

Virtues of Reality

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There's a new store on the corner. I noticed it a few days ago, on my way to pick up some groceries. At first, I thought it was a video rental outlet. They have been spreading like weeds during the last decade, replacing hardware stores, dry cleaners, radio repair shops, and other places that used to provide genuine neighborhood services.

But it didn't rent videos. It was called "Experiences Unlimited" and it rented Virtual Reality.

I'd heard of Virtual Reality, of course. Although it has yet to make a mark on the academic journals that I read, the glossy magazines are full of it. I knew that a technology that I had only recently associated with financial high-rollers such as NASA and the US Navy was now a "growth industry". I had not, however, expected it to arrive so soon at a corner near me.

Actually, I reflected, wandering up and down aisles of non-dairy cream, decaffeinated coffee, wheat-free bread, meatless hamburgers, de-alcoholized beer, nicotine-free cigarettes, and kosher shrimp, Virtual Reality has been quietly taking over the grocery store for some time. If Tchaikovsky were composing today, he would have to write a dance for the sugar-free plum fairy.

Later in the week, curiosity inevitably got the better of me, and I ventured into the Virtual Reality store. I was greeted by an affable young woman who told me to call her Cindy. She explained that the equipment simulated sight, sound, and touch, but not taste or smell, and that it responded to the client's movements, voice, and skin resistance.

"How fast are the computers?" I asked. When she raised her eyebrows, I continued, "I'll understand—I teach computer science."

"50 gigaflops."

A "gigaflop" is a thousand million floating point operations per second. I decided to inform the chair of my department that neighborhood stores had more computing power than all our research labs put together.

"Each one of these"—she held up a sort of large compact disk—"has a 'sim', short for 'simulation', with four or five terabytes of data."

A "terabyte" is a million million bytes. Back in the sixties, when I started programming, we stored data on punched cards. I did some quick mental arithmetic and decided that a terabyte would require about a thousand miles of cards. In the sixties, Virtual Reality was still science fiction.

Not wanting to appear too eager, I explained to Cindy that my interest in Virtual Reality was part of my scholarly research into the social effects of computers. She apparently believed this because she said that she would let me watch the monitor that she was supposed to use only in emergencies.

“The clients would be unhappy if they thought they were being watched,” she explained, “but sometimes, well, we have to.”

The first booth that we snooped on contained a young man who seemed to be aiming and firing a bulky weapon at a number of moving targets. I say “seemed to” because, of course, he was moving about in a small room, wearing a body-suit with a large helmet, and holding nothing. A bundle of cables emerging from the helmet were the only clue to his excitement.

“That’s *Rambo’s Revenge*,” Cindy’s voice was matter of fact as she switched to the next booth like a bored teenager fiddling with the remote control. The client there appeared to be on the verge of expiring. He lay on his back with his limbs at awkward-looking angles, his chest heaving as he gasped for breath.

“This guy likes hard work. He’s doing *Everest Without Oxygen*.” She changed the channel again and a middle-aged man appeared on the screen. His pelvis gyrated wildly.

“That one’s quite popular.” With a slight trace of embarrassment, Cindy switched the channel quickly without mentioning the title.

In the fourth booth, the client, another male, seemed to be shovelling heavy rocks. Cindy brightened. “That’s one of our better sims. It’s based on an old science fiction story. He’s on Callisto, operating a mine on Jupiter.”

After we had watched the ruthless plundering of Jupiter’s virgin surface for a few minutes, I asked Cindy if any of her clients were women.

“Yeah, sure, but we get a lot more men than women. I think it’s about seven to one usually. I could look it up—we keep all the stats. There’s something about Virtual Reality that women don’t seem comfortable with. But there’s a woman in number four.”

She changed the channel again. My first impression was that the client was doing a rather poor imitation of a belly dance.

“That’s *Natural Childbirth*. She comes in for it about once a month.”

“Once a month!” I repeated. “Don’t you think that it would be strange to give birth once a month and never experience an actual baby?”

“She comes most days for *Breastfeed Your Baby*,” replied Cindy, quickly. “She used to do *Pamper Time!* as well, but lately she’s been sending her husband in for that.”

The client in the last booth seemed to have received good value for his money. He danced around, waggled his eyebrows, giggled inanely, and gave the general impression of being in an advanced state of terminal ecstasy.

“Where’s he?” I asked. “*Seventh Heaven?*”

“No,” Cindy laughed. “That’s our most popular sim. Men, women, and kids all love it. It’s called *Nuclear Family* and it simulates life in the suburbs with mom, dad, two point five kids, and a dog.”

“Two *point five* kids?” I enquired, wondering about the simulated half-kid. Or was it a half-simulated kid?

“Well, you can choose any number from one to four. And you can have a cat instead of a dog, if you like.”

“Or an ostrich?” I said, mischievously.

“No, but they give you a llama in *Berkeley Life*,” she answered, with a smile.

“I grew up in a suburb with two sibs. It was okay, but I don’t think I’d spend a lot of money to relive it.”

“Yeah, but you’re *old*.” Cindy’s look added about fifteen years to my age. “You guys grew up like that. Nowadays, most people don’t. It’s a terrific experience for them.”

There were no other clients. I felt slightly guilty after our voyeuristic experience, but Cindy said I shouldn’t worry about it. She gave me a catalog and hoped that she would see me again soon.

Arriving home, I threw the catalog onto a corner of my desk with careful nonchalance and settled down to work. After about three minutes, I gave up trying to concentrate and reached for it.

Inside, predictably enough, there was an extensive selection of sims involving various kinds of violence. I skipped this section, not being partial to violence in either real-life or simulated form. There was also a long section for sims with sex, cross-referenced by age, a surprising number of different gender preferences, and subheadings to indicate who did what to whom while who else watched. I decided to pass on that section too.

As I looked at the other categories, it occurred to me that the lack of sensory modalities such as taste and smell made the offerings considerably less tempting than they otherwise might have been. I suspect, for example, that there would be a large market for sims such as *Gevrey Chambertin 1982*, *Extra Old Cheddar*, *Horiatiki with Retsina*, *Thirteen Course Chinese Banquet*, and *Toast and Marmalade with Tea*. Considering that smoking is now illegal in most public places and leads to ostracism in most private places, I could even see a demand for *Gauloises by the Pack* and *Stogies from Havana*. It occurred to me that the generic term “tactile sensation”, which occurred frequently in the catalog, actually included a multitude of experiences: pain, pressure, heat, greasiness, wetness, and so on. I wondered how many of these modalities the sims could simulate.

Most of the experiences that were described seemed to be biased towards the intrepid and daring. Activities such as climbing mountains, deep sea diving, and racing in assorted dangerous vehicles were far better represented than mundane activities such as weeding the garden, lying on the beach, or knitting socks. Eventually, I made a selection that I thought I could manage, closed the catalog, and returned to my not-so-virtual work.

The following day, I went back to Experiences Unlimited and Cindy. After looking around to see that none of my neighbors were watching, I slipped inside.

“Hi there. Find something?” asked Cindy, cheerfully. I told her my choice. “That’s nice,” she said, getting the disk down from a shelf and putting it on the counter. “Take as long as you like and you can pay afterwards, cash or card.”

The price was high, although not nearly as high as some of the other sims that the catalog offered. Actually, it seemed quite reasonable when compared to the price of aerobic exercise, self-defense, sensory deprivation, indoor tanning, and other forms of escape from reality. Cindy ushered me to Booth 5 while I tried to remember how much credit I had left.

“Here’s your Reality Suit. Undress and put it on like this—feet through here, arms here, zip it up here, here, and . . . here. Then put on the helmet, close this clip. When you’re in, just call.”

“Do I, um—” I began. She understood immediately and answered without embarrassment.

“Keep your underwear on if you want to, but most people rave about the Total Experience.” She grinned. “Everything’s sterilized, of course. Only safe simulation here!”

She left the cubicle, closing the door. I voted for Total Experience, undressed, and

climbed awkwardly into the suit. Although light in weight, it was quite constricting. I put the helmet on: total darkness and complete silence. I called.

Abruptly, I was standing on a narrow trail leading towards a lake with snow-capped mountains beyond. The landscape consisted of grass, rocks, and trees. Above me, cumulus clouds floated in an azure sky. Birds twittered in the trees. A gentle breeze played on my face. For a moment I thought I could smell the scent of pine, but then I remembered that smell was a missing modality.

I looked down and saw new hiking boots in soft leather, knitted socks, and hand-stitched walking shorts that felt custom-made. It made a change from my usual sneakers and jeans. Between the tops of the socks and the bottom of the shorts were a handsome pair of sturdy, tanned legs. I looked at my arms. They had undergone a similar improvement, I discovered, flexing a hulking bicep. I pulled at the waist of my shorts in the hope of finding further anatomical enhancements but, alas, arms and legs were apparently all you got with this sim.

I set off down the trail, glancing behind me at intervals to check that Virtual Reality was all around me. Determined to discover the limitations of the medium—in the interests of social research, of course—I grasped each bush and patted each rock as I passed it.

After a while, I tried to leave the path. No way! The rock face on one side was unscalable and the forest on the other side impenetrable. Ha! I thought. By keeping you to the path, they can keep the data requirements manageable. I stopped patting the rocks and strode along faster, deciding that Virtual Reality was just three-dimensional television with a bit of sensory feedback.

I noticed a stone on the path that looked a bit wet, but not quickly enough to avoid stepping on it. My feet skidded out from under me and I ended up on my knees. Virtual Reality, 1; Professors, 0. Perhaps Virtual Reality had a little bit more going for it than television, I thought, rubbing my aching shin. Not just touch, but pain as well. Couch potatoes do not run the risk of having the C-fibres of their polymodal nociceptors stimulated.

Clearly, Virtual Reality needed enough audial, visual, and tactile data to simulate a walk along a narrow path, and a few clever tricks to confuse you into thinking it was real. I reflected on the extraordinary ability of our brains to make sense out of incoming data. We are easily taken in by simple, superficial illusions, as novelists, playwrights, and film-makers know all too well. In my present surroundings, I could detect many small inconsistencies: a slight graininess in the scenery, a canned, synthetic quality to the sound, and of course a complete lack of taste or smell. Yet somehow my brain ignored these imperfections and did its best to convince me that I was in the countryside on a summer afternoon.

By concentrating on the imperfections, I could suspend disbelief. More accurately, I could suspend belief. If I concentrated hard, I could *disbelieve* what I was seeing and think of myself in a small cubicle, dressed in a Reality Suit. I could feel my helmet and I could imagine the umbilical cables connecting me to the computer.

As I walked, I reflected on the social significance of all this. That was, after all, the ostensible reason for my presence here. What is Virtual Reality? Do we really need it? Why now? The technology was available, but was there more to it than that? Will it spread, or fade away? Clearly it was profitable to someone, I thought, the \$45 price tag suddenly pricking my conscience. Profit was a necessary, but not a sufficient, condition for its continued existence.

What's wrong with *real* reality, I wondered. Why do we have to fake it? Perhaps, like so

many things today, reality is becoming a scarce resource. Perhaps it's even a non-renewable resource. Someone told me recently that by 2010 there will be ten billion people. Ten billion people can't all enjoy a solitary stroll through unspoiled park land. Nor is there much point in saying "It's not like climbing a real mountain" to someone who can't afford the time, the equipment, or the training to climb a real mountain.

I realized that I was quite close to the lake. A few experiments quickly convinced me that I could not actually reach it, either to put my hand in the water or to go for a swim. It was a virtual lake, but quite pleasant to look at. I sat down on a rock to admire it and get my breath back.

Even the people who enjoy themselves outdoors are not just people, I reflected. They bring their own interests, hobbies, prejudices, and peccadilloes with them. There are campers, hikers, and hunters; naturalists, ecologists, and conservationists; smokers, drinkers, and abstainers; believers, agnostics, and atheists; not to mention lovers, nudists, and vegetarians. How could you prevent a pipe-smoking hunter from getting into an altercation with a vegetarian nudist, accidentally shooting a beer-drinking bird-watcher, and thereby disturbing a couple of cuddling conservationists? The number of permutations was dizzying, and every one offered possibilities for dispute. Perhaps people really would be safer in their own little cells than out in the world, negotiating their rights.

I picked up a blade of grass and put it in my mouth to chew. My teeth felt nothing. Startled, I looked down. There was the blade, crisp and green. I was familiar with the experience of moving something from my hand to my mouth, having done it for most of my life. The experience of putting a visible, tangible object into my mouth and feeling *nothing* was disconcerting, to say the least. Virtual Reality, 1; Professors, 1.

The tasteless grass emphasized the awkward fact that Virtual Reality was second-class reality. This was not a real walk in the woods. This was somebody else's walk in the woods and I was experiencing it vicariously. Somebody else had planned this walk, taped or synthesized the scenes and sounds, and assembled it for thousands of willing victims. It was *tamed* reality, one step up from an armchair adventure. At least I'm getting more exercise than I would sitting in an armchair, I thought, as I stood up and continued down the phony path.

After a few more minutes, the lake was well behind me and I was approaching a small cabin of the kind provided for hikers on mountainous trails. I went to inspect it.

The door had no handle and did not respond to pushing and shoving. I bent over and peered through a small, grimy window. At first I thought the shack was empty but, as my eyes grew accustomed to the gloom, I realized that there was a person inside. He—or she—was wearing some kind of armor with wires attached and was standing in a curious, hunched posture.

I raised my arm to block the light reflecting off the window. The figure inside raised its arm. Assuring my jangling nerves that all this was Virtual, I tapped on the window. When the figure made a tapping motion, I suddenly realized who it was.

"It's me!" I cried, leaping away from the window. I looked at the cabin for a few moments and returned to the window to test my hypothesis. The cabin was empty.

Why did the experience give me such a creepy feeling? After all, it was just like being on television, or even looking at yourself in a mirror. But, when you see yourself on television, you see *yourself*, not someone else. This was more like an out-of-body experience. The

rocks, the trees, and the sky, so ordinary looking, seemed to mock me.

There was a low growl. I leaped a foot or so into the air and whirled round. A large bear was inspecting me from a rocky outcrop about twenty feet away. A part of me wanted to check out the bear in detail, to probe the limits of simulation. A much larger part of me wanted to run like hell.

Suspending belief carefully, I approached the bear. Its eyes remained fixed on mine. When I was about three feet away, I extended my arm cautiously towards its muzzle. "It's only data," I told myself. "A small fraction of the terabyte that I'm entitled to." I touched the bear's nostril. It felt warm and slightly damp.

"Ha," I said. "You're more virtual than real, old bear."

The bear lunged at me. I yelled, fell over backwards, rolled over, and started to get up. The bear knocked me down again with a casual flip of its paw. I felt its hot breath on my face. The bear gave another growl, louder this time, and ran off into the trees. Virtual Reality 2; professors, 1.

I got up, shaken, and looked cautiously around. There were bears. Could there be snakes in the grass, scorpions on the path, or vultures in the trees? I decided that it was time to quit. After all, the meter was still running at \$45 per hour.

"I give up," I called.

Rocks, trees, lakes, and mountains flicked out of existence. So did those strong, healthy-looking arms and legs. I stood helplessly in a rather sticky plastic suit under a heavy helmet. There were zipping sounds as Cindy extricated me. Just at the point when the situation might have become indiscrete, she exited, adding in a practical tone, "You can finish now. See you in the office."

I paid and left. Hiking clothes and travelling to a real wilderness would have cost me more, but not much more.

I spent some time, during the following week or two, reflecting on my virtual experience. I even went for a hike in the nearby woods, which is not my normal habit. The woods had a number of disadvantages compared to the pristine freshness of Virtual Reality—vicious insects, muddy puddles, noisy children, and the usual collection of broken glass and empty cans—but they had the significant advantage of being real. Perhaps, I thought afterwards as I pulled off my dirty clothes and surveyed the swelling bites on my sunburned arms and legs, the suffering is a necessary part of the fun. A machine that simulates sight, sound, and touch cannot match the reality of a small, buzzing mosquito.

Shortly after my walk in the woods, I decided to try something a little more adventurous—virtually, of course. But, when I returned, catalog in hand, Experiences Unlimited had disappeared. In its place was a bright new drugstore, offering its own varieties of virtual reality.