Dig the Dirt

Hashing Over Hygiene In the Artifice of the Real

John Leslie King
University of Michigan

> *"Let's put some dirt into virtual reality..."*
> Laurie Anderson

It seems kind of strange that eating parasitic worms causes a cure rather than a disease. Yet, this fact is no stranger than many other man-bites-dog stories about "real life" in contemporary times.[1] Such stories arise at moments of changing equilibria in the processes of the social construction of reality. They are especially evident during periods of intense dialectic in which long held theses are being upended by powerful antitheses, and the glimmer of an eventual synthesis is still occluded by ignorance and confusion about what is at stake. The emergent dialectic among the "real" and the "virtual" provides a particularly interesting opportunity to explore the mechanisms of such dialectics. The opening quote from Laurie Anderson is a device to explicate the tension between the real and the virtual, and the mechanics of reconciliation by which a new equilibrium might be forged.

In this story the patently "unreal" notion of virtuality makes a rhetorical play for the status of "real." This fundamentally deconstructive act reverses the established hierarchy of opposition among the terms, revealing both to be children of a more generic parent. The initial hierarchy of opposition casts the real in a superior position to the unreal, in a manner similar to other constructs such as truth/fiction, fact/opinion, informed/ignorant. Reversal is necessary for the unreal—in this case, the virtual—to establish claims of attention by which the unreal is not judged merely in inferior contrast to the real but as an essential part of the very notion of the real. Without this, the virtual cannot establish its own reality. The initial attempt at this

---

[1]Ingesting the helminth *Trichuris suis* (pig whipworm) has been proved an effective therapy for the auto-immune disorder Crohn's disease. A. Reddyand B. Fried, The Use of *Trichuris Suis* and Other Helminth Therapies to Treat Crohn's Disease, *Parasitology Research* 100, No. 5, April, 2007, 921-927.

reversal has already occurred in contemporary discourse, stabilizing the position of the virtual as "like unto" the real. This shifted the comparison from difference in kind (real and unreal as mutually exclusive) to difference in degree (real and unreal as related but distanced from one another). Virtual depictions of the real could then be discussed as relatively closer to or farther away from the real, rather than simply as "not real."

A good example of this shift is found in growing awareness of the role that cognition plays in shaping sensory inputs into a synthesis an individual can think of as representative of the real world. Cognition turns out to be trickier than first assumed, as seen in the discovery that viewer perception of audio *and* image quality rise as a function of improved audio quality without change in image quality.[2] Selective manipulation of sensory inputs makes possible cognitive "immersion," in which experience of representations in cinema, video or other multimedia draw ever closer to the experience of the real. When degree replaces kind, the rhetorical discussion shifts from whether to when and the virtual and the real are, in principle, one. This process is well underway, as seen colloquial acceptance of the oxymoronic signifier "virtual reality."

"Virtual reality" is on the verge of becoming both linguistically and experientially tractable, such that people think of virtual reality as a particular kind of reality, and not merely as an approximation. This happens through convergence on a notion of "real" that encompasses not only what people prefer in an idealized sense, but also what they mean when they say that something is "too real." In the context of Laurie Andersen's comment about getting the dirt into virtual reality it is clear she was aiming at the question of how to make virtual reality more realistic. This provides a hint about the transcendent notion of reality that subsumes both "normal" reality and "virtual" reality. The transcendence is accomplished by abandoning a static notion of what is real—what might be described as "*the* real"—and assuming instead multiple plausible realities, any number of which might be seen as real in any given moment. This has two advantages. It accommodates the well-established philosophical and psychological insight that point-of-view can influence perceptions of reality dramatically, such that different individuals looking at the same set of facts see very different realities (for example, the Rashomon effect). It also accounts for why different and sometimes contradictory things are seen as real at different times, even by the same people.

A useful mechanism for explicating this while staying on topic with dirt is to examine the changing reality in relationships among human disease and the immediate environment of the household. A good entry point to this is the work of Ruth Schwartz Cowan in her study of the complex role of household appliances in what she called the "consumption junction," where technological diffusion meets social reorganization.[3] The consumption junction often contains a subtle and viscous

---

[2] W.R. Neuman, A.N. Crigler, and V.M. Bove, Television Sound and Viewer Perceptions, *Proceedings of the Joint IEEE/Audio Engineering Society Meetings,* Detroit MI, Feb. 1-2, 1991.

[3] R.S. Cowan, The Consumption Junction: A Proposal for Research Strategies in the Sociology of Technology, in: *The Social Construction of Technological Systems*, edited by W.E. Bijker, T.P. Hughes, and T. Pinch (MIT Press, 1987) pp. 261-280.

circle in which technologies such as vacuum cleaners used to clean households were touted as labor-saving devices for housekeepers while, at the same time, they were part of a larger social mobilization to raise the expectations regarding the cleanliness of homes.[4] The reality of labor-saving technology enabled an extraordinary level of household cleanliness with far less labor, but the expectation of how clean a household should be accelerated even faster than the rise in cleanliness. The result was actually more work for the homemaker than had previously been the case. Households were simultaneously cleaner and insufficiently clean.

There is nothing inherently contradictory in these two facts: they are both part of a larger ecological mix evolving in the US, the UK, and other industrializing countries between the 1840s and 1930s as various hygiene movements swept middle and upper class society starting in the 1840s.[5] The household hygiene movement coincided with replacement of earlier "humoral" theories of disease with the germ theory of disease through the work of early 19th Century scientists such as Agostino Bassi, John Snow Joseph Lister, Louis Pasteur and Robert Koch. Throughout the mid to late 19th Century these scientific discoveries were incorporated into a wide variety of hygienic improvement schemes, some involving civic infrastructure (for example, the separation of sanitary sewers from water supplies) and others involving residential infrastructure (the invention and deployment of the recently developed sanitary flush toilet). Of special importance was the dissemination of hygienic practice as a necessary innovation among those responsible for "keeping house," namely married women and other female servants and caretakers who had charge of food preparation and childcare. By the late 19th Century there was an explosion in printed literature aimed at women either directly or through educational programs in which women participated.[6] Combined with instruction on other housekeeping activities, this became the core of "domestic science" and "home economy" programs that were incorporated into the growing Land Grant college movement, and that formed the first collegiate curricula aimed directly at women.

The central notion of household hygiene was simple: disease is caused by germs and germs live in dirt—human and animal waste, putrefying food, and even simple soil. Getting rid of dirt would reduce disease. At the beginning of the 19th Century dirt was an unavoidable part of everyday life: many dwellings had dirt floors, and the expression "spring cleaning" meant "annual cleaning." By the late 19th Century the

---

[4] R.S. Cowan, *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave* (Basic Books, New York, 1983).

[5] Household hygiene was only one of many such movements: others adjectives prefixed to the noun hygiene include industrial, dental, social, racial, mental, child, and female. Some intersect with household hygiene, while others go very far afield.

[6] The following provide a glimpse of this: R.T. Trall, *The Mother's Hygienic Hand-book: For the Normal Development and Training of Women and Children, and the Treatment of their Diseases with Hygienic Agencies* (S. R. Wells, New York, 1875); C.B. Allen and M.A. Allen, *The Man Wonderful in the House Beautiful: An Allegory Teaching the Principles of Physiology and Hygiene, and the Effects of Stimulants and Narcotics:* for home reading: also adapted as a reader for high schools and as a text-book for grammar, intermediate, and district schools (Fowler & Wells Co, New York, 1887); E.S. Reynolds, *Primer of Hygiene* (Macmillan, London, 1894); A.T. Schofield, *The Home Life in Order; or, Personal and Domestic Hygiene* (Hodder and Stoughton, London, 1906).

ideal of a disease-free home could be pursued through constant cleaning in the effort to maintain a dirt-free home. Improved construction standards as well as improving standards of living made better dwellings affordable. The second industrial revolution brought new mechanical and chemical technologies for cleaning. Education and other mechanisms of socialization created an expectation of household cleanliness that was simply expected at the upper end of social strata, and enforced by social workers, child welfare advocates, public health officials, and similar authorities at the lower end. In the span of a few generations, "reality" for most families shifted from *life-with-dirt* to *life-without-dirt*. The corollary decline in infectious diseases reinforced the presumed rightness of this change, and further established the sense that progress entailed driving out dirt. By the mid 20th Century dirt was being driven out generally, not merely from households and public facilities, but from routine life broadly through anti-litter campaigns. In an odd twist on Herbert Simon's distinction between the "natural" and the "artificial", nature became "dirty" and artificial became "clean".

It was into this strange dichotomy that virtual reality was born. The faint glimpse of what might happen at the intersection of digital computers and human experience took life at the Fall Joint Computer Conference in 1968 when Doug Englebart first demonstrated the computer mouse and other devices that allowed a human to interact with a computer.[7] This was a mere six years after Rachel Carson launched what became the environmental movement through her publication of *Silent Spring,* and just two years before the first Earth Day in 1970.[8] Works in praise of pastoralism, such as Thoreau's *Walden,* were resurrected, and public consciousness began to accept the idea that all of life is tied together by a complicated natural ecology. In the process, dirt was slowly rehabilitated by the recognition that even lowly soil was teeming with micro-organic life essential to the survival of plants and animals, including humans. The reality of germs-are-bad was slowly displaced by a new reality in which germs might be good or bad, depending on the context. This displacement required improved understanding of context, often alluded to as "environment" or "milieu." This new perspective enabled, for the first time, the idea that a household could be *too* clean.

Perhaps the most macabre development in this line of argument was the emergence of the so-called hygiene hypothesis, which explained the rise in incidence of allergic and other autoimmune disorders on insufficient exposure of individuals to routine pathogens as children.[9] That is, people got sick because their households were too clean. The mechanics of this hypothesis fit the ecological model through

---

[7] C. Engelbart, and W.K. English, *AFIPS Conference Proceedings of the 1968 Fall Joint Computer Conference*, San Francisco, CA, December 1968, Vol. 33, pp. 395-410.

[8] R. Carson, *Silent Spring,* serialized in *New Yorker,* June 16, 23 and 30, 1962, published in hardback by Houghton Mifflin, 1962.

[9] See D.P. Strachan, Hay Fever, Hygiene, and Household Size, *British Medical Journal,* 299: 1259-1260, 1989; S.T. Weiss, Eat Dirt—the Hygiene Hypothesis and Allergic Diseases [Editorial], *New England Journal of Medicine* 347:930-931, 2002; F. Guarner, R. Bourdet-Sicard, P. Brandtzaeg, H.S. Gill, P. McGuirk, W. van Eden, J. Versalovic, J.V. Weinstock, and G.A. Rook, Mechanisms of Disease: The Hygiene Hypothesis Revisited, *Nature Clinical Practice Gastroenterology and Hepatology* 3: 275-284, 2006.

the use of evolutionary adaptation: the human immune system must be "trained" by exposure to pathogens routinely encountered over the course of human evolution. Without this training, the immune system cannot be calibrated appropriately. Poor calibration causes the immune system to mis-read certain environmental signals and start autoimmune actions that damage normally functioning systems. The hygiene hypothesis has been controversial, yet considerable support for it has come from studies linking the absence of common intestinal parasites to the presence of particular autoimmune disorders. This is the story behind this paper's opening observation about ingesting pig whipworms as a treatment for Chron's disease. This shatters the idea that health is simply the absence of disease, and by extension, the absence of disease pathogens, and enables the idea that health might be some kind of equilibrium that requires the presence of certain pathogens. The oxymoron of the "friendly pathogen" becomes real.

Laurie Anderson's aspiration to put some dirt into virtual reality is superficially a plea to make the virtual a little more like the real by incorporating an essential element of the real—dirt. This has two dimensions worth pondering. One is the fairly modest observation that virtual reality has been stuck, probably inadvertently, in an extension of the hyper-clean ideal into which it was born. Virtual reality pursued cleanliness in the tradition of hygiene, at least in part because the virtual lacks both biological pathogens and the mechanisms by which they might operate—it is in no sense "alive". This was just an inadvertent appropriation of the prevailing expectations for households and public spaces at the time the movement got going. By putting dirt into virtual reality, it might be possible for the virtual to "catch up" with the real—to look or smell or feel a little more real. The more interesting dimension of the issue has to do with the realization that reality itself has long been somewhat unreal in failing to accommodate the importance of dirt. By injecting dirt into virtual reality it is possible to inject dirt into reality itself. In a remarkable way, virtual reality holds the potential to be more real than reality itself through incorporating alternative past and future realities that actually did or will obtain in the world.

The virtual and the real converge when the idea of static reality is suspended in favor of a more flexible and dynamic idea of reality itself as virtual. In this sense, what we call reality is an approximation of a large number of different realities as seen and experienced by myriad participants—a statistical characterization of conditions and attributes that describe putative things as opposed to what Kant described as the *ding an sich*, the "thing in itself". By suspending the sense of reality as altogether concrete, and incorporating abstraction as a central part of reality at any given moment, the virtual is given the opportunity to participate in the real. This has the effect of making the virtual concrete as well as abstract, and in symmetry, making the real abstract as well as concrete. Under this conception, the difference between the virtual and the real stops being a difference in kind and becomes solely a difference in degree. As technology and facility improve the virtual, the real itself is reshaped and the distance between the virtual and the real decreases. The question of whether the two will converge disappears, and only the question of when remains.