs himself unveiled the iPhone, people spontaneously seemed to switch desires: Now what they craved for their texting, emailing, social networking and web surfing were touchscreens. The iPhone was defiantly keyboard-free; its primary competitor at the time of its release, the BlackBerry, hung onto its physical keyboard all the way to oblivion. And by 2010, the keyboardless tablet — the iPad — made its reappearance. At its release event, Jobs approvingly quoted The Wall Street Journal, which said, “Last time there was this much excitement about a tablet, it had some commandments written on it.”

Similar reversals happened in the mid-2000s with e-books and video

calling, two long-dreamed-of technologies that appeared perennially hopeless until Skype and Amazon made them suddenly ubiquitous. And it seems to be happening with virtual reality today. Indeed, fans of the Oculus Rift discover a pleasure so deep that John Carmack, Oculus's chief technology officer, invokes it with a particular solemnity. It's called "presence." To achieve presence with an Oculus headset means to be suffused with the conviction — a cellular conviction, both unimpeachable and too deep for words — that you are in another world.

Presence is still coming into a definition, but we know two things about it: It feels good, and it's different from verisimilitude. As Norman Chan explained on Tested.com, a virtual world decidedly does not feel like reality. For one, it still entails game graphics, rendered in a special way that schematically simulates depth. And even less true to life is the effect of personal disembodiment, as the user's own body is left largely unrepresented in the virtual world. But with presence, as Chan explains, you do get a profound sensation of space, causing you to forget you're staring at a screen. Presence is fragile, but when achieved, it's so joyful and sustaining that those who touch it tend to fall silent.

I've found presence twice in Oculus experiences: HBO's "Ascend the Wall" and a live-action airborne tour of a Dubai skyscraper. Each time it was glorious. The skyscraper tour came as part of a reel by Total Cinema 360, a production company in New York founded by two former N.Y.U. film-school students that creates virtual-reality programming, as well as interactive, immersive omnidirectional video. To see the reel, the filmmakers seated me with the Oculus headset, on which I witnessed, taking place all around me, various cinematic vignettes: two lovers sharing pillow talk, a rock concert from the stage and then — suddenly — the Dubai flight, which the company made as part of a recruitment package for a firm in the city.

In that flight I lost myself. I can't tell you how I was airborne, exactly; maybe I was in a harness, in a parachute mysteriously ascending. I sailed close to the sky-high architecture, somehow alongside it, where I could examine it, as if I were Philippe Petit on a high wire. But also entirely safe. I could look up at the sky and down — way down — without fear, as my wordless physiology signaled to me that I was rising and in zero danger of falling. This was flight, and not the nightmare kind with crashes; flight as in the best dreams of being winged and soaring, as happy as you've ever been.

No wonder users are clamoring to test the Oculus. Every time "Ascend the Wall"

appears on its global rounds at “Game of Thrones” meetups, there are round-the-block lines of people wanting to try it. Some stay just to confer on their ice-wall experiences and watch others freak out during theirs. It’s all pretty trippy, and the whole subject of virtual reality brings out the Timothy Leary-style psychonaut in those who enjoy it. Sometimes things truly get into Leary territory. A friend of mine told me she didn’t need virtual reality because she’d recently tried DMT, a psychedelic compound known for producing powerful spiritual visions. I asked V.R. developers, in turn, about DMT, and they nodded approvingly. “Oh, I like Oculus *and* drugs,” one virtual-reality curator told me, as if in reassurance. Maybe I shouldn’t have been surprised. This is a crowd that likes to hallucinate.

Even old hands at virtual reality generally submit to new experiences with a kind of trip sitter, a role borrowed from drug culture, in which people try hallucinogens with a sober partner who enables the enjoyment and ensures the safety of the one who is tripping. I myself have never tried V.R. without a trip-sitter type — and sometimes I think that reassuring nearness was half the satisfaction of the experience. It surprised me, actually, how intimate and touching I found it to have my Oculus headset fitted to me, to be given gentle cues about how to explore the various illusions, to be occasionally reassured that I wasn’t going to disappear into a dreamworld, to have the headset removed when I looked bored or uneasy — and finally to be encouraged as I raved about various V.R. miracles.

To create and experience presence requires a keen sympathy between technology and neurology. Virtual-reality sickness, most believe, is produced by a brutal conflict among sensory inputs. Under the spell of V.R., the eyes and ears tell the brain one story, while deeper systems — including the endocrine system, which registers stress; the vestibular, which governs balance; and other proprioceptors, which make spatial sense of the body’s position and exertions — contradict it. The sensory cacophony is so uncanny and extraterrestrial to suggest to the organism a deadly threat.

If nausea is the body’s dysphoric response to the uncanny, presence is the euphoric one. This is what most intrigues Oculus programmers. As the headset’s hardware continues to improve — higher resolution, more frames per second, better positional tracking and so on — Oculus programmers have kept alert to the idiosyncrasies of individual neurobiology. Many developers, felled by nausea in their first virtual-reality forays but now safely acclimated with “V.R. legs,” have a high

tolerance for sensory incongruities. “You get a kind of immunity to V.R.-induced nausea,” Eric Greenbaum, a Manhattan-based developer, told me in email. “It’s a bit of an issue for V.R. development. Because developers often have a very high nausea threshold, they can’t necessarily be a good judge of whether the experiences they are creating are going to be comfortable for the average user. It’s one of the reasons that lots of user testing is so important.”

Just this fall, the tiny Stream gallery in the Bushwick neighborhood of Brooklyn, which exhibited an illusory gallery to be browsed entirely with a first-generation Oculus Rift developer’s headset, employed docents with mops exclusively to clean up the real vomit produced by beholders overcome by the psychic dislocations of virtual reality. (For a bright young person looking to break into the Brooklyn art scene, this docent/mopper gig might be as avant-garde as it gets.)

But no one at Stream ever had to mop. Yes, many beholders of the intriguing V.R. artwork “Desktops,” by Terrell Davis, a 16-year-old Internet artist, did hit a neuro-wall and stopped navigating around Davis’s angular virtual landscape, which incongruously crossed modern Dubai and Ancient Greece. I myself felt faint after a few minutes and quit. The curator, Kip Davis, nearly ripped the goggles from my skull when I said I was feeling woozy. (“We stop immediately,” he said. “At the first sign of nausea.”) Still, no one barfed. This is a meaningful achievement for a teenage artist working in virtual reality: His medium is no longer actually vomitous.

Neurological, technological, relational, psychological: There are so many moving parts in the creation of a full-dress illusory world. Virtual-reality developers and fans regularly cite the “suspension of disbelief,” a notion advanced 200 years ago by the poet and aesthetic philosopher Samuel Taylor Coleridge. Coleridge, of course, was talking about a reader willingly setting aside his skepticism about a story after being invited to do so by certain literary effects. An Oculus Rift experience, by contrast, involves something closer to a *forcible* suspension of disbelief. It’s fitting, maybe, that the first theorist to use the phrase “virtual reality” seems to have been Antonin Artaud, in “The Theater and Its Double” (1938). Artaud’s “theater of cruelty” aimed to expose spectators to the dangers of life, engulfing them in a tumultuous vortex that would leave them powerless and unable to escape.

In virtual reality, the notion of powerlessness cuts two ways. Sometimes when I listened to developers talk about their eagerness to “immerse” audiences in multisensory experiences, I thought I detected a less savory desire to *imprison* them

in programming — to leave them with no sensory exit. As much as nausea, it was that attitude that made me, sometimes, want to throw the Rift against a wall — shatter that pricey digital alchemy — and gulp some open air, and with it the reassuring freedom and natural laws of real physical space. Swaddled in goggles and headphones, your power-forward senses (sight and hearing) are steamrollered by a visually and aurally complete universe designed precisely to seal out opportunities for doubt. Virtual-reality sickness — *la nausée* — can be seen as the body's radical disbelief in this illusion. It surfaces to remind you, in horror, of your subjectivity and to force you to reclaim your sensory autonomy.

Oculus programmers often talk, as Coleridge's fellow poets might have talked, about how to keep audiences under their spells. Carmack, the Oculus C.T.O., has discovered some neat tricks to circumvent the "sensitivities" that some users have to V.R. phenomena, like the smearing, ghosting or flickering in V.R. images. He has highly technical strategies for "deghosting" images, as well as for achieving "submillimeter accuracy with no jitter" in the Rift's positional tracking. As for the flicker, Carmack advises keeping the periphery of a spectacle black to calm the flicker-averse. (He praises something called Oculus Cinema: "It winds up being a dark experience at the corners, so it's comfortable from a flicker standpoint.") In our gentler commercial idiom, used for movies and games, in which escape from reality is considered a given good, this comfort is known magisterially as presence.

Even if Imax 3-D movies make you queasy, you might be able to stomach the Oculus Rift, which may debut for consumers as early as next year. The company's latest prototype, which it internally calls Crescent Bay — with integrated audio, no visible pixels, better tracking and a light, ski-goggle-style headset — strikes many who have tested it as close to perfect. But Facebook and Oculus aren't ready to release it, or even name a release date. They're determined to keep the technology out of consumers' hands until it's blissful and bound to be world-historical, on the scale of the iPhone.

"Every 10 to 15 years a new major computing platform arrives," Mark Zuckerberg said last month, in the third-quarter earnings call for Facebook. "We think that virtual and augmented reality are important parts of this upcoming next platform." Zuckerberg then threw down the gauntlet in his insouciant way. The Rift, he said, "needs to reach a very large scale, 50 million to 100 million units, before it'll really be a very meaningful thing as a computing platform. . . . That'll take a few

cycles of the device to get there, and that's kind of what I'm talking about. And then when you get to that scale, that's when it starts to be interesting as a business in terms of developing out the ecosystem."

Marketers, educators, scientists and, of course, gamers are already imagining an internal ecosystem for virtual reality. Armchair travel. Risk-free sky diving and ziplining. Gender-bending with virtual bodies. Classrooms of avatars convened with people all over the world. Surgical demos. Virtual hikes in the Andes and sprints on Fiji beaches. But whatever its "use" might be, V.R. is not fundamentally a pragmatic technology, which is why it begins with gamers. If it works, if it catches on, it must first give pleasure — and be fun.

It's curious that James Cameron himself, a director known for his embrace of technology in the name of cinematic spectacles, recently dismissed Oculus as "a yawn." Cameron's pose brought to mind something Ian Cleary, whose firm designed "Ascend the Wall," told me. I'd asked Cleary if anyone visiting the snow-capped virtual land of the Seven Kingdoms from "Game of Thrones," is ever able to maintain an attitude of boredom and indifference. He thought back to one or two guys he encountered on the exhibit's international tour who endeavored mightily to play it cool during the ice-wall ascent.

"They seemed worried that everyone is looking at them, and they are determined not to react, but there are overreactors, too," Cleary said, alluding to an actress who tried "Ascend the Wall" and turned squealy and hysterical. Both reactions can seem contrived — and engender nostalgia for proportional responses to a three-dimensional world of energy and matter that behaves in predictable and ancient ways, in harmony with our capacity to appreciate it.

"The truth is," Cleary said, "virtual reality just creates a deep hunger for real-world experiences."

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