The Metaphysics of Virtual Reality

Michael Heim

The commission money was good and the artist arrived on time. One of the executives from corporate design was there to meet her at the door. After touring the facilities, the artist was left alone to begin painting. Each day the mural materialized a bit more, section by section, spreading a ribbon of color across the large gray wall at the end of the lobby. First a green patch of forest glade appeared, two blossoming plum trees, three sky-blue vistas, and a Cheshire cat on a branch. Finally the day came when the tarp would fall. Employees gathered around plastic cups and croissants. When the speeches were over, the room grew hushed for the unveiling. The crowd gasped. The wall came alive with paradise, an intricate world of multicolored shapes. Several employees lingered to chat with the artist. Once the congratulations died down, the artist strolled to the center of the mural, stopping where the garden path leads into the forest, and, with face to the crowd, she smiled, bowed, and turned her back. Walking into the green leaves, she was never seen again.

This ancient story, adapted from Taoist legend, anticipates the metaphysics of virtual reality. On one level, the story praises the power of artistic illusion. On a deeper level, it suggests the need we have to create realities within realities, to suspend belief in one set of involvements in order to entertain another. The story depicts our ability to enter symbolic space where we move about in alternate worlds. Whether we read a short story, watch a film or contemplate a painting, we enjoy being hijacked to another plane of being. Our capacity to immerse ourselves in a symbolic element has developed to where we hardly even notice the disappearing act. We slip off into symbolic existence at the drop of “Once upon a time” or “Given any variable X.”

From Naive Realism to Irrealism

Are not all worlds symbolic? Including the one we naively refer to as the real world which we read off with our physical senses? Philosophers as recent as Nelson Goodman and Richard Rorty have considered all

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for connection with reality, for metaphysical grounding. Kant dismissed
metaphysical theories as idle sophistries and intellectual games played
by charlatans. Philosophers in the twentieth century, from Wittgenstein
and Heidegger to Carnap and Ayer, followed Kant in side-stepping
metaphysics, believing it to be an ungrounded spin of the linguistic
wheels, or a chase after vague vapor trails, or simply a logical mistake.
For this line of thinking, reality has lost its meaning as a serious term.
The coming VR engines may force a change in that general line of
thought and shed new light on classical metaphysics. The next cen-
tury may have to dig again in a very ancient field of metaphysics
evacuated by the engines of computer-simulated virtual reality, the
metaphysical machine par excellence. Conversely, virtual realities may
be all the richer for preserving some relationship to a real world without,
however, becoming boring or mundane.

The terms “real” and “virtual” need sorting out before we relate
them to each other. I find the contemporary usage of the term, as well
as its distant ancestor, enlightening.

The Vocabulary of Virtuality

In contemporary usage, the virtual in “virtual reality” comes from
software engineering. Computer scientists use “virtual memory” to
mean computer RAM set aside in such a way that the computer operates
as if memory exists beyond the actual hardware limits. The term vir-
tual has come to connote any sort of computer phenomenon, from vir-
tual mail to virtual work groups on computer networks, to virtual
libraries and even virtual universities. In each case, the adjective refers
to a reality that is not a formal, bona fide reality. When we call
cyberspace a virtual space, we mean a not-quite-actual space, something
existing in contrast to the real hardware space but operative as if it were
real space. Cyberspace seems to take place within the framework of
real space.

The virtual in “virtual reality” goes back to a linguistic distinction
formulated in medieval Europe. The medieval logician Duns Scotus
(died 1308) gave the term its traditional connotations. His Latin virtualiter
served as the centerpiece of his theory of reality. The Doctor of Subtle-
ty maintained that the concept of a thing contains empirical attributes
not in a formal way (as if the thing were knowable apart from empirical
observations) but virtualiter or virtually. Though we may have to dig
into our experiences to unveil the qualities of a thing, Scotus held, the
real thing already contains its manifold empirical qualities in a single
unity, but it contains them virtually—otherwise they would not stick

Realism and Irrealism—Both Unrealistic

Yet irrealism may be short-sighted. We may need to hang on to a no-
tion of the real world, if not out of abstract conviction then at least out
of the need for occasional reality checks against our virtual reality
systems. An unrestrained proliferation of worlds cries out for sanity,
as qualities of that thing. Scotus used the term virtual to bridge the gap between formally unified reality (as defined by our conceptual expectations) and our messily diverse experiences. Similarly, we nowadays use the term virtual to breach the gap between a given environment and a further level of man-made accretions. Virtual space—as opposed to natural bodily space—contains the informational equivalent of things. Virtual space makes us feel as if we were dealing directly with physical or natural realities. As if...

Our as-if stops short of Scotus’ term, for he could assume, with all classical metaphysicians, that our concepts fit squarely with the eternally fixed essences of things. Scotus could assign a merely virtual reality to some aspects of experience because he believed his primary experiences already exhibited “real reality,” to use Plato’s strange phrase. Classical and medieval philosophy equated reality with the permanent features of experience, and this naïve realism anchored human beings in the world. The medievals believed the anchor held with all the weight of an all-powerful, unchanging God.

We cannot locate the anchor for our reality check outside this fluctuating, changing world. No universal divinity insures an invariant stability for things. But we need some sense of metaphysical anchoring, I think, to enhance virtual worlds. A virtual world can be virtual only as long as we can contrast it with the real (anchored) world. Virtual worlds can then maintain an aura of imaginary reality, a multiplicity that is playful rather than maddening.

A virtual world needs to be not-quite-real or it will lessen the pull on imagination. Something-less-than real evokes our power of imaging and visualization. Recall the legend of the vanishing artist. The magic within the story comes from the crossover of three-dimensional to two-dimensional frameworks. On another level, the magic of the story comes from our ability to cross over from the words of the narration to an inner vision of the sequence of virtual events (which occurs in us as we walk through the wall of words on the page). The story relates a legend about the power of symbols while at the same time exhibiting that power. Imagination allows us to take what we read or hear and reconstitute the symbolic components into a mental vision. The vision transcends the limits of our bodily reality, so that, from the viewpoint of bodily existence, imagination is an escape—even though imagination often introduces new factors into our lives which sometimes cause us to alter our actual circumstances.

For the most part, imagination receives in order to create. We take the words of a story or the flickering photos of a film and reconstitute their contents, customizing the narrative details to our own understand-

ing. Especially when using a single sense, like hearing or touch, we are active in receiving information. All the other senses subconsciously join to reconstitute the content. But imagination always leaves behind the limits of our physical existence, and for this reason it is “only” imagination. Because it leaves the real world behind, imagination is not reality. When the artist takes her body with her through the mural painting, it is our imagination (through the story) that completes her work of art.

The Virtues of Cyberspace

Cyberspace too evokes our imagination. Cyberspace is the broad electronic net in which virtual realities are spun. Virtual reality is only one type of phenomenon within electronic space. Cyberspace, as a general medium, invites participation. In the framework of the everyday world, cyberspace is the set of orientation points by which we find our way around a bewildering amount of data. Working on a mainframe computer, like the Cyber 960 or the VAX 6320, we must learn to sketch a mental map for navigating the system. Without a subconsciously familiar map, we soon lose our way in the information wilderness. Using a desktop or portable computer requires a similar internal depiction of how hardware, CRT, keyboard, and disk drives connect, even if the picture is mythical or anthropomorphic—just as long as it works. Magnetic storage offers no three-dimensional cues for physical bodies, so we must develop our own internally imagined sense of the data topology. This inner map we make for ourselves, plus the layout of the software, is cyberspace.

The familiar mental map compares to the full-featured virtual reality like radio to television, or like television to three-dimensional bodily experience. In its simplest form, cyberspace activates the user's creative imagination. As it becomes more elaborate, cyberspace develops real-world simulations and then virtual realities. William Gibson's cyberspace presents the data of the international business community as a three-dimensional videogame. Gibson's users get involved through a computer console connected by electrodes feeding directly into the brain. The user's body stays behind to punch the deck and give the coordinates, while the user's mind roams the computer matrix. The user feels the body to be "meat" or a chiefly passive material component of cyberspace while the online mind lives blissfully on its own. His novel Neuromancer describes the passivity of cyberspace as "a consensual hallucination... A graphic representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity." On the active side, the user pursues "the lines of light ranged in the nonspace of the mind."
Virtual Realities without Ontological Security

The problem is not with cyberspace but with virtual reality. I do not have to imagine myself bodily entering into a virtual world. The computer’s VR will soon allow me to take my body along with me, either with a sensorium interface or with a third-person iconic representation. The degree of realism is in principle unlimited. This very realism may turn into irrealism where virtual worlds are indistinguishable from real worlds, where virtual reality gets bland and mundane, where users undergo predominantly passive experiences akin to drug-induced hallucinations. If Schopenhauer is right when he says that we are incorrigibly metaphysical animals, then this irrealism violates something we need and puts a possible limit on virtual reality construction.

How may we preserve the contrast between virtual and real worlds? How can virtual realities preserve a built-in contrast to real or anchored reality so we will enjoy a metaphysical pull to create and actively use our imaginations in cyberspace? What anchor can serve to keep virtual worlds virtual?

This is no place to launch a full-scale “battle of the Titans,” as Plato described metaphysics. But I want to suggest some existential aspects of the real world which provide clues for preventing a virtual world from flattening out into a literal déjà vu. These existential features, evolving from twentieth-century philosophy, stand open to revision. Virtual worlds evoke imagination only if they do not simply reproduce the existential features of reality but transform them beyond immediate recognition. The existential features of the real world I refer to include: mortality/natality, carryover between past and future, and care.

The Three Hooks on the Reality Anchor

The real world, conceived existentially, functions with built-in constraints. These constraints provide parameters for human meaning. One constraint, our inevitable mortality, marks human existence as finite. Because of a limited life span, we demarcate our lives into periods of passage as well as into the schedules and deadlines that order our work flow. We are born at a definite time (natality) and grow up within distinct interactions (family kinships). These limits impose existential parameters on reality, providing us with a sense of rootedness in the earth (a finite planet with fragile ecosystems). Mortality/natality belongs to the reality anchor. Another reality constraint is temporality, the built-in carryover of events from the past into the future, our memory or history. We can erase nothing in principle from what happens in a lifetime. What the German language calls Einmaligkeit or “once-and-always-ness” endows actions with uniqueness and irretrievability. The carryover feature distinguishes reality from any passing entertainment or momentary hallucination. Finally, because of the temporariness of biological life forms, a sense of fragility or precariousness pervades our real world, frequently making suffering a default value. The possibility of physical injury in the real world anchors us in an ultimate seriousness, the poignancy of which lurks behind casual phrases like “Take care.” We care because we are fragile and have to be careful. These three features mark human existence and stamp experience with degrees of reality. They anchor us.

Should synthetic worlds then contain no death, no pain, no fretful concerns? To banish finite constraints might disqualify virtuality from having any degree of reality whatsoever. Yet to incorporate constraints fully, as some fiction does, is to produce an empty mirror over and above the real world, a mere reflection of the world in which we are anchored. (I think of Bobby Newmark in Count Zero, and the dead boy Wilson carried off Big Playground on a stretcher.) Actual cyberspace should do more; cyberspace should evoke imagination, not repeat the world. Virtual reality could be a place for reflection, but the reflection should make philosophy, not redundancy. “Philosophy,” said William James, “is the habit of always seeing an alternative.” Cyberspace can contain many alternate worlds, but the alternateness of an alternate world resides in its capacity to evoke in us alternate thoughts and alternate feelings.

Any world needs constraints and finite structure. But which aspects of the real (existential) world can attract our attention and sustain our imagination? Time must be built in, but the way of reckoning time need not duplicate the deadlines of the real world. Time could have the spaciousness of a totally focused project or could be reckoned by rituals of leisure. Danger and caution pervade the real (existential) world, but virtual reality can offer total safety, like the law of sanctuary in religious cultures. Care will always belong to human agents, but, with the help of intelligent software agents, cares will weigh on us more lightly.

The ultimate VR is a philosophical experience, probably an experience of the sublime or awesome. For the sublime, as Kant defined it, is the spine-tingling chill that comes from the realization of how small our finite perceptions are in the face of the infinity of possible, virtual worlds we may settle into and inhabit. The final point of a virtual world is to dissolve the constraints of the anchored world so we can lift anchor—not to drift aimlessly without point, but so we can explore anchorage in ever new places and, perhaps, find our way back to ex-
perience the most primitive and powerful alternative embedded in the
question posed by Leibniz: “Why is there anything at all rather than
nothing?”

References

Heidegger, Martin. *Basic Writings (Being and Time)*. D.F. Krell (Ed. and
Heim, Michael. *Electric Language: A Philosophical Study of Word Process-
Ricks and Leonard Michaels (eds.). Berkeley: University of Califor-
J.T. Goldthwait (Transl.). Berkeley: University of California Press,
1960.
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Virtual Reality

Virtual reality, the creation of highly interactive, computer-based multimedia environments in which the user becomes a participant with the computer in a "virtually real" world. This book begins to explore the complex and multifaceted nature of a concept destined to raise more (and perhaps more significant) questions about the nature of reality than the human race has faced to date.

The pioneers of virtual reality—scholars, educators, information scientists, philosophers, artists—whose contributions are published here, will inform, perplex, and engage anyone interested in this absorbing new dimension of the human/computer interface.

Edited by Sandra K. Helsel and Judith Paris Roth