Philip Evans

A Silicon Silicon Valley?
Virtual Innovation and Virtual Geography

Innovations Case Discussion: Second Life

Virtual worlds represent the "collapse" of geography, as Cory Ondrejka asserts. They are also its vindication.

In the large, as with other Internet platforms, virtual worlds bring together people who in reality are dispersed across the globe. And within the virtual world people fly or teleport with an ease of which the patrons of real-world red-eyed air transportation can only dream (if they can sleep at all). This amounts to the "death of distance" among both real-world participants and also among their alter-ego avatars.

But in the small, it is precisely geography, or "spatiality" as we might call it, that makes virtual worlds interesting relative to other Internet platforms. I can strike up a conversation with the person at the virtual water cooler, bump into a stranger and ask directions, guess at someone's personality from their appearance, ask someone lingering hesitantly by the dance floor to tango, recognize an acquaintance on the street, look someone in the eye and gain their confidence, or conspicuously cross the road to avoid them. All of these nuanced communications require space, adjacency, direction, the physicality of bodily position. The real world is by far our best platform for this kind of emotional broadband. Indeed we value it so much, that we pay the price of long-distance travel to indulge in the richness of short-distance physical co-location. The unique potential of virtual worlds lies in their promise of the latter without the former: the benefits of spatial proximity without the costs of spatial distance. That is what makes them interesting.

Interesting—to borrow Richard Bartle's famous taxonomy—for "hearts", "clubs" "diamonds" and "spades": people respectively seeking friendship, a fight, a world to explore or opportunities to make stuff.[1] But interesting as a platform for real-world innovation?

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GEOGRAPHY AND INNOVATION

Geography in the real world is both a driver and an inhibitor of innovation. Biologists attribute the evolutionary deviations of some species to the divisive effect of natural barriers, and they attribute the often superior fitness of species evolving in large, flat land masses to their greater opportunity for genetic intermixture. Some major biological discontinuities occurred precisely when previously separated populations were conjoined.[2] Similarly the variegated innovativeness of Italian renaissance city-states has been attributed not only to their maritime commerce, but to their mutual separation by a mountainous interior. The innovative advantage of Silicon Valley has been attributed to the depth and scale of the local meme pool as defined by fluid labour and capital markets.[3] And Ronald Burt has shown that "brokers", who span otherwise unconnected groups (perhaps, but not necessarily, separated by geography) are more likely to be innovators.[4] So physical separation, dense co-location and connection across divides can all, in their different ways, spur innovation. The focus of so much economic development strategy on geographical "clusters" is testimony to the intimate, perceived connection between geography and innovation.[5]

Is *Second Life* or any other virtual world therefore a cluster, or (even better) a cluster of clusters? Is it really a densely-populated geography where some of the characteristics of physical space are replicated with sufficient fidelity to enable interesting innovation? Is it a silicon Silicon Valley?

The simplest validation would be a compelling list of innovations *for the real world* that originated in the virtual. Stories such as that of Tringo, a video game for avatars (please ponder this concept before proceeding). Tringo is a cross between Tetris and Bingo, developed and test-marketed within *Second Life* by "Kermitt Quirk". Kermitt licensed the code (for about $50 US) to operators of virtual nightclubs and other magnet locations, enabling them to open Tringo parlours. It very quickly became a craze: so successful that Tringo transactions at one point accounted for about one quarter of the *Second Life* economy. Capitalizing on that

in-world success, Nathan Keir, Kermitt's unaltered-ego, licensed Tringo's real-world rights to Crave Entertainment for deployment on other platforms. Tringo is now available as a casual game on the Game Boy, XBox and a number of cell phones.

This is a great story, and impossible without many of the innovation preconditions that Ondrejka describes: the generic *Second Life* scripting language that enables complex artifacts to be built from simpler modular components, the zero-cost of deploying videogame consoles when those consoles are themselves virtual, a dense, fashion-conscious, fluid community where word-of-mouth flows at the speed-of-light, and a property rights regime which gave both Quirk the ability and incentive to franchise within *Second Life* and Keir the ability and incentive to license the game to a real-world distributor. Tringo is thus an innovative product, developed in the virtual world and exported to the real. Remarkable. But let's be honest: what is remarkable is *how* it was developed, not that a video game that cross-breeds two pre-existing games is in itself a particularly important real-world innovation. As Dr. Johnson famously remarked about a dog walking on his hind legs "It is not done well, but you are surprised to find it done at all."

This example could be dismissed as a straw man were it not that so far there are very few other examples of innovations exported from the virtual world to the real. Some virtual dress designs have been made up in real garment factories. Machinima—movies, filmed within Virtual Worlds—are popular on You Tube and some are quite creative. But the number of specific and implemented real-world innovations originating in a virtual world is small. Of course *Second Life* is replete with innovative products, services, communities, collaboration patterns, and business models. But as long as they these innovations reside solely *within* the virtual world, then how does that persuade a skeptic unconvinced that virtual worlds matter except as entertainment? Such innovations would matter to someone immersed in such a world, and obviously to the platform operator and its competitors, but not really to anybody else. Perhaps football is an extraordinary platform for the development of innovative tactics, but if nothing is exportable to other domains, why would anybody other than the players and fans care?

More generally, the literature on virtual worlds has focused largely on the remarkable and counterintuitive way that they replicate real-world institutions (most notably an economy), and on the low-cost of innovation within such worlds. While surely necessary, neither point is sufficient to make the case for virtual worlds as a platform for *real-world* innovation. Evidence that the Petri dish nurtures exotic flora is not proof that it will yield us penicillin.

What we really have is an hypothesis: the hope and expectation that because some preconditions known to be important for innovation in the real world can also be satisfied in the virtual, innovations will flourish there that are of value in the real. And there is an extraordinary amount of experimentation going on to test that hypothesis. It is not a criticism of Ondrejka's argument to point out that the bottom-line results are simply not yet in.

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COMMONALITIES: VIRTUAL WORLDS AS ANOTHER INTERNET PLATFORM

All Internet platforms "collapse geography" in the large: people from across the world transact and collaborate via email, wikis, chatrooms, listservs, blog posts, eBay, Craigslist, InnoCentive, and so forth. These platforms, including virtual worlds, enable innovation for a number of obvious reasons:

- Beyond possession of a computer and a network connection, there are in general negligible barriers to participation.
- Communication occurs at essentially zero incremental cost.
- Very large communities can form, enabling people with varied and complementary skills, interests, or ideas to find each other. Just as division of labour deepens with the size of the market, so do affiliation, collaboration and transaction around unusual commonalities.
- The size of the community is in itself a motivator to contribute: people can economically market to customers in miniscule segments, advertise themselves and their skills, or simply bask in the imagined applause implicit in a large audience.
- Reputation mechanisms (assuming persistence of identity, and at least pseudonymity) create social capital that is both a measure and a partial guarantor of trustworthy behavior. Moreover, since reputation is specific to the community (unlike pairwise reciprocity which is specific to a transaction relationship), trust can be ported from one transaction to another within that community at very low cost. The community can therefore continuously and cheaply "rewire" its transaction pattern.
- The ease-in-use of the underlying code (as embodied in Ward Cunningham's famous question "what is the simplest thing that could possibly work?"[6]) enables many individuals to make casual yet useful contributions.
- The loosely-modular, standards-based architecture of the platform allows such small contributions to be aggregated and concatenated in useful ways. And generally at extraordinarily low cost. Data beget metadata. Simple components need surprisingly little engineering to be formed into more complex systems.
- Property rights are often structured to lower transaction costs and thus maximize the cumulation of contributions. This can be by simple rules assigning property rights clearly (e.g. the courtship rules between Seekers—companies with unsolved problems—and Solvers—individual scientists—in InnoCentive), by "piracy" (e.g. anime music videos[7]), by various forms of commons (such as the GPL governing Linux), or regimes by which "some rights are reserved".

The result can be genuine and dramatic innovation. The Free/Open Source community has produced not only a remarkably robust family of software applications but some genuine innovations such as Freenet (a distributed, anonymous information-storage and retrieval system).[8] In the commercial domain, equally striking

is InnoCentive, a sort-of eBay for scientific problems where on average one-third of the problems posed (problems that major corporations were unable to solve internally) are solved.

These principles can also apply to virtual worlds and, by conscious design, apply to *Second Life*.

DIFFERENCES: UNIQUE CHARACTERISTICS OF VIRTUAL WORLDS AS INNOVATION PLATFORMS

Where virtual words go beyond the other Internet platforms is in their articulation of geography in the small: spatiality. Not as well as the real world of course, not as well as the elaborate, immersive virtual-reality setups of just few year ago, and in some ways (e.g., communication of facial expression) not as well as videoconferencing, but instead with all of the Internet platform advantages enumerated above.

Spatiality permits perhaps eight kinds of behaviour conducive to innovation:

Fun. The simplest point is perhaps the most important. A three dimensional high-resolution environment engages more senses and coheres more than do other media. People get more immersed, they get more emotionally-engaged, they stay involved longer. Fun engenders play, which in turn permits whimsy, and what Ondrejka calls "a culture of experimentation".

Experiential learning. The interactive exploration of complex three-dimensional objects. IBM scientists built a model of a rhodopsin molecule (the retinal chemical that responds to light) within *Second Life,* each chemical bond a virtual meter in length and the molecule the size of a virtual skyscraper. Scientists participating in the project use it to teach the physics and chemistry of vision to classes sitting inside the lattice of its chemical bonds.

Training and simulation. Virtual training and collective learning for groups that need to coordinate spatially. A good example is Play2train, a series of disaster "incidents" staged in virtual space to let first responders swarm to the rescue under conditions of partial chaos and imperfect communication.[9] Not as rich an experience as a real exercise, but orders-of-magnitude cheaper.

Trust building. Body language is a basis for commanding attention and trust. Numerous clinical experiments in the real world have documented how simple behaviours such as an experimenter's eye contact and imitation of the subject's hand gestures or facial expressions enhance the subject's recall and acceptance of what they are told. A broad programme of research conducted by Jeremy Bailenson and his colleagues at Stanford is progressively demonstrating surprising ways in which these results can be replicated among avatars interacting in a virtual space.[10] Spatiality, even in a crude virtual form, enables trust.

Experimenting with personae. The adoption of a "fantasy body" that liberates the individual from constraints that they cannot avoid in the real world. Short people can be tall, men can be women, the ugly can be beautiful, stutterers can speak, the paralyzed can walk. Controlled experiments by Yee and Bailenson have documented the "Proteus effect": how people's behaviour in virtual space is measurably

affected by their virtual appearance.[11] While much of this translates merely into innovative sexual activity, it also frees people from physical limitations and the prison of low expectations that in the real world might inhibit them from being confident, gregarious, risk-taking, leaders.

Chance interactions. The author's personal experience in participating in Boston Consulting Group virtual meetings in *Second Life* is that—like the real world but unlike (video)conference calls or chat rooms—they legitimate side conversations, particularly conversations induced by close proximity. Meetings thus support multiple connection patterns and multiple agendas, like the real world, but unlike the monolithic, hub-and-spoke, and therefore linear progress of events held on other remote collaboration platforms.

Low cost of "artifactual" entrepreneurship. Because the cost of replication is zero, it is inherent in virtual worlds that "physical" goods be many orders-of-magnitude cheaper than they are in the real world. (Intellectual goods and services may be cheaper also, but that would be true on many Internet platforms. The cost advantage in producing "physical" goods is unique to virtual worlds.) A real car requires design and steel; a virtual car only requires design. Manufacture *is* CAD/CAM. Therefore the cost and risks (and rewards) of launching a virtual business building or making things, are similarly orders-of-magnitude lower. This lets people learn entrepreneurial skills at low personal risk, permits wild experimentation that no real-world VC would fund, and enables corporations to conduct virtual experiments prior to real-world test marketing. How valuable all this is depends on how close is the virtual entrepreneurship to some real-world equivalent. Nike may well learn about sneaker fashions by looking at what avatars currently wear or by test marketing virtual versions of new designs. Starwood built a stunningly detailed version of their Aloft Hotel concept inside *Second Life*, partially as cute PR, but also as a product test. But what value is the feedback on a virtual hotel when it comes from avatars who by definition *never sleep*?

Experiments in social physics. The physical laws of a virtual word, and many of the institutional laws (such as property rights, privacy, rules of identity, political rights, etc.) are an artifact of the platform and therefore changeable at will. Just as there are now regions inside *Second Life* where sound waves carry and others where they do not, so social laws could be varied at will by the game masters. Does the stronger "protection" of intellectual property increase or decrease the rate of investment in new ideas? In a virtual world it would be possible to find out *empirically* by simply changing the rules of the game in some regions and seeing what happens. I am not aware that this has yet been tried, but the possibility of experimenting with basic legal parameters is intriguing. Some of this applies to the Internet at-large of course (c.f. the different licensing regimes governing various open-source projects), but the comprehensive and immersive quality of a virtual world makes it exceptionally rich as a platform for cheap social experimentation.

These are largely-unique qualities of virtual worlds. In some cases they underwrite interesting innovations *within* the virtual world. They have the potential to be springboards for innovation *beyond* virtual worlds. But not yet. We have not

learned anything new about rhodopsin. We have not, to my knowledge, designed a better real-world car or hotel. Virtual spaces have not significantly substituted for corporate meeting rooms or conference calls, even among most who have tried them. We have not learned the optimal life of a real-world patent.

But this platform is only a few year old, and we *could*. By collapsing geography in the large, yet reaffirming it in the small, virtual worlds could become a platform for innovation as important to our century as was the opening of trade routes to sixteenth-century Europe. They also might not. But given the radically low cost of experimentation and the evident potential, *why not try?* So long as we don't confuse hypothesis with established fact, we might even learn something.

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1. See Richard Bartle, "Hearts, Clubs, Diamonds, Spades: Players Who Suit MUDs," available at <http://www.brandeis.edu/pubs/jove/HTML/v1/bartle.html>.
2. For a readable and provocative discussion of the influence of geography on both biological and social evolution see Jared Diamond (2005), *Guns, Germs and Steel: The Fates of Human Societies* New York: Norton.
3. See AnnaLee Saxenian (1996), *Regional Advantage: Culture and Competition in Silicon Valley and Route 128,* Boston MA: Harvard University Press.
4. See Ronald S. Burt (2005), *Brokerage and Closure: An Introduction to Social Capital.* Oxford UK: Oxford University Press.
5. See Michael E. Porter (1998), *The Competitive Advantage of Nations,* Free Press.
6. See the interview with Ward Cunningham, creator of the wiki software at <http://www.artima.com/intv/simplest.html>.
7. On AMVs see the article by Laurence Lessig <http://www.ft.com/cms/s/d55dfe52-77d2-11da-9670-0000779e2340.html>.
8. See <http://freenetproject.org/>.
9. See <http://irhbt.typepad.com/play2train/>
10. See <http://vhil.stanford.edu/pubs/>.
11. See Yee, N. & Bailenson, J.N. (2007, in press). "The Proteus Effect: Self Transformations in Virtual Reality." *Human Communication Research*, 33, 271-290. Available online at <http://vhil.stanford.edu/pubs/>. One interesting finding is that the Proteus Effect is detectable even when variations in an avatar's appearance are visible only to the owner of that avatar. It is self-image, independent of image as reflected in the reactions of others, that can be transformed in a virtual environment.