Innis’s Infrastructure: Dirt, Beavers, and Documents in Material Media Theory

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Abstract
The work of Harold Adams Innis offers important contributions to the recent ‘infrastructural’ turn in media, communication, and cultural studies. While Innis’s late communication studies texts are widely read, few outside of Canada engage with his earlier economic histories and the ‘dirt research’ (field work) that produced them. The early texts offer the clearest presentation of Innis’s infrastructural orientation. I trace the development of this orientation by focusing on three aspects of his work often remarked upon but infrequently explored: dirt, beavers, and documents. Each is paradigmatic of Innis’s methodological, conceptual, and discursive contributions, respectively, and through them, he speaks very differently than we are used to hearing. These contributions are recursively called by infrastructural approaches to contemporary media networks and environments. Integrating Innis into these debates allows us, I argue, to move beyond the limits of his mid-20th century work, and to expand the horizons of what Peters (2015) calls ‘infrastructuralism’.

Key words: Infrastructure; media theory; media history; Harold Innis; field work

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Infrastructure is a concept of central importance to media and communication studies today. Infrastructural approaches are on offer in recent scholarship on topics as diverse as undersea cable networks (Starosielski 2015), logistical supply chains (Rossiter 2016), institutional paperwork (Bowker and Star 1999; Gitelman 2014), urban environments (Mattern 2015), digital labor (Dyer-Witheford 2015; Qiu 2016; Roberts 2016) and cetacean behavioral research (Peters 2015). These are complemented by journalistic works on internet infrastructure that journey ‘beneath the cloud’ (Burrington 2015), or which shed light on exploitative labor conditions endured by factory workers across the globe who provide cheap, outsourced production to Silicon Valley (McClelland 2012). These works foreground the systems required to make our black boxes tick and the often messy way such systems are built into terrestrial and human environments (or, since Sputnik, launched into outer space). They look at how hardware like undersea cables and server racks are integrated with software like computational stacks and technical standards, and with wetware like water and the human body.

Critical infrastructure studies participate in a broader ‘material turn’ taken in the humanities over the last thirty years. This turn takes many forms in different geographic and intellectual contexts. Beyond a sometimes vague emphasis on ‘materiality’, it is difficult to find connective tissue between approaches as varied as posthumanism, media archaeology, science and technology studies, sound studies, vital materialism, animal studies, media history, software and platform studies (for helpful overviews, see Packer and Wiley 2012 and Grusin 2015). Broadly, we might say such approaches reject the view that globalized network society and its digital culture are ephemeral or ‘immaterial’. These approaches also generally reject the idea that the human is necessarily the most important agent of any given social or historical situation. The move is away from histories of ideas, and the human geniuses who have them, and toward the
practices, mechanisms, things, and forces that make up the world: networks, signals, assemblages, systems, and noise.

Infrastructure has proven a useful concept in drawing together many of these threads. It resists anthropocentrism (infrastructures are always mixtures of human labor and terrestrial and technical material), and emphasizes interrelationships between humans and non-human things, systems, actants, or devices (depending on where you hang your terminological hat). Critical infrastructure studies also imply a revealing, a going ‘under the hood’ of systems and networks that, though vital to everyday communication and exchange, work best when we do not notice them. In Paul Edwards’s words, “mature technological systems reside in a naturalized background, as ordinary and unremarkable to us as trees, daylight, and dirt” (2002: 185). Edwards invokes nature as a metaphor but we needn’t. Infrastructure is indissociable from terrestrial environments because it is built into them. Ecologies of the Anthropocene are always and everywhere technical. Such a theoretical move contributes to the ongoing complication of previously stable distinctions between culture and nature, technology and environment, human and non, such as typified in science and technology studies by Bruno Latour (see e.g. 1993) and posthumanism by Donna Haraway (see esp. 2003 on ‘naturecultures’). The move also explodes traditional time scales used to analyze media and communication—from hundreds and thousands of years to millions or even billions (see Parikka 2015).

Such were matters of concern for the ‘Toronto School’ of communication, even if its members used different terminology. The retroactively named ‘school’ was actually a very loose configuration of cross-disciplinary scholars affiliated with the University of Toronto and surrounds during the period 1930 – 1980. This constellation includes thinkers such as Harold Innis, Marshall McLuhan, Jaqueline Tyrwhitt, Northrop Frye, and Edmund Carpenter who
pioneered many of the touchstone ideas and methods that enliven contemporary debates through their inquiries into, for instance, the materialities of oral and literary communication practices (Havelock 1963; Ong 1982); the shape and rhythms of an emerging globalized information society (McLuhan 1962, 1964); the role of media, ancient and contemporary, in structuring space and time (Innis 2002, 2007); relationships between media and art (Carpenter and McLuhan 1960); structural and non-content-based approaches to literature and mythology (Frye 1957); entanglements between anthropology and communication studies (Carpenter 1970); and archaeologies of media and urban space (Tyrwhit 1955). However, outside a spike in interest in McLuhan’s work around the centenary of his birth in 2011, and a recent conference at University of Toronto on the legacy of its ‘school’¹, relatively little has been written on the influence of such thinkers on contemporary debates (or about their conspicuous absence from same). This essay develops a few notes toward such a project through the figure of Harold Adams Innis.

Innis was as fine a thinker of infrastructure as we have seen. To my knowledge, he did not use the word, but it is a common refrain over his life and career. Many train journeys between Otterville and Hamilton, Ontario, as a young student, and between Ontario and Chicago as a graduate student, attuned him to thinking about the ‘fixed capital’ of rail lines, telegraphy, and borders. His experience as a signaler in the Great War turned his mind not only to signal traffic but to military logistics (Buxton, Cheney & Heyer 2016). His early work on the economic foundations of Canada, and the later notes toward a communicative history of earthly civilization, can be easily brought together when thinking in infrastructural terms. This essay does not, however, focus on biographical details, nor does it attempt a grand synthesis of Innis’s early and late periods. Such work has already been attempted or achieved (Heyer 2003, Watson 2006). Instead, I will sketch Innis’s infrastructural vision by focusing on three aspects of his...
work often remarked upon but infrequently explored: dirt, beavers, and documents. Each is paradigmatic of Innis’s methodological, conceptual, and discursive contributions, respectively, and through them, he speaks very differently than we are used to hearing.2

By re-reading Innis’s early economic histories—on, among other topics, the fur trade in Canada, the Atlantic cod fisheries, and Canada’s transatlantic railway—we find an infrastructural orientation that anticipated the recent turn by over eighty years. This orientation was developed through extensive fieldwork conducted throughout the 1920s and 1930s, and it prepared the ground for Innis’s later work on communication. It involved thinking *ablatively about infrastructure*. ‘Ablative’ is derived from a Latin verb that denotes movement or carrying away from something.3 To think in the ablative, a grammatical case not present in English, is to think in motion, to observe patterns, relations and dynamic change. John Durham Peters argues that the ablative case has always been central to media theory in the civilizational tradition of the Toronto school, and he reminds us that McLuhan was in fact the first to describe media theory in this way (Peters 2015: 21). The ablative character of media suggested to McLuhan that their analysis required different modes of thought and presentation. He devoted most of his life to developing such, and found a deep well of inspiration in Innis. McLuhan did not refer to Innis as an ablative thinker, but he endorsed a unique dynamism in his work as early as 1953. In a famous essay written shortly after Innis death, McLuhan suggests that “the trick [in reading Innis] is in finding the principle of intelligibility not in concepts of underlying essences or forms but in active relationships in existing dynamic situations” (1953: 393).4

Innis’s hunch that understanding historical change required modes of observation and research that were dynamic rather than static, and analysis that was material rather than abstract, led him to an experiential method, dirt research, and drew him to thinking in the ablative case. In
adopting this orientation, Innis refashioned familiar concepts like ‘staple,’ ‘monopoly,’ and ‘communication’ to develop a broad, synthetic approach to the study of human civilizations. In returning to his early work, we see that the objects, phenomena, and approaches of the contemporary turn to infrastructure are present from the start. This is a conception of infrastructure that moves beyond the transportation and utilities central to popular imaginings of the concept, and beyond the forces and relations of production at ‘base’ of Marxian imaginings. I follow recent debates in employing the concept to describe a plane or layer of activity on which terrestrial, technological, and institutional realms intersect, where environments, tools, and acts converge to create flexible, durable structures that form the basis for habitation, survival, and congress. This plane of activity was, for Innis, the key to understanding historical change, and it is as essential to tackling social, cultural, and technological problems in the twenty-first century as it was for understanding the historical situations he observed.

In Innis we do not find what Peters (2009) refers to as the traditional ‘interpretive triangle’ of media studies: text—audience—institution, but rather an ‘infrastructuralism’ with civilizational stakes (Peters 2015: 30-38). By re-reading him in this way, we destabilize contemporary approaches that presume shorter timelines, and we invite an entirely different set of source material for media theory to mine. Innis cared as little for disciplinary boundaries as he did for artificial distinctions between nature and culture, technology and environment, science and humanities, or human and non. The scope of his thinking invites the analysis of problems beyond the here and now. His famous critique of Western culture’s “present-mindedness” has roots in his diagnosis of this pathology in the Oxbridge political economy of his training (which demonstrated a bias toward abstract models of price, markets, and ownership). Innis gathered history and dirt from the margins of Empire to fill in these sedentary grooves of thought.
he excavated from history itself the forgotten documents and techniques of media and communication. Such ablative thinking arose in Innis through his attention to what we would today call ‘infrastructure’.

The essay proceeds as follows: I first outline, in brief, current debates around the ‘infrastructure’ concept. I then delve into Innis’s work, exploring the conventional reception of his late-period communication works and their uptake by McLuhan. I then demonstrate the infrastructural orientation on offer in his economic histories by discussing the role of dirt, beavers, and documents. Finally, I conclude with notes toward the development of dirt research for digital networks.

**Infrastructure**

Though infrastructure feels fresh, it is anything but. What we now refer to with this word—apparatuses, systems, surfaces, devices and labor required to support and facilitate basic human needs and desires related to movement, sustenance, shelter, communication and other modes of social interaction—are all as old as civilization. Rome’s vast web of roads still imprint the communication and transportation networks of Europe and North Africa. The earliest surviving forms of writing are grain inventories of Ancient Sumerians (*ca. 3000 BCE*) that facilitated basic food supply and trade (Schmandt-Besserat 1982; Goody 1977) Canals built in and around the Chinese imperial capital Ch’angan of the western Han and T’ang periods (206 BCE to 8 CE and 618 CE to 907 CE) remain in use (Schafer 1971). Herodotus writes of his admiration for elaborately-engineered transportation infrastructure of the Persian empire, including a 2500km road between Susa and Sardes (cited in Grübler 1990: 2).
The building and maintenance of infrastructure is as ancient as any known human activity, but the word itself is a relatively recent development. Its appearance in English is dated by *OED* at 1927. Appearances were sporadic and situation specific before a precipitous spike in usage around 1960. Subsequently, the word was employed frequently to describe structures and systems involved in military operations and logistics (it is not surprising that it appeared first in 19\textsuperscript{th} century France, shortly after Napoleon’s revolution in military and civil *opérations logistique*). As so often happens with words (and people), ‘infrastructure’ migrated from military to commercial life, providing a useful way to describe large-scale postwar construction and engineering projects. Repairing war-torn cities and regions around the globe required massive capital investments, many of which were targeted at rebuilding roads, rail and power lines, water treatment and distribution, and other such projects. North American investment was less about repair than putting military personnel back to work and cementing America’s place at the apex of the postwar global economy. Beyond North America, Europe, and Japan such efforts were less coordinated and capital investment more scarce. But in the west, the scale, frequency, ambition, and scope of these projects seemed to strengthen a conceptual imaginary tied to progress, industrialism, repair, and recovery. The positive effects of these projects on the postwar prosperity of white middle and upper classes helped infrastructure achieve a mainstream viability and political resonance that it enjoys to this day.

There is some debate about the uptake of the word after 1960. Petroski (2016) argues that ‘infrastructure’ came into vogue as a term to replace collective, publicly-funded projects that had been previously described as ‘public works.’ There is a coldness to the word ‘infrastructure.’ It has none of the connotations of publicness, collectivity, equal access, or responsibility of ‘public works’. It speaks in the language of science and engineering rather than that of arts, letters, and
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politics. ‘Infrastructure’ seems friendly to those who would deny the very existence of a ‘public’ requiring collectively owned and used ‘works’. Yet ‘public works’ fails to capture the dynamic interrelationships between works of various kinds. A bridge is not an isolated object, like a statue. It exists in a web of complex relationships with other structures and environments. It mediates two opposing shores and facilitates transport of various kinds from one side to the other. It shapes the flow of ships in and out of the channel over which it looms. It affects marine ecosystems and fluid dynamics of the body of water into which its pillars have been sunk, and the banks to which it has been attached. A bridge links previously-isolated transportation networks for cars, rail, bikes, and pedestrians. It facilitates and sometimes precludes movement between and through these networks. A bridge is a product of public funds, accessed through institutional decision-making channels and bureaucratic protocols. It is a product of design and construction, from blueprints drafted on paper using graphite pencils to concrete and steel forged from terrestrial elements. It is a structure that we conceive of as ‘beneath’ or ‘behind’ these various activities, whether as support, impediment, idea, or ruin. ‘Public works’—for all its capacity to galvanize attention and remind us of the publicness of such projects—fails to capture these dynamic relations.

‘Infrastructure’ can. Its prefix, ‘infra’, comes from the Latin word for ‘below’, its root word, ‘structure’, describes arrangements and relations between constitutive parts of a larger object or system. Taken together, we have a word to describe arrangements beneath. In this way, ‘infrastructure’ is different from ‘technology’ or ‘media’. The latter concepts oscillate between describing individual devices (‘a’ technology like gunpowder or ‘a’ medium like radio), on the one hand, and much larger complexes (‘technology’ as a category of human endeavor akin to ‘politics’ or ‘culture’; ‘the’ media as a complex of entertainment production and distribution), on
the other. Infrastructure, for the most part, resists being invoked to describe individual things (we don’t talk about ‘an infrastructure’ the way we do ‘a technology’ or ‘a medium’). It is instead a term that captures “a relationship or an infinite regress of relationships. Never a ‘thing.’” (Bowker and Star 1999: 230, quoting Bateson 1978). Infrastructure is the plane on which we delineate zones of activity and build interacting systems. These can be for habitation (of any scale, from a single dwelling to metropolitan cities), movement (transportation systems), organization (institutional protocols), communication (information systems), and sustenance (utensils for preparing and consuming food and water), among other activities. Infrastructure is about movement, maintenance, and repair. It is most obvious in transportation and facilities management but not exclusive to these realms (paperwork remains the often-infuriating infrastructure of institutional life). Bowker and Star’s (1999) seminal work thinks infrastructure in this way, as classification systems, technical standards and institutional protocols, and it thinks about how they become normalized. In the same way that ‘infrastructure’ allows us to describe the basic undergirding of transportation, communication, industry, and urban life, the word also captures something about the rhythms and rules of modern institutional life.

Building and maintaining infrastructure is an ancient practice, but thinking about it is not. Though the word was not taken up widely until around 1960, Peters argues there is a “deep infrastructural ethic in modern thought” (2015: 35). Thinkers from Marx and Weber to Heidegger, Mumford and McLuhan sought to map the contours of ever more complex institutions, technical systems, and devices structuring human life within what Heidegger (1991; 1993) called das Gestell, ‘the frame’ of modernity. Naming these shared concerns and pulling them together into a coherent approach encourages analysis of technological systems that does not reduce them to surface, utility, or content. Infra-structuralism takes its prefix seriously,
pushing beneath surface level phenomena and structures, peeling back layers to show the hidden
logics, histories, and connections between systems of processing, storage, and transmission;
exchange, transportation, and calculation. It de-mystifies the sublime, whether technological,
bureaucratic, or digital. Lisa Parks has done much to emphasize infrastructural approaches to
media and culture. Her work on ‘Orbital Viewing’ (Parks 2000) expanded the scope of television
studies to include military and technoscientific modes of observation in addition to entertainment
(see also Parks 2005), echoing similar calls in so-called ‘German’ media theory of the 1980s (see
Kittler 2010: 19-28). Recent ‘infrastructuralist’ work by Parks and others deflates celebratory
narratives from Silicon Valley that employ metaphors from nature to trumpet digital ‘clouds’ and
data ‘streams’ by revealing often violent material histories and effects of network infrastructures
(see Parks and Starosielski 2015). But perhaps ‘revealing’ is a poor word. Sound studies has
challenged an inherent visual bias in the way we think about, talk about, analyze, and historicize
culture and technology. Recent work on quantum computing continues this effort, making the
important point that critical infrastructure studies cannot only be concerned with ‘making visible’
(Noon and Russill 2016). Forces and implications of infrastructural systems affect human senses
and terrestrial environments in ways that are decidedly non-visual; most modes of computation
are impossible to visualize in any but the most reductive manner.

Excavating infrastructural ‘frames’ helps render institutions and industry, paperwork and
machinery, cultural techniques and technical artifacts on the same plane for comparison. It
compels questions such as: What institutions do people build to organize themselves and
preserve tradition? How do they design and build them? How do those institutions function?
Who decides what to preserve and how? How do techniques of communication, circulation, and
exchange become institutionalized, and how do such institutions affect the character of
civilizations? These are precisely the questions that perplexed Harold Innis for the duration of his scholarly life.

**Late Innis and Early McLuhan**

Interest in his work has ebbed and flowed over the years, but it is rare to find a scholar of media or communication who would deny Innis’s foundational importance. Peters straightforwardly claims that “Innis was one of the first to insist that infrastructure should be at the heart of media theory” (2015: 18), but this is not often how he is understood. By far the most widely read Innis texts today are *Empire and Communications* (1950) and *The Bias of Communication* (1951). In these, he develops the classic argument that the biases of dominant media shape the character of civilizations, marshalling social, political, and institutional life toward certain tendencies: spatial conquest and political bureaucracy, as with Rome and its papyrus administration, or temporal endurance and religious ritual, as with monumental civilizations of Egypt and later religions of the parchment codex. Media of communication, Innis discovered, are important to historical knowledge because they are the means by which people and institutions stitch themselves together; they are, to borrow Peters’s characteristic pith, “the strategies and tactics of civilization, the devices by which people and other creatures hold together in time and space” (2009: 10). To people and creatures, we might add things and concepts. Stories and events, institutions and traditions, trade and art—these civilizational elements travel across space and through time only via media: surfaces like paper and clay, elements like air and water, techniques like writing, printing, and speaking. As such, time and space are not static categories. They change and are a function of the way human beings choose or are able to communicate with each other. Stories persist in time. Empires expand through space. This dialectic of space and time, along with the
concepts of ‘bias’ and ‘monopoly of knowledge’, are the most well-known aspects of Innis’s work (Babe 2000).

Before he ever thought about communication, Innis was an economic historian of the highest rank. His late foray into histories of writing was, for his colleagues in Economic History, an unfortunate coda to a distinguished career. When he delivered *Empire and Communications* as the prestigious Beit Lectures on Imperial History at Oxford University in 1948, his audience thought he had lost the plot. The topic was to have been anything of Innis’s choosing related to British imperial history. What he disseminated instead were notes toward a communicative history of earthly civilization. It was a broad, sweeping survey delivered not in coherent narrative or analytic arguments but staccato assertions. His audience was scandalized.7

What Oxford found repulsive, Marshall McLuhan found invigorating. Innis’s communications work helped the young literature scholar push his own into bold and controversial directions. The two were colleagues at the University of Toronto from McLuhan’s appointment at St. Michael’s College in 1946 until Innis’s death in 1952. They were friendly but not particularly close. A single exchange of letters is their only documented correspondence. In a long letter to his senior colleague, McLuhan forges connections between Innis’s work and his own literary and aesthetic concerns. He goes so far as to say that “lines appearing in *Empire and Communications* [...] suggest the possibility of organizing an entire school of studies” (McLuhan 1951). Innis was fond enough of the letter to ask McLuhan’s permission to “have it typed for circulation to one of two of our mutual friends” (Innis 1951a) even if he did not wish, or have time, to respond in depth. This correspondence was not their only interaction. An earlier (1948) letter inviting Lewis Mumford to speak at University of Toronto, written by McLuhan at the behest of Innis, suggests the two met in person on occasion.8 It is uncertain what future
collaborations Innis’s untimely death might have curtailed. In McLuhan’s 1951 letter, he suggests establishing what, in 2016, reads as a description of a lab for media archaeological research:

It seems obvious to me that Bloor St. [home to Innis’s dept. of Political Economy] is the one point in this University where one might establish a focus of the arts and sciences. And the organizing concept would naturally be ‘Communication Theory and practice’. A simultaneous focus of current and historical forms. Relevance to be given to selection of areas and study by dominant artistic and scientific modes of the particular period. Arts here used as providing criteria, techniques of observations, and bodies of recorded, achieved, experience. Points of departure but also return (McLuhan 1951, emphasis in original).

What is certain is that Innis’s ideas left a lasting impression on his junior colleague. McLuhan built on Innis’s insights—first through a series of 1950s collaborations with Edmund Carpenter, Jacqueline Tyrwhit and others on the journal Explorations, later on his single-author studies of the 1960s—to pull the study of media and communication from the margins to the center of Canadian and international letters (the transmission of McLuhan’s voice around the world spoke his ‘Global Village’ into existence). Innis’s work inspired McLuhan to argue, succinctly if not always clearly, that attention had been focused for too long on the ‘figures’ of messages and meaning rather than on the ‘ground’ of effects that new technologies had on bodies, minds, and environments. This emphasis on ground was lifted directly from Innis, whose career was spent sifting through the dirt, physical and metaphorical, of history.

The relationship between the two scholars is typically understood in this relatively straightforward manner: Innis shifted the lens from content of communication to modes,
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unearthing a hidden history of power and conflict. McLuhan updated and extended these insights to account for the media of modernity—first the print technology of Gutenberg’s galaxy, and later new ‘electric’ media like television and radio. Innis developed macro-histories that traced dynamics between communication, knowledge, and power; McLuhan focused on micro-issues related to the body, perception, and the ‘environments’ we experience through media that extend (and alter) our senses. A less well-known letter has bearing on the McLuhan-Innis relationship. It was written during a transitionary moment, after McLuhan had wrapped up Explorations and already embarked on his individual studies of media. In May 1960, he wrote to the Director of Research for Canada’s Department of Northern Affairs and Natural Resources:

I have been working on a paper for the coming Economic History Conference in Philadelphia this Fall. My topic is The Media of Communication in Economic Growth and Development, and while working on this theme I suddenly realized that staples are in effect media shaping and patterning homogeneously social life and organization. But media are also staples. Media are natural resources in the fullest and most unqualified sense. But the resource which they constitute and which they tap is the human sensorium itself. That is to say media are externalisations of our senses, and give immediate access to our senses as a resource for shaping and controlling information flow. Information flow is the necessary means of promoting economic growth, and as the level of such flow increases products and resources become increasingly substitutable for one another.

My media studies impel me to pursue these themes, but if they have any relevance to your interests and problems, I shall be glad to be of help.
One implication of media as staples is that they are global rather than regional, and the laws of development relating to staples must therefore follow a global pattern. Some very enthralling vistas begin to open here (McLuhan 1960).

For McLuhan to phrase his realization as “sudden” is remarkable, and the letter signals a distinct shift in his thinking. Issues related to communication had been of interest to him since at least the 1951 letter to Innis. But what he describes here is something beyond communication. McLuhan outlines the discovery a new concept—or at least a new conceptualization—that could tie together his varied interests in communication, culture, economics, history, aesthetics, and perception. Media-as-staples finally signaled for McLuhan the means by which to grab conceptual hold of what he was really interested in: the parasitic third party to every communicative act, a medium. Hence the importance of the media concept, and the recession of ‘communication’, in his subsequent work.

The media concept resonates most strongly, McLuhan writes, not with Innis’s communication texts but with his staples thesis. This was because Innis saw staples (and, later, ‘modes’ of communication) as paradigmatic of broader civilizational issues. They offer insight into the wider ecological and environmental concerns that would be the subject of McLuhan’s studies because they operate beneath the surface level of attention, use, or meaning; they comprise arrangements beneath structures of exchange, communication, thought and perception. By isolating and studying them in operation, the rhythms and characters of civilization become apparent. McLuhan would re-christen ‘modes of communication’ as ‘media’ but otherwise adopt the same approach. In these primal scenes, media theory was—and remains—primarily about identifying paradigms that can offer “enthralling vistas” onto the techniques, systems, and infrastructures of civilization.
Dirt

Clues about why it was the economic histories that opened these enthralling vistas for McLuhan, rather than the communication texts, can be found in the voluminous notes Innis produced during field work expeditions of the 1920s. The most famous of these was in 1924, when the young professor of Political Economy travelled by rail to northern Alberta to embark on a journey through the Mackenzie River basin that retraced routes important to the Canadian fur trade of the 17th and 18th centuries. He navigated the Athabasca, Peace, and Mackenzie rivers—sometimes by birch-bark canoe but usually by steamship—he portaged over marshland, and he camped out at mining towns and former trading outposts like Fort McMurray. Two years later, in 1926, Innis travelled down the Yukon river to learn about placer mining and the Klondike gold rush; the following year saw him visit pulp mills and mining towns of Northern Ontario, Quebec, and the Maritimes. The last expedition of the decade was to Hudson’s Bay in 1929. Future trips would see Innis visit sites of interest in the Maritimes and Newfoundland, but the 1920s trips have been, as Matthew Evenden argues, “enshrined as mythic instances in the history of Canadian historiography” (2013: 73). During these trips, Innis traced the vectors of circulation and exchange that, he believed, were crucial to the emergence of ‘Canada’ as a territory, political entity, and idea. Innis’s approach today might be called ‘critical topography’ (Bordo 2002; van Wyck 2010) or ‘media archaeology’ (Parikka 2010); he called it ‘dirt research’.

Figure 1
Innis in a canoe on the Peace River 1924. Courtesy University of Toronto Archives.
The term ‘dirt research’ captures (or conjures) something about the gritty realism and granularity of the knowledge Innis sought to complement his traditional work in archives, libraries and classrooms. He was in search of material that could reinforce his coming attack on interpretive models then ascendant in Anglo-American political economy departments (the Oxbridge tradition of Alfred Marshall, John Stuart Mill, and Adam Smith). He thought this tradition—which rested on unquestioned assumptions about rational action, self-regulating markets, and price as a metric—was ill-equipped to explain how ‘Canada’ emerged, first, as a zone of extraction and exchange and, later, as a nation state. So he replaced abstract models with observations and data culled from the field about the importance to culture and economy of staple goods like fur, cod, timber, and coal. The approach brings to mind a famous remark made some fifty years later by Friedrich Kittler (who admired Innis a great deal) that “in lieu of philosophical inquiries into essence, simple knowledge will do” (1999: xl).

The ‘staples thesis’ Innis developed from his dirt research proposed that staple goods, and the complex of activity that arose around them, were much more important to the unfolding of economic activity—and thus to culture and history—than typically understood. He produced a tremendous amount of material in this vein between 1923 and 1940. Most notable were his exhaustive volumes on the histories of the Canadian Pacific Railway, the fur trade, and the Atlantic cod fisheries. These works were inspired by Thorsten Veblen, a figure then not simply out of fashion but widely considered a charlatan. Innis was attracted to Veblen’s macro approach, which treated economics as a branch of history and anthropology rather than a discipline unto itself (Patterson 1990; Buxton 2013; Bonnett 2013). Veblen took into account the strategies and tactics of civilization: customs, institutions, techniques and technologies, logistics, and infrastructure. In Veblen, Innis found a thinker that understood the importance of these
neglected factors, and through his work Innis sought to historicize and materialize the basic concepts, categories, and considerations that other economists took for granted: supply and demand, pricing and market activity, the motivations and actions of people, the rhythm and character of institutions, and even more basic capacities for survival, movement, and communication across time and space. Veblen helped Innis think through a question he had been pondering since he was an undergraduate, posed to him by philosophy professor James Ten Broeke: “Why do we attend to the things to which we attend?” (quoted in Babe 2000).

*The Fur Trade in Canada* remains the most famous of Innis’s staples works. It was the culmination of a decade of research and several field expeditions. The Innis archive at the University of Toronto is full of hundreds of pages of descriptions of what he observed and experienced on these trips. Supply lists and sketches of trapping techniques appear alongside notes from conversations with locals, nuggets of oral histories about the slow, violent convergence of settlers and indigenous communities. This was field work that went beyond ethnography. It paid as much attention to geology and biology as to culture, to non-humans as to humans. It was impressionistic and enumerative, lacking any classificatory schema or narrative structure. His notes are ontical descriptions. For van Wyck, they “attest mainly to his practice of gleaning—he makes lists, he notes exchanges, prices, and trapping techniques, he takes measurements, makes sketches, counts boats and barges—all toward the production of a descriptive thickness. He sought the dirt on the place” (2010: 198). See, for instance, the following page from the 1924 Mackenzie River notes that begins with Innis’s description of he and companion John Long being passed in their canoes by a steamship (*Athabasca River*):

> [...] Tremendous swell on river as a result — same thing witnessed in afternoon, almost unbelievable. Scow loaded with hay camped about 25 miles from Fitzgerald - passed us
about 12 o’clock. Gasoline launch pushing a scow loaded with bales of hay. Met

*Athabasca River* coming back pushing empty scow.

Fitzgerald - rapids near town but such as to be easily passed. Town situated on a point. Innumerable dogs of all sizes and descriptions—some well fed, other very badly fed, thin and mangy.

Meal 75¢ each, butter $1.00 a lb. Sugar 2 to 3 lbs. for $1.00. Boats bring in 175 tons generally—one boat pushing scow brought in 325 tons. Teams hauling freight for H. B. [Hudson’s Bay Company] From 22nd of May. 14 teams hauling continuously, 7 going in and 7 coming back. Started last 2 or 3 days hauling at night because of first appearance of bull flies. Noticed them 2 days ago—sharp bite draws blood […] Fitzgerald generally a transportation town. Tremendous advantage of swift current loaded provisions heavy material going in and light coming out—adaptation of trade (furs) to river. Whole Arctic civilization a capitalization of a swift river (Innis 1924: 4).

The land and waterways appear frequently in his notes, always underscoring the importance of navigation to economic and cultural activity. “The river holds sway. Since the rivers are the Highways, the buildings of the missions, the trading companies and the police, each with a separate landing, are strung along the banks. These posts have length but no depth” (Innis 1925: 152, also quoted in van Wyck 2010: 192). And he writes of the animal inhabitants of the land: otter, mink, marten, lynx, foxes, and, most famously, beavers.

**Beavers**

Innis’s famous claim about the beaver was that knowledge of its physiology and habitational patterns is essential for understanding not just the fur trade, but Canada itself (Innis 1973: 3; see
also Schabacher 2015: 57-58; Berland 2015). Hence *The Fur Trade in Canada* opens with 5 pages of ethology—notes about the composition of the beaver’s pelt, how it constructs dams, what it eats, how it moves, and so on. His monograph on *The Cod Fisheries*, too, opens like this: notes on the fatty flesh of cod, the specific gravity of their eggs, and the salinity and temperature of waters off of Newfoundland’s grand banks (Innis 1978: 6). The beaver is important to Innis because it is a paradigm. In studying the animal, itself, and not simply its pelt or extraction by humans, he came to see a feedback loop between nature and culture that propels social, economic, and historical change. It offered a glimpse of the ensemble of humans, techniques and technologies, environments, and animals that prefigures the Imperial project of British North America and, later, Canada.

Indigenous trappers observed and learned from the beaver’s peculiar bodily and habitational techniques, and settler trappers mimicked them in everything from when to hunt to how to transport furs (the birch-bark canoe could carry heavy loads and traverse long distances). “White men follow Indian [sic] methods,” he writes bluntly in the 1924 McKenzie River field notes (Innis 1924). As they were hunted, beavers moved inland: “The animal was not highly reproductive and it was not a migrant. Its destruction in any locality necessitated the movement of hunters to new areas” (Innis 1973: 387). Trappers could follow because the St. Lawrence basin and the Great Lakes offered a relatively easy pathway to the interior of the continent. In this way, Innis suggests that “Geography has been effective in determining the grooves of economic life through its effects on transportation and communication” (Innis 1995: 301; also quoted in Schabacher 2015: 56). Geologic formations delineated available routes, but indigenous tools, techniques, and knowledge were essential to navigation:
The waterways along the edge of the Canadian Shield tapped the rich fur lands of that area and in the smaller rivers of the headwaters of four drainage basins provided an environment to which the canoe could be adapted […] The birch-bark canoe was borrowed and modified to suit the demands of the trade. Again, without Indian agriculture, Indian corn, and dependence on Indian methods of capturing buffalo and making pemmican, no extended organization of transport to the interior would have been possible in the early period (Innis 1973: 389).

What Innis saw was that as voyageurs followed beavers inland, they established a network based on European models of extraction, transportation, and exchange to replace the extant “Indian trading organization” that had been “essential” in the early seventeenth century (Innis 1973: 386). This process left behind infrastructure (Innis called it ‘fixed capital’), which, as the fur trade became more established, became permanent: roads replaced paths, steamships adopted the routes of canoes, towns replaced trading posts, maps became standardized (allowing for the eventual parceling out of land plots in settlement), institutional bureaucracy replaced ad hoc techniques of same. While Innis was clear that the fur trade and permanent settlement of the continent were antithetical (1973: 386) this did not prevent the Northwest and Hudson’s Bay Companies from establishing reasonably permanent structures and transportation routes.

Figure 2
Hudson’s Bay Company Trading Post, Mulligans Bay, 1886. Courtesy Chapleau, Ontario Public Library.

This was the infrastructure of colonization. New systems of extraction and circulation crowded out a robust indigenous social order that had existed for hundreds, if not thousands, of years. Cultivating and sustaining life in the Canadian wilderness—creating shelter and
harnessing fire, preparing food, navigating terrain, engaging with local populations—required completely different cultural techniques than what Europeans brought with them. Unfortunately, the story of their adaptation and flourishing is one of skimming knowledge from indigenous communities about land, shelter, hunting, food preparation, climate, navigation and social structures before systematically dismantling their cultural practices and habits (this process of monopolizing knowledge would obviously inform Innis’s later, more expansive explorations of historical knowledge monopolies dating back 5000 years). That this project was not entirely successful is a testament to the resolve of Canada’s indigenous communities. The infrastructure of the fur trade economy was an important site, for Innis, in which to understand the material processes by which colonization was enacted as a slow, sedimentary and violent historical event. It also established a pattern in which economic activity became organized around a single staple good that was relatively abundant in a ‘peripheral zone’ (according to European eyes) but highly desired in the central empire. This pattern continues long after the fur trade, as Innis would show in analyzing other staples like cod, lumber, grain, placer gold, and oil. Canada’s economy is still organized in this way, as debates around pipelines and the extraction of bitumen from the Athabasca oil sands remind us.

Innis understood that surface phenomena always rest upon deeper structures and forces, whether one is discussing social formations or rock outcrops. The feedback loops he observed went deeper than Marxian base-superstructure metaphors, and they transcended arbitrary modern distinctions between nature and culture, environment and technology, or science and social
science (the same distinctions that have been subjected to rigorous critique by scholars associated with the recent material turn). He sketched the way geography, geology, climate, navigation and biology structure, and are inscribed by, networks of circulation and communication. When he quotes and extends Washington Irving in the conclusion of the *Fur Trade*—“‘the lords of the lakes and forest have passed away’ but their work will endure in the boundaries of the Dominion of Canada and in Canadian institutional life” (1973: 392)—he is not writing in metaphor.

The beaver offered Innis a window onto such processes at a relatively small, Canadian scale. As Barry Gough writes,

> The beaver was a means for Innis to explain history [...] It was to Innis an amalgam of economic forces, human activity, and political organization. The beaver pelt was the currency of exchange, the meeting of European ‘civilization’ with that of the Aboriginal peoples of North America, the focus of trade rivalry and corporate wars, the link between metropolis and far frontier, the driving force for new fields and districts of exploration, fort-building and local exploitation, the symbol of new trade allies. The trade was based on Aboriginal, indigenous needs; it linked European markets with interior fur posts and, even further, circuit traders who traded *en derouine* and freemen (2013: 57).

The beaver was the vessel, the medium, by which Innis grasped how human activities become inscribed into the earth as infrastructure, and the way these comprise the plane on which subsequent activity can (or must) unfold. His unique analysis shows that the story of Canadian colonization is not one of an *idea* (like manifest destiny), nor a sublime technology like the railroad, nor of a ‘productive’ convergence of three founding nations (as we hear in some popular and nationalistic histories, e.g. Saul 2008), but of cultural techniques of hunting and
trapping, economic exchange and circulation. It is a logistical story about the movement of people, data, and things, about dynamic processes of growth and decay.

Innis would later apply this model of thinking to the history of earthly civilization (2002, 2007). Different moments offered him different paradigms: cuneiform tablets, hieroglyphs and pyramids, parchment and papyrus, newspapers and pulp. Each opened a window onto the infrastructure of civilization, the means by which people hold together in time and space. And this is how the staples of his early work like fur, cod, or timber are related to his later interest in media of communication: they are paradigms. Media theory was, from the start, the identification of civilizational paradigms. This is an important but understudied aspect of Innis’s intellectual legacy. It comes into view when re-reading him in infrastructural terms.

Documents & Digital Dirt Research

Thanks to the efforts of the archival staff at the University of Toronto, we are able to return to the huge number of documents Innis generated in the field. Doing so with fresh eyes, I submit, helps us rescue his work from clichés that spring forth from the late communication texts (“the space-bias of the internet is making us stupid”). It also helps us move beyond important but by now repetitious critiques of knowledge monopolies in news media production and circulation. Such arguments arise from reading the communication works in isolation, blind to the method and intellectual formation that produced them. Method and formation are precisely what we find in the dirt research documents.

In a recent piece, John Guillory (2016) ponders the role of documents in humanistic inquiry. His aim is to move conversations about the humanities away from commonplace reactionary defenses (which rest on vague claims about social value, or that make propriety
This is a pre-publication version of an essay to be published in Cultural Politics (2017)

claims about the human world). I am sympathetic to Guillory’s cause but it falls beyond my purview here. However, Guillory lifts two concepts developed in 1940 by Erwin Panofsky that are relevant to my re-reading of Innis: the monument and the document. He writes,

by [documents], Panofsky means all of those artifacts or traces of human making, action, or thought surviving into the present, the total accumulation of human artifacts, events, and ideas. By ‘monument’, Panofsky refers to those artifacts, events, or ideas that have the most urgent meaning for us at any present moment and that most demand our recognition or study (2016: 12).

Documents are the totality of inherited material; they are constitutive of monuments. Various monuments demand our attention in different historical periods. To recognize and reckon with them, scholars seek out, sift through, and arrange documents of various kinds – paper-based, much of the time (but not always). Guillory reads Panofsky to say that humanistic inquiry sifts through documents because monuments often loom so large in the present that we lose sight of them. They are the hyper-familiar, the taken-for-granted, or they are aspects of the forgotten past that burst forth so powerfully that we cannot believe we did not notice them before. Guillory points to ‘history from below’ as one such object that “called to us, belatedly, from the archive, and in this calling we discovered a new monumentality” (2016: 27). ‘Totalitarianism’ is another for which we are still attempting to parse the requisite documents.

Panofsky claims for the relation between these two terms, monument and document, nothing less than the essence of humanistic inquiry. They are two sides of the same coin: “everyone’s ‘monuments’ are everyone else’s ‘documents’ and vice-versa” (Panofsky in Guillory 2016: 20). How we conceive of the relation between monument and document is what sets the disciplines apart. For Panofsky the art historian, a 15th century altarpiece is a monument;
the contract he finds, dated 1437, speaking to its provenance is a document. For a legal scholar or
philologist, the relation might be reversed (Guillory 2016: 18-20). It is the job of humanists to
detect, understand, and reconfigure the relations between documents and monuments. And it is in
this activity that Harold Innis excelled. The young Innis intuited that there was more to economic
history and theory than the monuments of prices, markets, and invisible hands. So he did what
we always do when we want to translate intuition into exploration and argumentation: he
observed, listened, transcribed, collected, combined, and re-wrote as much as he could. Sifting
through the dirt, and later doing the same in archives of disciplines to which he was an outsider,
allowed him to find the ‘documents’ required to support the construction of a new object of
study. Today we call this monument ‘media theory.’

We face today a task much the same as the one Innis faced. We intuit that our models are
ill-equipped to process the way digital computation continuously recalibrates the spaces and
times of everything from commerce and culture to information and identity; from art and anxiety
to supply chains and social relationships. We struggle to find accurate approaches to climate
change, algorithmic affect, high-frequency trading, just-in-time delivery and mass surveillance.
These monuments burst forth and demand that we attend to them. But their machinic spaces and
times resist, at every turn, the human sensorium. What are the ‘documents’ that will enable their
robust analysis and critique?

The search for an answer to this question is what motivates the recent infrastructural turn
in scholarship and journalism. Some such work ventures into the field to gather material about,
for instance, warehouses and distribution centers, highways and drone-populated skies, ports and
shipping containers, server racks and undersea cables, satellites and colton mines. It looks to the
arrangements beneath same-day delivery, on-demand streaming, globally distributed call centers
and 24/7 assembly lines. Field work is attractive in the face of such issues precisely because their ‘black boxes’ remain opaque. Experimentation and tinkering with the operations of proprietary algorithms behind Google search results and Facebook newsfeeds have produced what little concrete understanding exists beyond the walls of these companies (e.g. Bucher 2017). A good way to grasp the size of data centers required to run the cloud, and the amount of water and energy they use, is to walk through them (Burrington 2015-16; See also Hogan 2015).

Incorporating voices of those whose communities and lives are directly affected by the on-shoring of undersea cables, as Starosielski (2015) does, localizes these technologies in a way birds-eye view visualizations do not. Harvey’s (2012) ethnographic analysis of uses (and ‘misuses’) of roads complicates the way such infrastructure is typically perceived as an expression of fixed (topographic) state power, enlivening our understanding of state-space as dynamic, emergent, and topologic. Collecting sensorial impressions about infrastructure, such as the “odd but distinctive” smell of the internet, challenges the visual bias of modern thinking about technology in ways even sound studies cannot (Blum 2012: 44, quoted in Mattern 2013).

Field work provides researchers with documents of a different order than are found in archives, libraries, or theoretical discourse. It facilitates approaches to ‘monuments’ that do not reduce them to surface issues of use, representation, or industry.

Multi-sensorial explorations of the infrastructural turn shake loose metaphors—‘the cloud’, data streams, news feeds, information flows, wireless—that would naturalize and render ‘immaterial’ the violent truths of digital media networks. Such work has successfully attuned us to the hidden ‘monuments’ of digital media networks. But the challenge remains for researchers to move beyond the act of revealing and toward more systematic analyses that demonstrate the way infrastructural monuments comprise the grooves through which social, political, and
institutional life unfold. Innis seems to point a way forward, and contemporary thinkers of infrastructure would do well to read his work with fresh eyes.\(^\text{14}\) There is much for each party to say to the other: Innis’s dirt research was media archaeology *avant la lettre*—“the student cannot afford to neglect visits to industrial plants as a means of understanding their technological implications,” he wrote in a 1951 piece called “Communications and Archaeology” (1951b: 237). His monographs are a model for how to integrate practice-based approaches and fieldwork with traditional archival and discursive research in a sustained, systematic way. On the other hand, contemporary works amplify voices from the field that were excluded or depreciated by Innis’s “white male optic”, and they push his model beyond his own (admitted) Eurocentric bias.\(^\text{15}\)

Innis teaches us to go more granular—to fur, salt, and grain, but also sand, silica, and bits. In so doing, we open up much larger questions of being and time; of ontics and ontology; of data and *Dasein*. This is what Innis understood in 1930. Through his insights we learn to work *up*, from the dirt, seeing the way culture and economy are made, as opposed to working down from abstract notions like ‘social media’, ‘neoliberalism’, or ‘digital culture’. Such an inversion necessarily recalibrates the document-monument relations of digital networks and culture. Only then might we hope to change what is unjust about them.

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\(^\text{1}\) “The Toronto School Then | Now | Next” was held at University of Toronto, Oct. 13-16, 2016. See www.thetorontoschool.ca
I find inspiration here in Buxton’s call to “abandon the conventional grand narrative of the development of Innis’s thought in favor of an approach grounded in a more nuanced and detailed micro-narratives” (2013: 6).

‘Ablative’ is derived from the Latin *ablatus*, the (irregular) perfect passive participle of *auferre*, "to carry away". It is the case for nouns “expressing source, agent, cause, or instrument of action” (*OED*, 2016).

For a recent take on Innis as a thinker of dynamic relations, and of history as a series of clashes between self-organizing systems of emergent change, see John Bonnett’s comprehensive study (2013).

Bateson’s original quote was about the scientific study of schizophrenic communication. It achieved wide circulation in information and media studies when quoted by Bowker and Star (1999: 230, 246) and now appears frequently in literature on infrastructure (see Mattern 2013).

Others sympathetic to this characterization of Innis are Rossiter (2012), Acland (2015), Schabacher (2015) and William J. Buxton, who uses different terminology but has done the most to foreground issues in Innis related to infrastructure (see Buxton 2013).

Innis’s University of Toronto colleague, Graham Spry, attended one of the initial lectures and noted that many in attendance thought the treatment of antiquity and classics “should best be left to Europeans.” (quoted in Watson 2006: 251).

“Dear Mr. Mumford, At lunch with H.A. Innes [sic], Karl Helleiner and WT Easterbrook recently I was congratulating them on the way in which they had pulled into a unity their Economic, Sociology and Political Science departments. I was illustrating further possibilities of a genuine encyclopedic synthesis from your work and suggesting how English, modern languages, History and the fine arts departments might be got to work together. At this point,
Innes, who is head of the graduate school of Toronto University asked me to write and ask you to visit us — a commission which bestows much honor on me and which I hasten to carry out [...])” (McLuhan 1948: 208).

9 It has been assumed that the media-as-staples formulation was intuited by McLuhan from the beginning of his relationship to Innis. I have found no documented reference to it before the May 1960 letter to Miller. After this letter, the formulation appears frequently in McLuhan’s interviews, talks, and published writings. See, for instance, the transcript of a plenary held at Ohio State University in October 1960, five months after the letter to Miller (McLuhan 2005: 39), or its appearance in The Gutenberg Galaxy (1962: 187). Notes in the McLuhan archive on media as staples that have been accurately dated are all post-1960 (though there are several undated entries). The closest McLuhan comes, to my knowledge, of formulating media as staples is in his essay “The Later Innis”, where he writes “The bias of this sentence [from Innis’s Empire and Communications] is its view of the social process in terms of staples, not a surprising bias in an economic historian. But the drift of the sentence is toward the view of social and political forms as modes of human communication” (McLuhan, 1953: 387).

10 Richard Cavell characterizes this as a shift in McLuhan from matters of communication to those of mediation (see, on McLuhan’s interest in mediation, Cavell 2016).

11 For a similar treatment of Innis that explores the way his ‘dirt experience’ “grounds phenomena of circulation (goods, media) in an ecological understanding and in a specific situatedness” see Schabacher (2015: 50).

12 For comprehensive overviews of Innis and the staples thesis intervention into classical political economy, see Easterbrook (1959a and 1959b); Watkins (1967); and Spry (1980, 1999), among many others.
As Evenden notes, Innis did not escape the biases of his time. The vision of north on offer in the field notes is of a decidedly “white male optic” (2013: 79); who appears in the notebooks and how they are allowed to speak presents the North and its inhabitants in particular, problematic ways.

On the possibilities for digital dirt research, see Rossiter (2012) and on ‘dirt research’ into contemporary media industries, see Acland (2015).

Though Innis famously noted that “we have not yet realized that the Indian and his culture were fundamental to the growth of Canadian institutions” (1973: 392), he never followed up on this suggestive thread in any meaningful way. See Evenden on Innis’s “white male optic” (footnote 19) and van Wyck, who notes that “the emptiness of the landscape [for Innis] does not belie a human presence. This human presence is simply not available to that (southern) eye. He sees empty with a telos of filling, whereas one might have seen or heard something else” (2010: 202).
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