

Spatial Discursions: Flames Of The Digital And Ashes Of The Real

Confessions Of A San Francisco Programmer

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The Genealogy Of Dead Space

Distance is dead. The world has ceased to align itself on spatial gradients, lost its topological reference and become discrete, gridded, encoded, enmeshed in webs of tangled hierarchies and productized data, in access control structures and security plans and deployments, distribution logics and fluctuating lines of control and specificity all subject to variant rates of diffusion across embedded media topologies and the multiplicitous parameterizations of wealth, class, color, identity, ideology and style.

But frankly, this is not very clear.

Let us be precise, move slowly: distance can be understood both physically (in the most literal sense) and conceptually (as that which renders access a function of time). On a plane the two are identical: something twice as far away (physically) takes twice as long to get to. But imagine this plane was crossed by a mountain range, or anything time-consuming to traverse. Physically a distance spanning this feature, while identical to another, would be conceptually greater. To represent this we can construct a conceptual plane which is linked to the physical plane by a transformation: in this case stretching the mountainous region, injecting more conceptual space into it to account for the difficulty of traversing it in physical space.

We can imagine other transformations that would account for other physical features. For example, replacing the mountain range with a road would require not merely inverting the transformation into a lateral shrinking but also applying a longitudinal contraction (since one would choose to travel along the road, which one wouldn't do with the mountain range). Anything nonsymmetrical (a river, for example, which aids travel in one direction) would require introducing a new dimension into the conceptual plane, with distances measured along it expanded or contracted according to which way one was travelling (an unfortunate but noncritical complication we will henceforth ignore).

What is clear is that any physical geography could be mapped onto a (perhaps dimensionally elevated) conceptual plane by a set of superimposed transformations. It is obvious also that further transformations could be applied to this terrain, either by modifying it directly (building roads, leveling mountains) or by a technological adaptation (making snowshoes, constructing maps) providing increased access to some portion of it. We can divide these transformations loosely into area, linear, and point types.

An area transformation expands or contracts an entire area. When made by humans it corresponds to either a drastic alteration in the terrain (leveling forests, draining swamps) or to an ability or technology developed upon man himself (riding horses, surviving in the desert). As the latter it is the most primitive type of transformation man applies to space.

Linear transformations correspond to the construction of pathways, roads, canals and the like. They are more sophisticated than primitive area transformations, requiring the ability to modify the terrain and thus providing a potentially greater deformation, but are more limited in scope. Point transformations occur when two points (but not the areas around them) are brought close together. They correspond to an engineering technology that transcends the plane, punching holes in it (airplanes, tunnels, bridges), and are the most focused (and hence powerful but restricting) of forms.

Of course an area extended becomes a line which attenuates into points, and points in sequence form lines which, gridded, cover an area; this is less a distinct typology than a delineation of idealized points along a spectrum that runs from low amplitude, low specificity, low investment (area) transformations to high amplitude, highly specific (point) transformations which require massive prior investments of energy to realize. Driving, for example, is sometimes area (in suburbs and cities) and sometimes linear (highways). Trains exist somewhere between linear and point.

The most efficient transformation structure on a plane depends on the distribution of places one is concerned with reaching; assuming a certain locality amongst these a reasonably optimal structure will include different levels of the spectrum selected according to the vagaries of history and development, with higher transformations linking dense cores and successively lower ones incorporating surrounding areas. One thus exists within a nested layering of transformations, which layers one ascends to and descends from according to the distance travelled: you walk to your car, drive to the airport, fly, etc., and then reverse the process.

But if conceptual distance is to be understood as we've defined it, as that which renders access a function of time, we must consider that access can be realized in

terms other than physical presence. This is the domain of communication systems. A message dispatched into such a system traverses the conceptual space defined by its underlying transport medium (courier, telephone wires, radio waves) but the transformations that construct this space may be selectively (and nonsymmetrically) permeable to different types of messages: interrogative (those that request information), informative (those that convey information), or imperative (those that effect a change in the recipient). Furthermore the message, as a creature free from physical constraints, has the potential to be multiplied (broadcast, mechanically reproduced) within this space. When the underlying medium is electromagnetic the transformations applied (be they point, linear, or area) are absolute: what they join can henceforth communicate instantaneously. In the case of wireless communications (area transformations, multiplied) the economics of spectrum allocation and the transmission apparatus limit their permeability (in mass media) to nonsymmetrically informative messages: one is the passive recipient of information streams issuing from a few centralized points. Wire-based communications have no such constraints. Their transformations must be inscribed on physical space and thus their development obeys a reverse dynamic from that observed in transportation systems: they are used to connect a few important points first, then branch out, and finally end up networking entire areas together. But it is only with the widespread adoption of computers for the automated storage, replication, and distribution of information that these networks are freed to multiply what they carry (via newsgroups, multicasting, publishing, etc.). And that is when things start getting interesting.

The Illusion Of Community

Cyberspace: a floating term with different images. In the sci-fi imaginary it is a dark plane, an awe-inspiring planet, something mysterious and electrified, a neon density of city lights arrayed against the eternal vastness of space with strange energies and glyphic forms, mutating avatars and data streams in ceaseless flow. But what we commonly apply the word to, the web, is a little more mundane. You type; you connect. Your computer nuzzles into another and sucks off a loving, coded flow. You follow a link, you traverse, you search, you back out again. But what is this, exactly? Clearly it isn't amenable to our spatial understanding. There is neither a physical nor even a conceptual space. There are places but nothing between them, no interspatiality; one navigates a sprawling agglomeration of webbed-together billboards, of insides without exteriors, of islands of hyperdense information adrift on etherealized seas.

It is an article of faith with many technologists that an immersive, virtual reality cyberspace (perhaps in its more humanized/urbanized form, as a "metaverse"¹) will one day dominate our online experience, but this is far from a foregone conclusion.

Nevertheless contrasting these images of cyberspace allows us to critique distance from the perspective of utility (what does it do, what functions does it serve?) and examine the implications and viability of its absence.

So what does it do?

Distance orders. One occupies a point from which some things are closer and some farther away. One can move amongst these but their relationship to each other doesn't change.

Distance makes visible. One can survey a space and determine what it contains (or if it's occluded, what it could potentially contain).

Distance provides neutral zones. The notion of distance implies a space between places where subjects can see each other and participate in unmediated relationships.

The lack of these qualities explains the curious character of the web. In the absence of space brand names become the central ordering principle, the chief structure superimposed on unfettered chaos. Real estate becomes something no longer found but created, carved from the semantic war-zone of the consumer's mind, but to achieve this the denizens of nonspace must embed themselves in traditional media topologies (via advertising) where they can acquire the visibility the web, with all its immediacy, fails to offer.

To the novice user it's all terribly disorienting. S/he wanders the menu options offered by the portal, hops to a few big-name sites s/he's heard of and finally, seizing a search engine, boldly slashes a cross-section through the tangled growth and plunges in. But without being able to ascertain where s/he's been, how much of what s/he's seen, what else is out there or where anyone else is the suspicion soon arises that while s/he's lost in the boonies running in circles, suffering plug-in deficiencies, and battling jack-in-the-box porn windows, somewhere out there the real internet party is seriously going down.

But there's no party because there are no people. The web posits a subject and object but no others. There is no way to detach from its immediate presence, to turn around and see who else is there. Unlike broadcast media it's point-to-point (symmetric interrogative/informative), not point-to-many (nonsymmetric informative), but this is still a communications grid, far from a communal space, and still based around a unicity of interaction with static points. One can interact with others through these points but that mediation comes at a cost: communication that is restricted, formatted, censored, and archived, wrapped in ads and subject to revocation at any time. A radio or television projects an area outside it within which people can experience it.

Passively, to be sure, but as a group. But the websurfer, locked in a feedback loop through the junctions of screen, mouse, and keyboard, interacts alone. But these complaints are nitpicking. Fundamentally distance restricts and limits, it extorts time as the price of all its pleasures, and has no basis in the web's underlying transport medium (where the actual flow of data is orthogonal to one's direction of movement). The web exists to provide access to information, not a community. Visualization and virtual reality technologies will come to it but as means to structure it and render it visible, not livable.

They will not create spaces but present maps and interfaces; one will use them but one won't be inside them, and neither will anyone else. Distances will be arbitrary and space will be vacated, selected and arranged according to whatever queries and filters one puts in place.

Which perhaps addresses some current visions of virtual reality but doesn't really get to the root of things. Cyberspace as originally envisioned in the works of William Gibson² was neither a form of media nor a communal space. It was the operant field of a radical individual empowerment by technologies that, it is true, penetrated and colonized the body but did so only to enhance it, to elevate and transpose its sensorium into an abstract realm of financial and informational flows where all its natural capabilities (instinct, intuition, spatial perception, kinesthesia) could be brought to bear. In the hands of metastasizing corporations technology had laid waste to much of the world, but these same technologies allowed suitably fitted cyborgs to meet them on their own terms, to exist in their world as first-order entities instead of particularized functions, traversing the communication and capital nets of the world with fluid ease. Which may come to pass. But the fundamental premise of this vision, that the layered and interlocking webs of commerce and communications and the vast architectures of the world's data archives all compose a space that can be conceptualized in a paltry three dimensions and through which movement has any significance, seems based on a strange and unlikely corporealization of informational mechanisms which invests them with those properties whose absence is the true revolutionary characteristic of our age.

However, occupied virtual worlds are being created. In computer games and virtual reality chat spaces participants assume avatars and explore medieval realms, extraterrestrial settlements, and assorted other fantasia, therein to quest together, meet, talk, or (most commonly) engage in mutual high-speed repetitive slaughter. Here, at last, space has a role, but only as a surrogate.

It's as if virtuality was eating the real, eating history, eating myth, eating the future and vomiting it all back up again in bubbles of gossamer simulation. One revisits the outmoded paradigms of mechanized warfare, explores manufactured kingdoms, plays

the sports one can't be bothered to in real life and mimes intercourse, but the landscapes these unfold across are not the vanguard of a coming spatialization, they are its zoos and museums. Playgrounds for vestigial senses and obsolescent drives.

Predatory Software Controls

We have touched on the transformation of space in transportation systems and its partial restitution in telecommunications systems; we have not yet investigated functional systems. By functional we mean systems which exchange imperative messages between their parts, where control takes its place alongside communication. The informative messages traversing our communication systems serve imperatively within any number of encompassing functional contexts (social, commercial, financial, etc.), but the role of distance in these latter is unique.

Fundamentally distance restricts and limits, but in a functional system this can serve a positive purpose: it prevents unwanted interactions, it keeps things away. The importance of this is easily overlooked: the efficiencies of proximity are obvious while the structural functions spatial buffers implicitly provide (manageability, isolability, locality of effect, etc.) are more subtle. New transformations perturb these buffers and cause transient stresses while the systems they've touched adjust, but when these transformations conspire to effect a wholesale deconstruction of their underlying space then pathologies arise. Systems become overwhelmed, overloaded by information that used to be naturally filtered out by distance. They become transmissive, vulnerable to sudden traversals by viruses, panics, and epidemics³. They become increasingly exposed to malicious intervention. And they evidence a growing sensitivity to initial conditions, and a penchant for chaotic effects. Thus, twin themes of the near future will be exploiting the advantages of limitless speed while retrofitting systems destabilized by the removal of spatiality with mechanisms that reconstitute its structural effects. But the erasure of space provides another dynamic based on simply this: things that can get at each other compete. The increase of competition can be destructive (leading to overspecialization and homogenization, the red queen effect⁴, the tragedy of the commons⁵, etc.) or beneficial, but either way it accelerates the rate at which systems evolve and thus favors entities and configurations that can rapidly mutate to exploit emerging opportunities.

Computer programming (more precisely, software engineering) provides a clear illustration of where these developments lead. Flexibility and adaptability are crucial goals of any software architecture. Moreover software lives in a world utterly without space or distance. Any piece of code could access any point in the process's memory, accomplish anything; thus, the essence of the art consists in structuring subsystems so as to reduce their potential for unwanted interaction while preserving their flexibility

to rapidly evolve. To achieve this one modularizes systems into component parts, hides their implementations behind clearly specified interfaces and grants access to these according to the principle of least privilege (as little as needed). These principles, extended and elaborated, are at work everywhere today: in the disaggregation of the corporate body into virtual corporations and turnkey service providers⁶, the sweep of standardization across industries, the increasing opacity and automation of all forms of products and services⁷ and the spread of security regimes via authentication and surveillance measures. With distance evaporated control mechanisms crystallize across supersaturated topologies. Firewalls and filters accrete at interfaces. Homeostatic feedback mechanisms spread and merge. Regulatory metasystems coalesce and stabilize competitive matrices. Classification and codification schema multiply and assign everything a place.

In the cultural sphere production and mass-media scale economies approach a toxic level of monotony. Minds sharpened for use as intellectual tools and soaked in easy reproductions of world culture and gratuitously irrelevant university educations revolt in a breaking rash of destructure and fragmentation, a spontaneous precipitation of differentiating subcultures that are vectored in by new transmutations of the corporate form: pure research and marketing concerns that have jettisoned their manufacturing/distribution hulks the better to shape-shift with their rapidly mutating markets.

In the personal sphere new selection criteria are posed. If the industrial age demanded physical (exterior) conformity in pursuit of economies of scale, the information age demands interior conformity in pursuit of economies of interconnection. One is componentized: rendered modular (plug-compatible), cleanly specified and labelled. Not a cog in a machine but a conductor for the flows that will be applied. A nutrient media for the contagions specified. And more. When criminals can strike anonymously, at a distance, then everyone is a suspect. When all markets are fused into one then everyone is a competitor. And when any effect can chaotically ramify and everything hinges on control mechanisms, on links and switches and servos whose very power is the difference in magnitude between cause and effect they enable, then everyone is a potential source of disruption and must be guided, normalized, watched and controlled. But simultaneously these systems feed on proliferation and ceaseless change, and thus a strange dichotomy infuses them, a sort of hardware/software cleavage that realizes a focusing, channelling, synchronization and integration of all energies for the purpose of cycling them at ever higher speeds in spasmodic streams of synchromeshed variation.

And so, even as space implodes, the systems it contains grow larger, wider, more sophisticated, multistructured, becoming partitioned, hydral, complexified, increasingly resistant to any form of attack and capable of absorbing local failures.

And thus the chief sensation of our time is a feeling of integratory fractionation, of falling apart while coming together. We sense that we are nested inside of contractions inside of expansions. We sense our actions moving in different directions in distinctly different spheres.

The End Of Cyberspace

We are concerned, primarily, with the efficacy of the human form. Transportation systems govern how this form moves, communication systems how it senses and functional systems how it acts (and what acts upon it). In the primitive state a natural relationship exists between these: the self is the locus of concentric fields of increasing extension (where you are, what you can affect, what you're aware of) on a single conceptual plane.

Electromagnetic technologies shatter this arrangement. The self remains in place but its presence is released along fluxes and wires that impose transformations so extreme as to be effectively infinite, the space under them not merely shrunk but imploded into points of hyperdense singularity. Within these points space and distance are entirely annihilated. But there is still structure. This is the regime of the switch and the signal, of information, that most curious of substances that has no intrinsic properties and serves only to parameterize and configure the behavior of the system within which it operates. This is the essential difference between the real world and the informational. Information has no significance apart from the machine that chooses to interpret it. The effects it causes are neither necessary nor subject to any limitations. In fact it has no relationship with them at all except to select them from an array of offered choices. And it is this complicitous yet disjunctive relation between cause and effect, this inextricable cycling of interpretation and parameterization, this interpenetration of figure and ground mediated through the instantaneous and frictionless omnipresence of microelectronics that gives the digital world its smooth and radically dissynchronous texture.

It is a world composed purely of mechanism, and subject to a physics irreducible to our own. There is no action, only atomic state changes; no distances, only connection; and the very medium within which this world consists possesses no reality. It is utterly indeterminate until the moment that it is functionally contextualized within (and contextualizes) the complicated, shifting exegesis of codes that inscribe it. The physical world (where conserved substances obey principles of linearity and locality and interact according to immutable laws of quantitative equivalence) remains only in fragments and residues (bandwidth, processor speed, storage capacity), irritants informational systems strive compulsively to displace, excise, reject, and annihilate.

This is the world ours disappears into, our systems sucked into its dark, ineluctable core. Inside they are transformed: reduced to strands of dataflow and component transactions and woven into its networks, inscribed in its circuitry. But this realm has fine mesh filters, selective membranes: it seems we're a little too fleshy to pass through. Instead we accrete around its interfaces, forming as low-grade peripherals around its terminal points for the sole purpose of binding it to the real, meshing it with legacy systems. What is effected is a progressive evacuation of human intelligence from systems centers, a centrifuging of paper, verbiage, relationships and meaning from nexuses that, now dissipated into electronic networks, disappear.

In a bureaucracy we are nodes in networks of circling paper; in a factory we are parts of machines; either way we permeate and control all levels of our environment. But the networks (and factories) are becoming capable of running themselves. We manage and supervise, distill and decant information, provide the fusillades of point mutations we refer to as innovation and supply the support matrices these systems rely on but all these occur on the periphery of centers that are increasingly obscure, where we operate as functions, agents, and avatars for forces increasingly beyond our ken.

Perhaps here we can locate the powerful resonance of the myth of cyberspace. It arose at a point in history when certain trends in technology were becoming apparent but their absorption and deployment for functional purposes was still in its nascence. Biotech, digital communications, personal computers, and portable electronics hinted at a future on a scale (personal) and a scope (global) that had been inconceivable earlier⁸. Video games and sophisticated audiovisual devices foretold new levels of interactivity and immersion. These were personal, intimate technologies: their potential for attaching to and controlling the human form was clear, but at their intersection another premise seemed possible: that they would allow one to plunge through the wormhole and come out on the other side, entering a body virtualized for full participation in the digital realm. This was both a movement away from the body proper (as flesh, meat) and towards an idealization and reconstitution of its functional essence. It hypothesized that once they had achieved a certain density and sophistication, informational mechanisms, from an appropriately abstracted viewpoint, could be subsumed under spatial/physical forms. What is interesting about this is not so much its plausibility as how strongly it resonated with the mass unconscious, and the torrent of psychic energies it unleashed. This image of a virtualized real and a spatialized virtual struck deep in a collective imagination suffering the vitiation of technologized space.

Its promise was to capture the functionalities dissolving into a nebulous stratosphere and throw them back into space, reinscribe them on a terrain that was clear, ordered and visible. It also promised to import the monadic subject (the unity at the center of graded concentricities of access and awareness) into this space, while imbuing the

subject with a new set of digital powers. But most importantly, if this world was a space and the user localized as a subject then the body (the whole sensory, perceptual, and motor apparatus) could be resurrected at their interface. From the dawn of agriculture to the rise of the symbolic analyst class, civilization has progressed by circumscribing, controlling, and finally eliminating (with surplus energies channelled into sports, entertainment, fitness, etc.) the animal functions of the human form. Now, suddenly, there was the image of a reversal: of the human form as technology's apotheosis and integration, the body recontextualized within information networks and charged with all their fantastic powers. A new body would rise, phoenix-like, from the flames of the digital and the ashes of the real.

This body would occupy an environment constructed from dream landscapes of the past. To a world that was mapped, gridded, partitioned and surveilled it offered itself as a frontier, a zone of lawlessness and adventure. To a world glutted with waste products and saturated with media forms it offered the purity and vastness of interstellar space. There was no illusion that it would be free of corruption, collusions of power, or deception, but it framed these with classic noir romanticism. And it promoted itself as an image of transcendence in the best traditions of western idealism, as the spirit's escape from the degraded flesh and a corroded, wicked world.

Despite all this, the myth of cyberspace flared only briefly before vanishing. It understood that technologies were erasing physical space and manufacturing illusory ones, but it misjudged in anticipating a convergence of these trends on the functional plane. While virtual reality was foundering on the incommensurability of organic and digital perception functional systems were draining away, screened by a heady wash of entertainment imagery. Cyberspace depended, ultimately, on extrapolating potentials extracted from indeterminate technological waveforms. As these collapsed, the myth was revealed for what it was: a poignant imaginative lunge that illuminates exactly what will be denied us. A nostalgia for a world that will never come to be.

But this nostalgia is no longer with us. If we remember it at all it seems quaint and far away. The charms of the spatial (of movement, predictability, organization, an integral self) are losing their hold on us, as are our apprehensions of its absence. It seems, after all, that we are oozing through the filters. We are reconfiguring, acclimatizing, and slowly gaining confidence. We are learning to swim in digital seas.

This is an ontological shift of fundamental significance. It marks a vast range of stresses, distortions, disjunctions and transitions across all aspects of the human form. Mentally, it involves converting from a visual to a linguistic modality, from spatial to symbolic orderings, from fixed to fluid viewpoints, and from a centered to a fragmentary model of self. Physically, it involves reconstituting the body not functionally but within the domain of sign systems as a pure symbol, a screen across

which difference can play. Culturally it corresponds to the elevation of differentiation and categorization as central principles. In the realm of knowledge it manifests as a sensitivity to issues of contextualization.

This shift is hardly spontaneous; it spreads differentially through the social body according to the feedback cycling of selection criteria and environmental matrices; yet it is spreading, and it provokes resistance as it does. This is chiefly because it challenges conventional, culturally determined modes of perception and behaviour, but there is a deeper revulsion that senses the nihilism at its core. It is an abandonment of the body, of space, of our whole inborn cognitive skill in location, mapping, movement, visual assessment, and orientation, and with that the ideal of a comprehensible, unified world. But few respond to this; these principles have already long since been repudiated. Chaos has inundated us; what was solid has already washed away.

The Triumph Of Networking

We began by watching space deform under the impact of transportation systems. What was important about this was not our typology of transformations but the fact that, regardless of these transformations, the end result was always a conceptual plane a space on which the subject and objects could be located, and across which they could move. We can consider this the organizing principle of spatiality.

We can oppose this to the organizing principle of networking. Here there is neither location nor movement, but only connection. Our hypothesis is that this principle is superceding the former; that the large-scale systems we compose are progressively migrating to it, and that we are adapting as well. If we have a thesis, it is that this movement of transition and adaptation is the central dynamic of our time.

We chose the term cyberspace to interrogate this movement as proposed originally to examine a moment of atavistic longing for spatiality, and as currently incarnated to establish the ramifications of its absence. We claimed that spatiality serves functions which are absorbed into systems as it deteriorates. And we concluded with the thought that it is more natural as well; and thus, to a certain extent, this transition represents a loss.

But this is a rather wishful coherence to attribute to our wanderings, and these are heavy claims to erect on the flimsy framework we've thrown together. We shall have to regard them as tentative. We examined distance and space from various angles; nothing more.

Notes

- [1.](#) Stephenson, Neal. *Snow Crash*. Bantam 1992.
- [2.](#) Gibson, William. *Burning Chrome*. Arbour House 1986 & *Neuromancer*. Ace 1984.
- [3.](#) Baudrillard, Jean. *The Transparency of Evil*. Trans. James Benedict. Verso 1993.
- [4.](#) Ridley, Matt. *The Red Queen: Sex and the Evolution of Human Nature*. Penguin 1995.
- [5.](#) Hardin, Garrett. *The Tragedy of the Commons*. Science magazine 1968.
<http://dieoff.org/page95.htm>
- [6.](#) Sturgeon, Timothy. *Turnkey Production Networks: A New American Model of Industrial Organization?*. <http://brie.berkeley.edu/~briewww/pubs/wp/wp92a.html> 1997.
- [7.](#) Baudrillard, Jean. *The System of Objects*. Trans. James Benedict. Verso 1996.
- [8.](#) Sterling, Bruce. *Mirrorshades: The Cyberpunk Anthology*. Ace 1988.
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