

From dialup dreams to digital enclosures

by Aidan Cornelius-Bell

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Dear friends,

Bear with me, I swear this is cultural studies.

I've been thinking about how internet topologies shape the nature of communications, and the culture of 'place' in the hyper-online world. This started with me reminiscing about the dialup years, impatiently waiting for awkwardly themed phpBB forums to load, the disconnect mid-download from a phone call, and the internet *being* a place[1]. The early foundations of internet technology arose from a desire to network, specifically to network beyond the intranet (i.e., the office, your house). There were competing modes of connecting, from different cables, standards, and approaches to different protocols and communication stacks (particularly across operating systems: UNIX, MacOS, Windows for Workgroups, Novell, etc.)[2]. But somewhere in these early days standards were achieved™ and computers could talk.

But I don't want to write a history of internet communication protocols and methods. That's been done, and it's really that interesting... except to consider how late-stage capitalism would approach that problem today. Can you imagine the micro-quantifications of connectivity shaped with mandatory advertisement viewing, cost per click, commercialised interconnection, concentration of services onto oligarchic platforms, propaganda and information filtration, god it makes me feel sick just thinking about it. Oh, that's the current internet. But the foundations of *the network is the computer* gave us great freedom of connectivity, even if it was and remains largely bourgeois. Information passage and collectivity fundamentally underpin the computer today - what is a computer without the network in 2025? Can you imagine not having internet access now?[3]

Getting funky, and applying some philosophical concepts to technology I'd like to ask: what assumptions have we made about the internet? Does it really offer universality, human connection, ease and convenience, and what might we be letting go of to allow this? How do our assumptions influence (or otherwise) our thinking about the largest non-organic connection in our lives? And, importantly, what ontological necessities frame our communication modes? See, I told you it was cultural studies[4]!

The modern internet depends on quite a few "layers" of technology. First, we have a physical layer the actual cables, infrastructure, satellites, switches, routers, servers, and storage (and many other bits and pieces). This layer makes some assumptions about place, politics, and physics. In order to have a physical layer, we might say, the ontological space requires:

- Reality to have measurable physical phenomena -for instance transmission of electrical pulses, flashes of light, or radio waves.
- Relatively reliable tools which enable construction and transmission across place and time.
- Reality as non-abstract: photons, electrons, electromagnetic fields, cause and effect.
- Human labour to construct the network: the hardware and the installation of that hardware.

We also have certain epistemological assumptions embedded in this layer. These include:

- Even if none ontological assumptions are "real", we must hold a belief that the above are *somewhat* real which underpins the infrastructure (let's not get nihilistic about it).

- We can know the physical world well enough to engineer mostly reliable transmission of signals.
- Those signals can be measured, noise can be distinguished from data, and errors can be understood and corrected.
- This knowledge foundation is largely quantitative, empirical and replicable.

Jumping up a few steps we have a protocol layer. The protocol layer enables the machines to talk (we're not quite at the level of human interaction, though some talented humans know far too much about this). In 2025 we mostly use Transmission Control Protocol/Internet Protocol (TCP/IP) at this layer[5]. On an ontological front we could assert:

- Communications can be broken down into packets (described and relatively stable units).
- Networks, building on the physical layer above, are about connecting separate entities, these entities remain "separate" but connected.
- Implicit atomisation, the network is made of nodes (mostly computers, etc.) which have boundaries based on the physical.

On the epistemological front, we might say:

- There are "universal" protocols which allow different types of systems to communicate.
- Strong beliefs that there is possibility of unambiguous communication, that standardisation, specification, and protocols can be made and, to an extent, enforced.
- There are methods which can enable us to detect what information is correct and what is corrupted.

At the application layer (not to be confused with apps), we start to see a more human organic nature emerging. This space has more 'tribes' and diverse standards, rather than requiring one agreed approach. For the web (http/https) there are some more interesting ontological concerns:

- Information can be separated from context.
- Information can be transported to different environments.
- Information retains a coherent identity.
- Information has (relatively) stable identifiers.
- Resources (combinations of this information) may have stable identities and identifiers.
- The presentation of resources can be separated from the resource itself (think different web browsers, email clients, etc.).

Epistemologically, then, there is an assertion of certain cultural aspects:

- Hypertext, this page you are reading for instance, is an associative model of knowledge.
- "Understanding" hypertext emerges from relationships. Finding this page, for instance, requires me to either communicate with you in the meat suit world: offering the link, or you use another linking service (i.e., search engine) which brings you here.
- Hierarchies and taxonomies are largely moot – links may receive "preference" based on search algorithms, but these aren't fundamental to how we know in application spaces.
- These relationships, the "world wide web", embeds assumptions about how humans navigate information and what constitutes meaningful connection between ideas.

Cool, so we've given a genealogy of knowledge to the internet. It's so academic that it hurts. But, I think there's some use in trying to understand what conditions our communications. These building blocks, while clearly contestable and very surface level, might help us to understand the socio-cultural construct which sits atop them, similarly to how ontological

and epistemological examinations give us necessary context for positioning theoretical understandings –and the politics therein. And on that note, let's briefly examine the politics of network construction.

The politics of these technological layers is probably more visible when we think about who controls the infrastructure, how access is distributed, and what assumptions about our behaviour are present in these systems. Let's consider the seemingly neutral act of laying undersea fibre optic cables, rather than 'construction projects', we could see decisions about physical routing as geopolitical relationships. Our communication infrastructure reinforces existing knowledge power structures. The quantity, for instance, of optic routes between Australia and the US is much higher than between Australia and Vietnam. Increasingly as corporations fund these constructions, they are not doing so because they are benevolent, rather they are literally reshaping the topology of information flow according to their commercial and political interests.

At the protocol level, the apparent universality of TCP/IP masks its (western) cultural heritage. The packet-switching paradigm assumes that information can be meaningfully decomposed into discrete units and reassembled elsewhere. Intriguingly this is based on enlightenment ideas, fundamentally Eurocentric, an analytical approach to knowledge which has not been fully critiqued in relation to, say, high context ways of understanding information. Moreover, the "robustness" of the internet, its ability to "route around damage", embeds military thinking about decentralisation and resilience, carrying those assumptions about threat and survival into civilian communications decades later.

The application layer is more overtly political, it promises universal access but collides with the reality of platform capitalism. The epistemological shift toward hypertext and associative knowledge, above, has been commodified. Google's PageRank algorithm manufactures hierarchies based on what serves advertising revenue. Google's platform dominance as *the* search engine centres this even further (though threat from ChatGPT as the new information synthesis machine threatens this dominance, even if it is stupid). The democratisation of publishing offered in the early days of the internet to bourgeois folks, through blogs and web publishing tools, enabled new voices, but social media has conversely concentrated unprecedented power in the hands of a few platform owners who frequently amplify and suppress content to feed their priorities.

Each of these layers politics shape the kinds of subjects, agents, or people we are online. The atomised nodes of network topology, in 2025, reinforce neoliberal conceptions of the individual as a discrete, competitive unit seeking optimal connections. What emerges across these strata is a constellation of philosophical commitments that are not made explicit, or really examined. The entire edifice rests on profound faith in reductionism. Quite literally a belief that the irreducible complexity of human communication can actually be decomposed into standardised packets, protocols, and formats without losing what makes it meaningful. This assumption underpins everything from the way TCP/IP breaks messages into fragments to how HTML separates content from presentation. Alongside, a commitment to universalism show us that technical standards can transcend the messiness of cultural difference (ha!), that a protocol designed in California can seamlessly facilitate communication between contexts as different as a Scandinavian internet café and a Nigerian research lab. There's also an extraordinary optimism about mediation embedded in these systems. A belief that technical infrastructure can serve as a neutral conduit for human intention and that meaning can traverse fibre optic cables and wireless signals without fundamental distortion or transformation. Perhaps most significantly, the network architecture enshrines liberal individualism as its organising principle, positioning discrete agents as the primary locus of choice and value creation, even as it enables unprecedented forms of collective action and emergent social phenomena that exceed individual intention.

And we've barely even scratched the surface of how the entire architecture of the internet

is based on colonial capitalism.

Each assumption is thrown in to stark relief when viewed through the lens of plural Indigenous epistemologies. The internet's foundational logic reproduces colonial patterns of knowledge extraction and appropriation. This extraction logic operates across the internet, euphemistically called data mining, and betrays the colonial underpinnings at work. Heck, just think about how AI training complicates this ever more. Just as European colonisers extract gold, timber, and other resources from Indigenous lands while treating those territories as empty space available for appropriation, platform capitalism extracts value from user-generated content, social relations and behavioural patterns, treating these as freely available resources.

The internet's assumption of placelessness, that information can be abstracted from its context and transmitted anywhere without loss of meaning, directly contradicts Indigenous ways of knowing that understand knowledge as fundamentally relational, emerging from specific places, communities, and responsibilities to the land. Not to mention the internet's modern transience –following us everywhere we go, even when we don't carry a smartphone. When ecological knowledge is synthesised into Wikipedia articles, or cultural practices are subsumed into virtual reality experiences, there's no preserving of context, culture, knowledge genealogy, and these practices are regularly forms of epistemological violence that severs knowledge from relationships –even when the internet offers ways to preserve this. Such extraction renders knowledge meaningless, as the process remains colonial and harmful. The evolution from early internet collectivism toward extractive platform capitalism sits with deeper transformation (late stage capitalism) which informs how we understand knowledge. No room for “collectively held” and “contextually bounded” ways of knowing with Facebook on the scene, everything is individual property that can be owned, traded, and accumulated –by Facebook.

Indigenous knowledge systems remind us *all* that knowledge carries responsibilities as much as or more than rights, that certain understandings are meant to *stay* within specific communities and contexts, and that the commodification of knowledge is a categorical error about what knowledge is and how it should circulate. Not to say there should be no trade of ideas, ways of working, and ways of being. But that these should be bounded in place, community, and context. Not promulgated as advertising material, hypercapitalist money grabs, and fear mongering to drive engagement metrics.

The concentration of our collective digital life onto a very small handful of platforms is tantamount to the enclosure movement across Europe, then around the world, which displaced Indigenous peoples globally, rendering many *no longer Indigenous to place*[6], and converted communal resources into private property –HELLO CAPITALISM. What began as a decentralised network has been systematically enclosed by Meta (Facebook, Instagram), Alphabet (Google, Gemini), Amazon, and so on. Their privatising has captured in hegemony the commons of human connection and knowledge-sharing.

The vague and naïve pioneering promise of the internet's relatively equal peer-to-peer communication has been replaced by platform-mediated relationships where our most intimate conversations become raw material for algorithmic processing and targeted advertising. The emergent fiction is that unenclosed resources are waste, that can be more efficiently managed through private ownership, and that Meta should be the ones to do it.

Golly this really became a spread of arguments. Let's wrap up before we become a puddle of plato on the kitchen floor.

Emergent critiques, in whatever my ramble is above, can still point us toward alternative possibilities. All hope is not lost. We are seeing the emergences of different philosophies of knowledge online –just look at federation[7]. Perhaps we can move toward “access to vital information” which recognises praxis in relation, in *right relation*. Knowledge sovereignty

demands recognition of community ownership of information and ways of exchanging it, while embedded reciprocity challenges extractive data relationships. Perhaps we might consider the internet itself as a kind of Country that deserves care and respect, where communal proppa protocols govern our connections and enable us to know and respond to place. Not to scream at each other over deliberately divisive micropolitics while Zucc sleeps soundly on his pile of money built on genocide and expropriation. This work of reimagining digital relations isn't individualist - it is based on reframing ontological and epistemological foundations of our networks, to build new forms of digital practice that recognise the relationships between knowledge, place, and community that sustain us, as social animals. And I don't even have to leave us on a negative note -new ways like this are happening, right now, probably somewhere near you.

And, as a last word, if we reconsidered each of these epistemological and ontological frames through a different meta-theory, we could already point to the ways that computer networking gives rise to respectful and proppa ways. Go on, think about it[8].

What a time to be alive,

Aidan

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1. c.f., https://www.reddit.com/r/nosurf/comments/18nmyef/the_internet_used_to_be_a_place/
 2. Here's a low effort Wikipedia article for this.
 3. Many can, because they are still denied access by extreme cost floors, genocidal regimes, and outrageous filtration, but if you're reading this, it's not that likely to be you.
 4. A quick sidebar: The way we think - something we label as epistemology -is assembled through social processes. This reproduction of our ideas, thoughts and ways of being is quite deliberate. In the dominant western system, education has been formalised and mandated for all children from around the age of 5 to around the age of 17 (with a handful of exceptions). This education process, something which we often take for granted in itself, delivers a curriculum derived from a fragment of the status quo. Teachers may have some capability for autonomy (agency) within this (though, this is increasingly stripped away) to change *how* the curriculum is delivered, but it remains imbued with a western middle class way of thinking, working, being and doing. The difficulty with examining epistemology (or epistemologies) is that they are an endless cascade of ways of thinking all the way down. If we even begin to trace back the origins of the thinking which underpins education, as above, we get trapped in a cycle of "whose thinking" all the way back to Aristotle. Lest we accidentally stumble on the prehistoric, the internet is also framed in epistemological and ontological assumptions and ways of working which, just like a teachers' agency, shape the way we learn, interact, and act.
 5. https://en.wikipedia.org/wiki/Internet_protocol_suite
 6. <https://doi.org/10.1017/jie.2017.25>
 7. <https://jointhefediverse.net/learn/> (and hey, surprise, this blog is federated like a cool cat)
 8. Or I could do it, I guess:

The physical layer recognises that knowledge cannot exist without material grounding. Like Aboriginal epistemologies that understand knowledge as inseparable from Country, the internet acknowledges that information requires physical substrate, that there

is no "virtual" without the material. The ontological requirements of this layer resonate with Indigenous materialism: reality manifests through measurable phenomena, requires reliable tools for transmission across place and time, and depends fundamentally on human labour and relationship to construct the network. The epistemological foundations here parallel Indigenous empirical traditions that read Country through careful observation, pattern recognition, and intergenerational knowledge-testing.

The protocol layer holds potential for deeper affinities with relational ways of knowing. While TCP/IP appears to atomise communication into discrete packets, it actually demonstrates that meaningful communication requires constant relationship and reciprocity. Packets acknowledge receipt, negotiate transmission rates, and adapt to network conditions, a dance of mutual recognition. The ontological identification that networks connect separate entities while maintaining their distinctness echoes understandings of autonomy-in-relationship, where individuals and communities maintain boundaries while participating in larger webs of connection. The epistemological commitment to "universal" protocols that enable different systems to communicate reflects Indigenous values of translation and diplomacy, literally the belief that different ways of knowing can find common ground *without* losing their specificity.

The application layer has striking alignment with Indigenous knowledge systems. Here tribes and diverse standards abound, not monolithic approaches. The web's ontological assumptions about information connect with knowledge systems which travel between communities through story and practice, expertly tailored to local contexts. The epistemological foundation of hypertext as an associative model of knowledge directly mirrors Aboriginal ways of knowing which have long understood truth as emerging from relationships rather than hierarchies. The recognition that understanding hypertext emerges from connections, that finding knowledge requires either direct communication or following networks of relationship, perfectly fits with how Indigenous knowledge systems operate through kinship, cycles, and connections that link particular places to broader patterns of meaning.

There, I did your homework for you.