PHYSICS FOR PHANTOMS

by

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This is possible in a virtual world: to pass into the space under a table or in a cabinet or vase, and there discover spaces teeming with life and larger than the room from which they were entered. Within these, in turn, there may be smaller spaces--things with interiors like photo albums or lanterns--which turn out to contain worlds vaster yet...and so on and on, *ad infinitum,* in a Borgesian chain of spaces which grow larger as they are more tightly contained and which may curve back on themselves, so that the final entry into the deepest of deep spaces (no matter which) precipitates us back to where we began, or part of the way back, where we may dive again by another route into inexhaustible innerness. This is a journey through a dimension at once spatial and not; a circle made in an impossible plane; a direction followed which lies at right angles to all others. Is it the fabled *fourth dimension?* Perhaps. For here some Law of Scale is broken the way only children, madmen, and dreamers know it can be.

This too is possible in a virtual world: an object as round and full as a pillow which can be seen through like a window, and this from any and all directions simultaneously. Each viewer who looks through the pillow, whose contour is the shape of the pillow seen in *this* room, sees a pillow-cut view of *another* place, another room, occupying the same space as this one. This pillow/window is nothing more or less than a plump and movable hole, a rotund vacancy, transgressible from all quarters and from both rooms, one into other, back and forth as we please. In our world, the real world, windows have no volume and holes have sides. What Law of Physics is broken here that we might regret?

This too is possible in a virtual world: clouds whose shadows set the earth aflame; chairs that are not chairs but someone in Utah, watching; objects that pass through each other like ghosts or that follow you like the moon; surfaces that can be approached forever but can never be touched, like planets we cannot

land on, looming, ever revealing of more detail; a salt shaker which, upon each turn, turns into a figurine, then a tobacco pipe, a crystal log, a hot dog, a laughing bat, a crooked hat, a button-hole maker, and then the salt shaker. Again. Where will the phantasmagoria end? And what is different here from the routine and ritual flauntings of the laws of physics found in fairy tales and Saturday morning cartoons? What is different here that we should take this whole question seriously at all? How important is it that Pacman could disappear on the left of the screen and reappear on the right, or disappear on the bottom to reappear at the top, instantaneously, without it troubling us that the actual *corners* of Pacman's world-surface cannot be joined in any physically realizable topology whatsoever?

One might answer this: there is nothing essentially new in what video games, virtual reality, and cyberspace can show us. Through mythology, folklore, and fiction, through the surrealism and dada in painting and the movies, through fifty years of commercial art, the ground of the fantastic has largely been covered. Moreover, the fracturing and extension of visual experience under the impact of special effects in cinema, video, and the graphic arts, has reached the point where reality itself--streets and trees and buildings, people walking their dogs--has become staid, inherently disappointing, as though caught in a permanent, Sunday afternoon amber. To this stifling familiarity the media bring welcome relief: dislocations and rearrangements, sharpenings of our perception of otherwise just-noticeable- differences, "knowledge" of miracles once only read about or heard of.

But, we reply, not for real; never for real. Though we may enter it, Pandora's box remains safely closed. As long as we flip off the switch, take off the helmet, leave the projection room, close the book, get some coffee, go home.

Something else happens, however, when personal virtual worlds *become linked together* and can be shared by many people--by tens, or hundreds, or even thousands of people simultaneously who themselves are located in real places scattered over the globe. This is the vision of *cyberspace*. Suddenly, the closed and marvellous little world of the video game must appear sufficiently similar to all those immersed in it that they can communicate on the basis of what's "really" there, that they can find each other, avoid each other, and see what others are doing. Such an extended virtual world must resist transformation. It must be indifferent to arrivals and departures from it. The *there* we visit must be there when we return, and when we look back. How strange that physics should be made necessary by sociality. Who is to say that this is not already the case?

And something else happens when these virtual worlds are *never turned off,* when *life* goes on there whether you witness it or not, whether you participate in it or not. Games you cannot afford to leave are not games. When meetings are held and you are not there, when news is disseminated and you did not hear, when others more fleet of mind and virtual of foot plunge deeper and travel further through the glittering constructs of cyberspace, gathering information, making deals, and absorbing experiences to their advantage, and when the whole system grows, as it will, exponentially...then there will be a penalty for *not* being there. No longer an amusement, or an art, the finite video game will have become the infinite life game.

It is the boundary between Games and Life that Softworlds proposes to explore, and it is significant indeed that they turn to Kafka as others might turn to Borges. In both of these writers, the Law is carried in the architecture and the architecture is virtual: capable of a liquidity of scale, of a dream logic not far from reality but far enough to settle upon its own faults an air of normalcy. And this is the key: out-and-out fantasy is easy, the stuff of adolescence. Rationality shattered is not half so compelling as rationality curved around, sutured. Cyberspace, William Gibson saw, would begin in video games, and pass through "virtual reality" and "virtual worlds" on the way. And on the way through them what was logically possible would shear away from what was *psycho*logically possible. Likewise, physical law would stand revealed as the important but *partial* underpinning of social law that it is. Consider: what is "property" when whole tracts for new settlement can be fabricated algorithmically and buried in the eye of a firefly? What is "liberty" when constraint upon movement and access to people's consciousness is governed by neither architecture nor nature, i.e. by neither gates nor walls nor the fading effects of time and distance, but by private law: permissions, encryptions, and inabilities appearing to us as inexplicable lacunae in the data, as silences, circular logics, puzzles, and endless loops? This is defeat by cognitive exhaustion, liberty lost as Kafka prefigured it and only to be re-won, according to Gibson, by the artist/hacker/netrider, keystroke by keystroke.

But is this the only way? It seems to me that in both *Sacrifice* and *The Imperial Message,* Cirincione, D'Amato, and Ferraro of Softworlds explore the critical question of the cognitive and emotional shape of a digital reality. As they have found, when the terrain is swept clean and the air is electrons only, archetypes emerge to fill the vacuum. The power of institutions remains compelling in defining the relation of individual to law as transcribed into space and action, even when inverted. The question as a whole is "critical" because as today's cyberspaces--the space of the telephone, email, MUDs, video-conferences,

interactive TV and on-line data services--coalesce with today's arcade- and museum-grade virtual worlds, logics will emerge that are informed by the reality coded into our bodies: the topo-logic, that is, of four million years of natural evolution as well as the mytho-logic of one hundred thousand years of human cultural evolution, layered upon the topo-logic and constrained by it.

In *Cyberspace: First Steps,* I propose a number of Principles--I hesitated to call them Laws--that might guide the design of cyberspace and virtual worlds, both. These Principles attempt to circumscribe the basis for, rather than describe the details of, cyberspace's "nature," as cyberspace, in turn, manifests human, and evolved, nature. They make, I think, the sort of "good sense" which artists are drawn to test, but defy rendition into easy political critiques.

For example, The Principle of Universal Up states that there needs to be agreement as to which way is "up" in a (multi-user) virtual world, this for two reasons: first that gravitation, though it does not strictly speaking exist in cyberspace, continues to exist in our perceptual apparatus and our expectations of the form of things: any horizontal division of the visual field is a horizon, the earth is *below* the sky, things poised on their points or corners topple, and so on. Second, it is likely that *text* will appear in these worlds: signs, banners, documents. Text is orientation-sensitive for its legibility, and so, for that matter, are facial expressions and many if not most body gestures. Creators of cyberspaces have control over the direction of virtual gravity, and there are interactions to be considered between this direction and the direction of real gravity (after all, the traveller's body is still here, in a chair) especially when major virtual body movement is involved such as flight, shrinkage, rotation, and braking. Indeed, the larger problem of motion sickness, which is the conflict between optical and inner-ear motion-information to the brain, might never fully be solved.

Here are some of the other Principles. The Principle of Indifference, which we have already touched upon, states that "...the felt realness of any world depends on the degree of its indifference to the presence of a particular 'user' and on its resistance to his/her desire." What is real rather than imaginary always pushes back. Reality always displays a measure of intractability and intransigence. One might even say that "reality" *is* that which displays intractability and intransigence relative to one's personal will. It lies at the intersection of multiple perceptions. This is why what is unreal can rarely generate consensus. The Principle of Indifference also implies strongly that, in a world we take to be real, life goes on in one's absence.

The Principle of Scale states that the maximum velocity of our motion through cyberspace is, and should be, indexed to the (computational) complexity of the world visible around us, including the world that exists behind our back. This introduces a sort of informational inertia or force field which proportions the phenomenological size of a thing with the amount of information it displays. It happens also to conform to certain computational parameters at the level of hardware.

The Principle of Transit states that "...travel between two points in cyberspace should occur phenomenally through all intervening points, no matter how fast (save with infinite speed), and should incur costs to the traveller proportional to some measure of the distance." The idea here is not to succumb entirely to the technology's inherent ability to transport us between remote points in cyberspace instantaneously. For taken to its logical conclusion and finest grain, if we can have instant and motionless "transportation" between any two locations, then we have no space at all. Space--real space or cyberspace--depends on continuity and contiguity in the range of self-movement, and this registering logically with what we can see as possibilities for further movement. Without it, cyberspace becomes, at best, a slide show or video-clip organizer. Moreover, if one is not anywhere when one is "in transport" then opportunities for serendipitous experience are truncated. We become like moles, popping up here and there, and out of sight in between. This question of out-of-sightness brings us to the next Principle, the Principle of Personal Visibility.

The Principle of Personal Visibility is a perfect example of the sort of mixture between two realms of Law, the physical and the social, which the design of virtual worlds and cyberspace forces us to entertain. It states (i) that at all times (when logged in) individual users in/of cyberspace should be *visible,* in some perhaps minimal but never trivial form, to all other users in the vicinity, and (ii) that individual users may choose for their own reasons whether or not, and to what extent, to see/display any or all of the other users in the vicinity. Notice the asymmetry: you may make others invisible to you, but you may not make yourself invisible to others.

Now the first provision of the Principle of Personal Visibility seeks to prohibit individuals from "cloaking" themselves completely in cyberspace. Given the undeniable pleasures--not to say advantages--in real life of seeing but not being seen, of becoming the proverbial "fly on the wall," one wonders why this Principle should carry any weight. Why should the attractions of voyeurism not be allowed to take their "natural" course? (It is estimated, for example, that

fully 90% of the "participants" in Internet newsgroups and BBSs are "lurkers:" anonymous, invisible, and untrackable readers-only.) I offer two reasons.

The first is essentially political. In any social system founded on contracts and trust, what comes with freedom is *responsibility;* and if cyberspace is the "electronic frontier," the site of new freedoms, then it is also, properly and democratically, the site of new responsibilities. Responsibility depends on accountability, and accountability in turn depends on countability, on the obligation, that is, to "stand up and be counted," to be there *to* others if not *for* others. "Hit and run" is what we call action without responsibility. Spying is what we call coming to know without being known to know. A peeping Tom is what we call a person who transgresses our privacy privately. In the physical world, all these actions and modes of presence/non-presence are possible, of course, but difficult. For in the real world we must take our light-reflecting, space-occupying, easily-identifiable and massy bodies with us. In virtual worlds however, where our visibility is entirely digitally constituted, these transgressions are easy.

The second reason is less ethically loaded. The presence, number, and spatial disposition of other people in a certain place--not to mention their detailed personal characteristics or actions--constitute important information in their own right. We learn from the collective actions of others what is good to do, where it is good to be, when it is good to go. We may follow the crowd; we may not. But a world populated only by lurkers would be as empty as a ghost town, like a neutron-bombed Vegas with lights blazing and no visitors...but worse: the night air would have eyes. It flatters architects to imagine how important their structures are *per se*. But to everyone else, *people* matter more: their presence and movement, their appearance and voices. A virtual world consisting of living representations of real people and with a bare minimum of architecture would fare better than a virtual world in which the reverse was the case.

Turning to the second provision of The Principle Personal Visibility shows us the other side of the coin. It says that we ought to be able to screen out, turn off, the sight and sound of others to ourselves. Why? Because we may wish to be alone, to feel alone. A shopping trip, in the real world as in cyberspace, may or may not be enhanced by the experience of the crowds shopping with you. The ability to render others invisible to oneself is an important one, simulating electronically what we do when we close our eyes, draw the curtains, or turn off the phone. But it has political consequences too, ones that we ought to consider. In the real world, people with just and unjust causes can place

themselves in public spaces so as to be seen and heard whether we want to or not. They cannot be "screened out," by law. If cyberspace is to have any purely public domains, then, provision (ii) of The Principle of Personal Visibility must be suspended there. And by law.

The subsidized exploration of virtual world and cyberspace technologies by artists--notably at the Banff Center and in the present Softworlds residency at the Wexner Center--marks the beginning of a new phase in the maturation of the Information Age. I say "subsidized," of course, because this is a mode of artistic production that dwarfs most others in terms of the cost of the technology required. No matter how much faster computers become relative to their price, they will not be fast enough to outrun the artistic imagination. Nor will artists be able to afford them. Without the university and public support of artists and architects designing virtual worlds, and without their involvement in the development of cyberspace generally, we shall have what Gibson warned us of: a consciousness-degrading torrent of choiceless choice, kitsch, and commercialism the likes of which has not yet been seen this side of doing acid on Route 10 out of Phoenix. Main-lining TV, Gibson called it. Cyberspace is a public good. Vice President Gore's abandonment of the national "information superhighway" to private development by media conglomerates should give us little hope of realizing a digital world any lovelier than the mall, or Home Shopping Channel, any time soon. •