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**Naturalized Nation**  
**Tyndall Stone and the Prairie Imaginary**

Abigail Auld

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# Naturalized Nation

## Tyndall Stone and the Prairie Imaginary

### ABIGAIL AULD

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On opposing banks of the Ottawa River, two symbols of Canadian architectural nationalism face off. Seven decades and shifting national imaginaries distinguish one from the other. On one side, the Parliament's Centre Block and its commanding Peace Tower crown the steep banks of the nation's capital complex. Across the river, the undulating walls of the Canadian Museum of History terrace into the gentle slope of the Quebec riverbank.

While the architecture of these two buildings is dissimilar, both are built with huge quantities of the same dimension stone: Tyndall limestone. The creamy mottled stone adds a dizzying visual dimension to the ornate gothic vaults of Centre Block's interior (fig. 1). By contrast, the entire exterior of the Canadian Museum of History is clad in the stone, enveloping the terraced façades and hardscaping with smooth and split

**FIG. 1.**  
CONFEDERATION HALL, WITH  
VIEW OF CENTRAL COLUMN  
AND HALL OF HONOUR,  
CENTRE BLOCK, PARLIAMENT  
HILL, OTTAWA, ON, 1920,  
PHOTOGRAPHED IN 1936.  
LIBRARY AND ARCHIVES CANADA  
/ CANADIAN NATIONAL RAILWAY  
COMPANY FONDS / E010861885.



face ashlar masonry (fig. 2). The 1920 reconstruction of Centre Block was led by French-Canadian architect Jean-Omer Marchand (1872–1936) and British-born John A. Pearson (1867–1940). Their design sampled an array of stone quarried across the young Dominion, constructing a totalizing metaphor for unification and territorial claim. With the 1989 completion of the Canadian Museum of History, the stone took different form and meaning in a sculpturally sinuous building designed by Alberta-born architect Douglas Cardinal, who is of Blackfoot, Ojibwe, Métis, and European descent. Cardinal's competition-winning bid for a new national monument capped the end of Pierre Elliot Trudeau's leadership (1968–1979 and 1980–1984) and marked an emerging shift in the desire of settler colonial regimes to acknowledge and incorporate contemporary Indigenous culture within popular Canadian image-making. Cardinal met this political imperative with uncompromising vision, crafting a metaphorical building-as-bedrock that roots the bright buff limestone museum into the dark grey limestone rock outcrops of the Ottawa River.

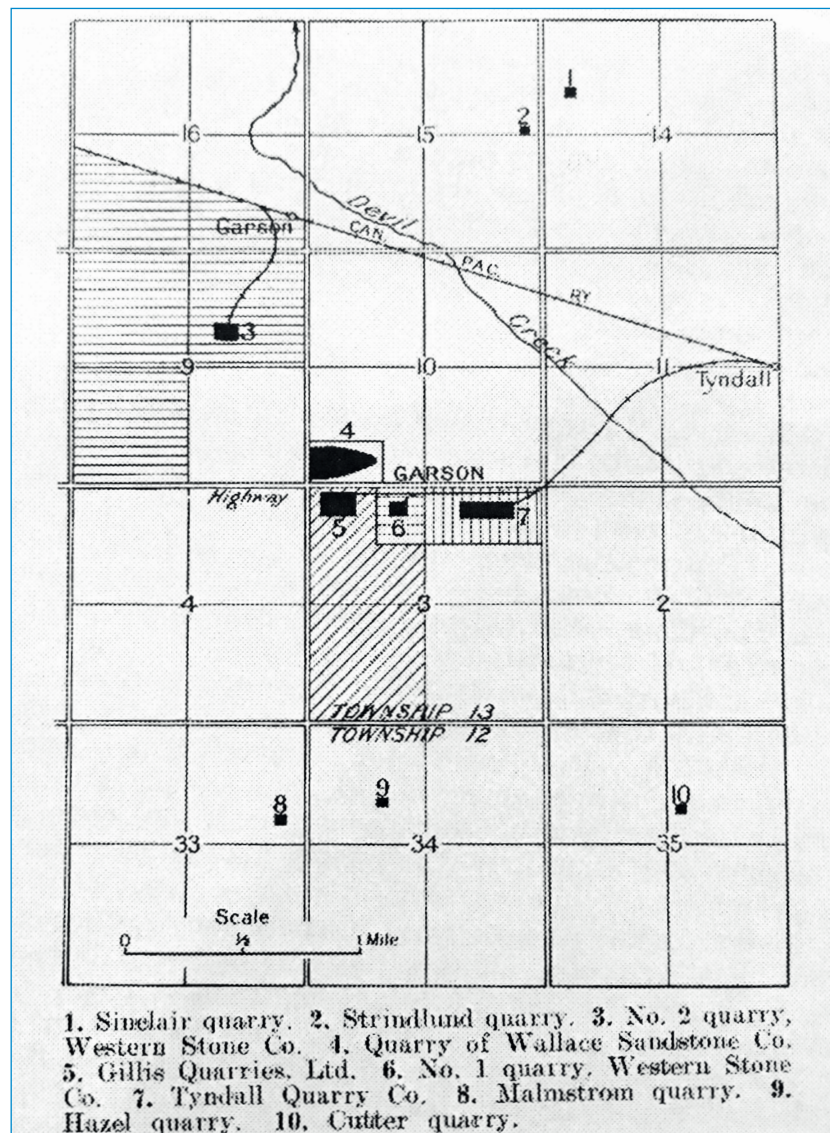
FIG. 2.  
CANADIAN MUSEUM OF  
HISTORY, GATINEAU, QC, 1989,  
PHOTOGRAPHED IN 2018.  
ABIGAIL AULD.



Despite prominent use in the nation's capital, Tyndall limestone is a building product exclusively sourced from the twinned towns of Garson and Tyndall, Manitoba. Commercial quarries opened in the mid-1890s, attracting a small settlement that eventually incorporated as Garson.<sup>1</sup> The neighbouring, slightly more established, town of Tyndall grew from a small railway depot on the main line of the Canadian Pacific Railway, built through the area from 1878–1881. Railway connection facilitated industrial speculators' journey into the region while providing crucial means of transporting heavy stone to urban markets elsewhere. By 1916, the Canadian Department of Mines ranked this mottled limestone as the best of all architectural limestones across the country<sup>2</sup> and "undoubtedly the most important source of building stone in the western provinces."<sup>3</sup> The assessment underscored the ease with which Tyndall limestone can be excavated and worked, its durability, seemingly endless supply, and strategic position as one of few rock deposits in Western Canada with the material properties necessary for quarrying dimension stone.

During the twentieth century, several companies cut quarries in the Tyndall-Garson region (fig. 3).<sup>4</sup> Tyndall Stone, a common name for over a century, became a trademark of the stone's now-exclusive supplier, Gillis Quarries Ltd., in 1995.<sup>5</sup> As Tyndall Stone use spread across the Prairies, nationally, and through select international projects,<sup>6</sup> it became a recognizable Canadian building material. The mottled stone's striking appearance has elicited varied responses. Many celebrate its "active" surface,<sup>7</sup> described like "a Bayeux tapestry" that records the past in geologic detail,<sup>8</sup> while others have balked at the "vast frozen porridge,"<sup>9</sup> or become fascinated with its "deformed" quality.<sup>10</sup> In February 2023, Tyndall Stone became the first Canadian stone to be recognized as a Global Heritage Stone Resource by the International Union of Geological Sciences—a designation that identifies 32 natural stones for their widespread use and significance in human culture.<sup>11</sup>

**FIG. 3.**  
DIAGRAM INDICATING  
HISTORIC QUARRY SITES  
AROUND TYNDALL-GARSON,  
MANITOBA. SOURCE: GOUDGE,  
M. F. *CANADIAN LIMESTONES  
FOR BUILDING PURPOSES.*  
CANADA MINES BRANCH,  
PUBLICATION N° 733, 1933, P. 31.  
REPRODUCED WITH THE PERMISSION OF THE  
DEPARTMENT OF NATURAL RESOURCES, 2023.



Nevertheless, Tyndall Stone is far more than an object of human making. It is, after all, cut from ancient bedrock. As seemingly solid substrate, bedrock witnesses whole geologic epochs unfold. It carries the formation of younger rock and landscape over its surface and moves with earth's changing geomorphology. Medievalist Jeffery Jerome Cohen argues

that the common perception of stone as “nature, stilled into resource” mutes its inherent vitality.<sup>12</sup> Stone challenges human perception, pushing against anthropocentric boundaries of time and place, even as it holds an unparalleled capacity to transport human narratives.<sup>13</sup> What, then, does Tyndall Stone reveal about both its human story and the wider ecological histories it has witnessed? What would it mean to consider both the building material and the bedrock from which it is extracted?

This paper proposes an expanded view of Tyndall Stone, reconnecting the stone to the rock body from which it is excavated: the Selkirk Member of the Red River Formation. Such reorientation aims to challenge existing definitions of the stone as either building product or geologic specimen, through examination of the pre-extraction history and ecological context from which it is removed. The paper begins by suggesting alternative means of mapping and conceptualizing of the material’s extent, understanding that by its very nature, as ancient rock, stone challenges fixed notions of place, physical geography, and the immutability of earthly matter. To remap the boundaries of Tyndall Stone’s material history, the paper puts forth the novel concept of a “material-shed,” akin to a watershed, as a conceptual device through which to visualize the trajectories between the rock body of origin and all the places where stone extractions have ended up. Drawing from the ecological model of a watershed—a basin and its tributaries—this concept imagines similar flows between the rock formation and its “material-shed” of extracted stone.<sup>14</sup> Through extracted use, Tyndall Stone has become synonymous with a settler-Canadian-constructed Prairie environment. In tracing how this association was forged, and to what end it serves, this paper aims to uncouple the constraints of such symbolism by pointing toward alternative approaches to this more-than-material substance.

## Defining the Material-shed

If not only as building material, how else should Tyndall Stone be defined? An often overlooked linguistic distinction proves helpful: rocks and stones are not equivalent. Surface geologist Robert M. Thorson explains that rock is hard mineral, “raw material, in-situ,” whereas stone is the same but detached.<sup>15</sup> While rocks do fragment naturally, stones are often the result of human intervention. Artist, curator, and writer David Garneau also considers this difference, describing stones as “rock altered by human hands and intention.”<sup>16</sup> This distinction presents a compelling starting point for a material analysis of dimension stone. As a ‘natural’ product, stone is a minimally modified ecological substance. And yet stone is inextricably linked to human activity—to the irreversible transformation of *bedrock* into building *stone*. A full sense of Tyndall Stone thus necessitates recognition of the interrelationship between extracted stone and its landscape of extraction.

Several dialectic frameworks provide pathways to reconnect Tyndall Stone with the voids left by its excavation. Geographer Gavin Bridge suggests various ways to remap resource landscapes, pushing against a prescribed notion of nation-state borders as being the “containers of resources.”<sup>17</sup> In *Reciprocal Landscapes: Stories of Material Movements*, landscape architect Jane Mah Hutton traces material trajectories, tethering production landscapes to the designed environments where extracted materials end up. Mah Hutton’s analysis makes reference to land artist Robert Smithson’s series of *Site/Non-site* artworks (beginning in 1968), and the way these sculptural works make it possible to see one place through another. Smithson’s work enables dialectical thinking: peripheral quarry *sites* become present in *non-sites* (urban gallery spaces) through the portal of quarried material as sculpture.<sup>18</sup> Writing

about the pockmarked landscape surrounding her home in New Mexico, Lucy R. Lippard speaks of the symbiosis of gravel pits and urban erections,<sup>19</sup> and of living in “the distorted mirror image of the center,” where negative space, or material absence, is of far more consequence than what is built with “deported materials elsewhere.”<sup>20</sup> Each of these thinkers foregrounds the importance of identifying place and material as co-created and of tracing the multifarious effects such activity has across vast territorial networks.

Tyndall Stone differs from the material landscapes described above in that its extractions do not necessarily travel far. The stone has moved across Canada and the United States, and, to a lesser degree, landed in Europe, Asia, and the Caribbean. Still, material use concentrates, radiating from the quarry site to nearby urban environments, then further afield, dissipating over distances travelled. At first glance, this could be read as a simple, localized “material-shed” with some outlying material trajectories. Yet Tyndall Stone’s significance should not be defined by its geographical reach, nor by a focus on its constructed use alone. Instead, the interconnections within the stone’s “material-shed,” between the rock formation as extraction site and sites of its extracted use, provide an important indication of the processes through which its home landscape became interdependent with and defined by connections elsewhere. With nuanced specificity, these trajectories make visible the material exchanges that solidified and substantiated the Canadian Dominion, through industrialization, construction, and capital accumulation, all the while realizing a national image reified in stone.

To chart Tyndall Stone’s material history, this paper begins in the ancient equatorial sea where the rock formation originated. From there, the rock’s ecological relationship to land formation, plant, animal, and human life in the northern hemisphere is explored. Analysis of pre-Confederation building practices situate the emergence of this stone’s excavation within the complex sociocultural context of Indigenous and colonial fur trade societies. The development of commercial Tyndall Stone production is defined in relation to Western Canadian expansion and examined through the array of institutional, commercial, and cultural buildings produced. Seeing these constructions as points within the extent of Tyndall Stone’s “material-shed,” their signification becomes the focus of architectural analysis in the latter half of the paper.

## Equatorial Origins

Tyndall limestone formed in a shallow equatorial sea during the Late Ordovician Period of the Paleozoic era. Roughly 450 million years ago, organic life only existed underwater (fig. 4). The earth’s landmass was consolidated into paleocontinents, including Laurentia, which straddled the equator. Over time, Laurentia’s craton shifted, broke apart, and reconsolidated as North America. These circumstances conspired to create a rock that, as paleontologist Graham Young describes it, “is made from life.”<sup>21</sup> The stone matrix of light calcium carbonate and darker magnesium-altered dolomite is crowded with large body fossils, attesting to the warm environment that fostered these organisms’ growth.<sup>22</sup> Trace fossils, seen as mottling, record the movement of marine creatures tunnelling through shallow seabed sediment.<sup>23</sup> The limestone’s massive beds break along horizontal stylolites every 18 to 24 inches, indicating long calm periods between major climatic disturbance. In all these physical characteristics, the rock reveals the conditions of its formation. Long ago, these circumstances of deep time created the material attributes that have since been exploited to turn bedrock into building stone.



**FIG. 4.**  
DIORAMA INTERPRETATION OF THE EQUATORIAL SEAFLOOR ENVIRONMENT DURING THE ORDOVICIAN PERIOD, WHEN TYNDALL STONE (SELKIRK MEMBER OF THE RED RIVER FORMATION) FORMED.  
MANITOBA MUSEUM AND GRAHAM A. YOUNG.

Over time, the equatorial sea hardened into a vast rock body that only surfaces above ground in a few instances. The whole of its extent, called the Red River Formation, extends deep below other rock that layers into the contours of a basin centred on Williston, North Dakota (fig. 5). Along the edge of this depression, the Red River Formation is the uppermost bedrock layer in an outcrop belt running up the middle of Manitoba. In southern Manitoba, the Red River Formation is divided into smaller units of rock that layer over one another, from oldest to youngest, known as the Dog Head, Cat Head, Selkirk, and Fort Garry Members.<sup>24</sup> The Tyndall quarries cut into the lowest levels of the Selkirk Member, which skims the surface in the Beausejour-Tyndall-Garson region, while the upper levels of the Selkirk Member outcropped along the Red River, where the communities of Selkirk, Lockport, and St. Andrews are now located.

**FIG. 5.**  
DIAGRAM SHOWING THE BOUNDARIES OF THE WILLISTON BASIN. ADAPTED FROM JIN, JISUO, AND REN-BIN ZHAN. *LATE ORDOVICIAN ARTICULATE BRACHIOPODS FROM THE RED RIVER AND STONY MOUNTAIN FORMATIONS, SOUTHERN MANITOBA*. CANADIAN SCIENCE PUBLISHING, 2001. P. 3. FIG. 1.  
© CANADIAN SCIENCE PUBLISHING OR ITS LICENSORS.



## Red River Rapids

In this part of southern Manitoba, bedrock is mostly covered by flat lowland prairie and marshland, bisected by the meandering path of the Red River. As it flows north into Lake Winnipeg, the river crosses a bedrock high, where it once exposed limestone that studded the riverbanks and cut across the water, breaking its flow into shallow rapids. This is the only place in southern Manitoba where the Selkirk Member of the Red River Formation is known to have been exposed by environmental conditions. The rock, and awareness of the place once known as The Rapids, Grand Rapids, or Sault à la Biche (Deer Rapids),<sup>25</sup> has receded, in part due to the flooding of the rapids for the 1900–1910 construction of St. Andrew's Lock and Dam (fig. 6).



**FIG. 6.**  
PREPARATION WORK FOR  
ST. ANDREW'S LOCK AND  
DAM, LOCKPORT, MANITOBA.  
H. E. VAUTELET (DESIGN  
ENGINEER), 1900–1910,  
PHOTOGRAPHED IN 1908.  
ARCHIVES OF MANITOBA PHOTOGRAPH  
COLLECTION. 1984-129. LOCKPORT 28,  
CONSTRUCTION, 1908, P1188, N17222.

Nonetheless, for millennia before their inundation, the rapids were an integral part of a landscape that has sustained life since the last ice age retreat roughly 10,000 years ago.<sup>26</sup> The ancient, shapeshifting glacial Lake Agassiz deposited rich alluvial sediment, leaving glacial scouring and a pair of lakes in its wake. Within this post-glacial environment, the limestone rapids were an important feature. This was the singular shallow point in the entirety of the Red River's path, and thus provided a crossing point for animals. The pooling rapids created spawning grounds, nurturing an abundance of fish. Archeological field work carried out from 1984 to 1988 determined that this very spot was likely a significant cultural landscape: a meeting place for trade, fishing, renewing relationships, establishing marriages, and conducting ceremonies for several distinct cultures over a period of 3,000 years.<sup>27</sup> Pottery sherds, tools, underground storage pits, and crop remnants found here attest to four distinct cultures: the Larter, Laurel, Blackduck, and Selkirk, who hunted, fished, lived here seasonally, and participated in inter-continental trade via the Red River's overland connection to the Mississippi and Gulf of Mexico. And, from 1300–1480 C.E., land adjacent to the rapids was cultivated to grow corn (fig. 7).<sup>28</sup>

The bedrock exposures could be interpreted as having supported horticultural activity by shaping an environment with favourable growing conditions. Spring floods inundated the



FIG. 7.  
ILLUSTRATED INTERPRETATION  
OF THE WOODLAND (1300–1480  
C.E.) CULTIVATION PERIOD  
AT THE RED RIVER RAPIDS.  
SOURCE: MANITOBA HISTORIC  
RESOURCES BRANCH. *THE  
PREHISTORY OF THE LOCKPORT  
SITE*. WINNIPEG: HISTORIC  
RESOURCES BRANCH, 1985. P. 12.  
REPRODUCED WITH THE PERMISSION OF THE  
MANITOBA HISTORIC RESOURCES BRANCH.



rapids and riverbank's lower terrace, which became enriched by riverine sediment. Evidence of horticulture was concentrated in this terrace, and, in my view, represents the earliest instance of the Selkirk Member of the Red River Formation having been used to support human habitation. Clearly, in this instance, it is not a building material. Nonetheless, this landscape use suited lifeways. The use of bedrock, in situ, may well represent an attuned relationship with and awareness of the ecosystem service provided by this material in its home landscape. What changes if the history of stone use begins here, rather than at the quarry site?

## Red River Rock Harvests

Over subsequent centuries, the Red River Rapids and surrounding region became the territory of Ininiwak, Anishinewuk, Anishinaabeg, and Dakota Oyate. Waterways, footpaths, and later, cart trails, linked regions east-west and north-south. When the foreign-export fur trade pushed into the area in the seventeenth century, European traders relied on Indigenous knowledge to move through the territory, survive, and extend mercantile trade routes.<sup>29</sup> Fur traders and church missionaries established parish settlements close to places of longstanding, significant Indigenous habitation, including the rapids. Settled life developed between “the Forks,” where the Red and Assiniboine rivers meet and the marshy limits of Lake Winnipeg’s southern basin. Interlinked riverbank communities became known as the Red River Settlement and the birthplace of the Red River Métis Nation, whose ethnogenesis is rooted in the wider region and intermarriage between First Nations Peoples and French Canadian and European fur traders. Following negotiations between the Métis-led Legislative Assembly of Assiniboia and the Canadian Dominion, the region became the Province of Manitoba, joining Confederation with a majority Métis population in 1870.<sup>30</sup>

In the years before Confederation, the presence of rock became a subject of scientific and industrial interest. American geologist W. H. Keating published an early written record of the

mottled stone, having observed it while participating in an American military reconnaissance mission up the Red River in 1823.<sup>31</sup> This was followed by more detailed reports by D. D. Owen (1852), H. Y. Hind (1857), J. Palliser (1857), and various members of the Geological Survey of Canada.<sup>32</sup> With time, the rock formation became geologically described as the Selkirk Member of the Red River Formation, named after the geographic locations where it was initially observed. Early scientific reporters participated in exploratory missions by river, undoubtedly experiencing the Red River Rapids firsthand. Some stopped just downstream, or north of the rapids, for provisioning at a Hudson's Bay Company (HBC) fort built there between 1832 and 1848.

As it happens, the fort was erected at this precise location due to the presence of the rock, which became its defining building material. HBC Governor Simpson justified this material choice in 1831:

Instead of wasting time, labour and money in temporary repairs of tottering wooden buildings, [I] set about erecting a good solid comfortable Establishment... the only stone and lime—and I may add the most respectable looking—Establishment.<sup>33</sup>

The compound became known as the Stone Fort, and later, Lower Fort Garry. Limestone cut from the riverbank provided building material and determined the fort's location downstream, conveniently avoiding portage around the rapids en route to the HBC headquarters at York Factory.

In this era, rough blocks of limestone were excavated on an ad hoc basis by the HBC and for stone parish churches being built to replace earlier wooden structures. At the time, cut stone masonry was rare in the region. As class division emerged, wealthy people commissioned stone houses modelled after the Stone Fort's "Big House" (fig. 8). Historian Robert Coutts explains that those who inhabited stone masonry buildings considered themselves the settlement's elite and used "the style, size and architectural sophistication of their residences, churches, and forts to provide outward signal of their privileged position within local society."<sup>34</sup>

**FIG. 8.**  
THE "BIG HOUSE" AT THE  
STONE FORT [LOWER  
FORT GARRY], 1830-32,  
PHOTOGRAPHED IN 1958.  
LIBRARY AND ARCHIVES CANADA / HUMPHREY  
LLOYD HIME FONDS/ E004155606.

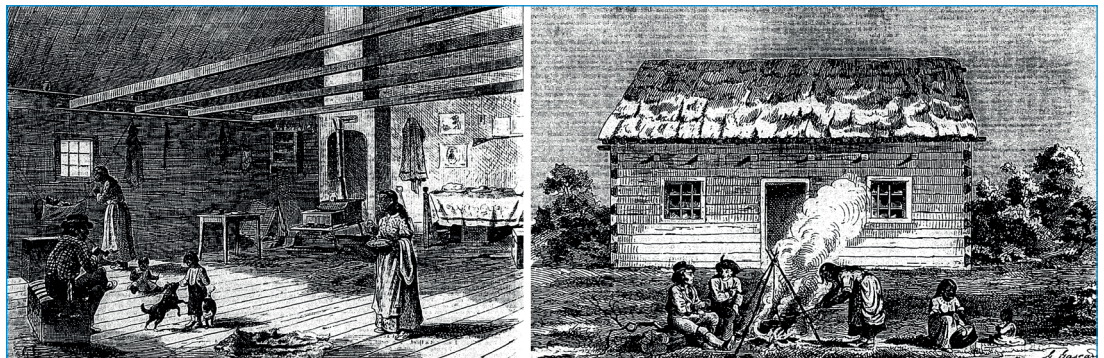


Nonetheless, most Red River buildings were built with rough-hewn timber. The style, known here as Red River frame, evolved from log-building methods brought to the region by French fur traders. The structural system was modular, allowing buildings to be small or expansive, easily enlarged, or disassembled and reused.<sup>35</sup> Gathered limestone was also used to construct foundations in these timber-frame buildings and to produce kiln-burned lime for limewashing, plastering, mortar, and fireplaces.

Red River frame construction required minimal labour and enabled quick assembly and material reuse. Builders adapted the construction method to suit their own cultural traditions, as attested by the iterative range of stacked-log styles that spread across the Prairies. As colonial encroachment and political disenfranchisement caused Red River Métis People to migrate further west, they brought a lap-jointed timber frame typology that remixed European construction technique with Indigenous spatial order, resulting in what has been defined as a distinct Métis building vernacular (fig. 9).<sup>36</sup> In the 1980s, archeologist David Burley led a survey of such buildings in St. Laurent, Saskatchewan and concluded that a Métis worldview of egalitarianism, open unboundedness, consensus, and continuity with nature was reflected in the buildings' siting and open-plan interiors.<sup>37</sup> More recently, architectural scholars David Fortin, Jason Surkan, and Danielle Kastelein have connected Burley's work with their own analysis of historic and contemporary Métis architecture, demonstrating an ongoing continuity of ethos across building practices.<sup>38</sup> This analysis of Métis building culture demonstrates how differences in the application of similar building methods and material use may reflect distinct worldviews and values that, importantly, continue across time and architectural tectonics.

**FIG. 9.**  
MÉTIS HOUSE AT FORT  
DUFFERIN, SOUTHERN  
MANITOBA, SHOWING OPEN  
INTERIOR AND LAPPED DOVETAIL  
JOINT STYLE CONSTRUCTION.

CANADIAN ILLUSTRATED NEWS, N°  
14, VOL. 10, OCTOBER 3, 1874, P. 220.  
CANADIANA, [HTTPS://WWW.CANADIANA.  
CA/VIEW/OOCIHM.8\_06230\_257/13].



Back at the Red River Settlement, stone masonry and timber frame construction represented contrasting material practices that reflected different values and relationships to the environment. Stone masonry was built to endure much longer than timber frame construction. The significant material and labour resources necessary to build masonry walls—a process requiring several years—were invested not simply to accommodate lives, but rather to use architecture to channel wealth and exert permanence. By contrast, most Red River Frame buildings were self-built and made economical use of a wide variety of regional resources. Modularity, disassembly, use of timber, and limewashing to protect wood maximized the lifespan of building components and created adaptable buildings using largely renewable resources.

## Supplying New Demand

Once Western Canada entered Confederation (1870–1905), the Dominion Land Survey and government-sponsored transcontinental railway changed how people moved through and occupied land. The 1881–1885 advance of the Canadian Pacific Railway (CPR) figuratively unified the nation, while the infrastructure investment both necessitated and facilitated industrial development in its new peripheral environment. Railway progress was fueled by material extractions along the way. Trees were felled to clear the route, providing sleeper ties that balanced on excavated crushed stone aggregate. The first rail lines constructed in Manitoba connected the earliest commercial quarries to Winnipeg, the city that developed at the confluence of the Red and Assiniboine rivers. The growing city demanded curbing, rubble stone, and lime for construction, which was largely supplied by quarries in the Stonewall and Stony Mountain areas. Though limestone produced from these quarries was of similar age to stone quarried along the Red River, they extracted from different rock formations. Of the various limestone deposits, the Selkirk Member of the Red River Formation was far better suited for excavation as dimension and ornamental stone. In the 1880s, the cross-river towns of Selkirk and East Selkirk developed not far from Lower Fort Garry and its riverbank exposures. Once connected by rail, East Selkirk began shipping dimension and ornamental stone to Winnipeg. This marked a shift from ad hoc excavation to the emergence of a market-driven quarry industry. For a brief period, the riverside community of East Selkirk became a quarry epicentre before the limited quantity and quality of stone caused operations to peak between 1884 and 1887 and then cease (fig. 10).<sup>39</sup>

**FIG. 10.**  
QUARRYING AT EAST SELKIRK  
[THEN DESCRIBED AS GALENA  
LIMESTONE QUARRY],  
PHOTOGRAPHED IN 1884.  
LIBRARY AND ARCHIVES CANADA / NATURAL  
RESOURCES CANADA FONDS / A050784.

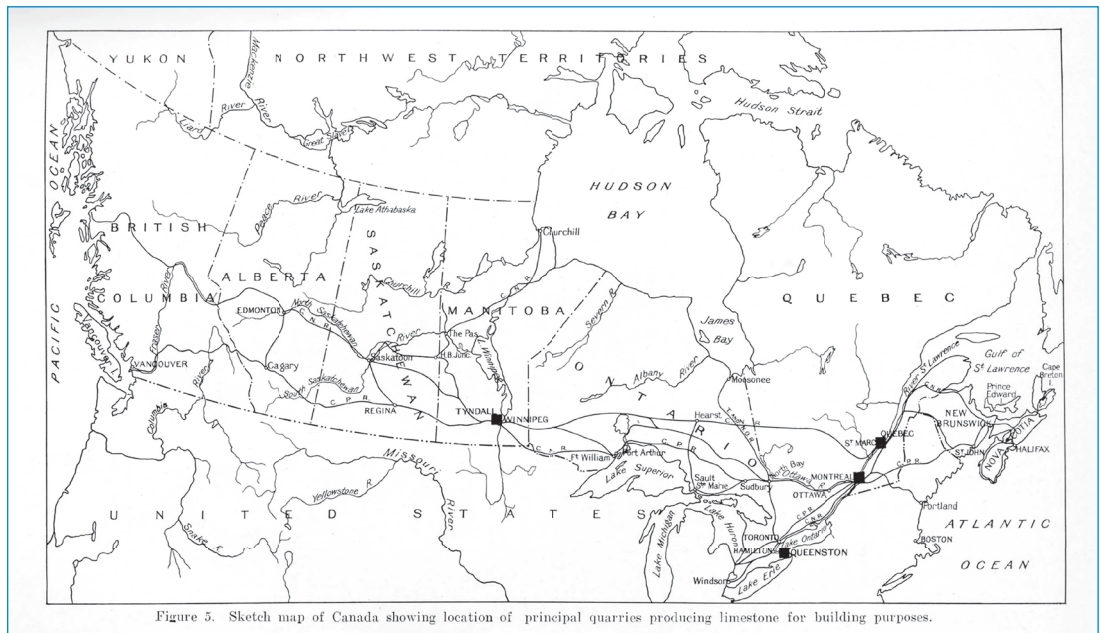


A few miles east, an undisturbed expanse of the same rock formation lay just beneath the surface. The CPR established Tyndall as a small depot, just one stop east of East Selkirk, and, by 1886, the *Manitoba Free Press* reported that rock, allegedly of inferior quality to that at Selkirk, existed near Tyndall. This opinion—and commercial activity—would soon change. The 1890s saw three Tyndall-Garson quarries open, followed by more operators in later years.<sup>40</sup>

## Naturalizing a Nation

As Western Canada urbanized, Tyndall Stone spread across the Prairie provinces of Manitoba, Saskatchewan, and Alberta, and, to a lesser degree, British Columbia. Accessible bedrock with properties suited to dimension stone extraction—including deep bedding, grain composition, and lack of impurities—is rare across Western Canada, thus enabling Tyndall Stone to win frequent specification (fig. 11). Following Confederation, a flurry of federal public construction asserted the government's presence through an array of eclectic revivalist buildings during the 1880–1910 period. As Janet Wright notes, "government buildings represented a small but highly visible component in the process of the Canadianization of the Prairies."<sup>41</sup> These buildings brought federal policy and jurisdiction to Prairie soil, in the form of government administration buildings, post offices, land titles and customs offices, jails and lawcourts, large mixed-use "Dominion Public Buildings," and Indian Residential Schools aimed at assimilation (fig. 12).<sup>42</sup> Tyndall Stone became a building block of this post-Confederation Western world, cladding steel-structured buildings with ornate ashlar masonry and embellishing hundreds of modest brick assemblies with stone trim work.

**FIG. 11.**  
BLACK SQUARES INDICATE ALL  
FOUR CANADIAN LIMESTONE  
QUARRIES AND THEIR RAIL  
LINE CONNECTIONS IN 1933.  
SOURCE: GOUDGE, M. F.  
CANADIAN LIMESTONES FOR  
BUILDING PURPOSES. CANADA  
MINES BRANCH, PUBLICATION  
N° 733, 1933, P. 99.  
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Over time, the stone became synonymous with an array of picturesque revival and neo-classical buildings produced by the Federal Department of Public Works, their provincial counterparts, and municipal building committees. Mark Fram and Jean Simonton highlight the political nature of public buildings, noting how such projects "symboliz[ed] the role of government in society and how that government wishe[d] to be perceived by current and future populations."<sup>43</sup> Initially, federal directive sought to transmit strength and stability through exertion of an imposing and sophisticated architectural image.<sup>44</sup> Political climates then shifted to an imperative of economy and efficiency, leading to a standardization of building typologies from 1896 to 1914.<sup>45</sup> Tyndall Stone provided continuity across shifting national ambitions, affording a suitable local—and, by consequence, relatively cost-effective—alternative to imported dimension stones. The use of Tyndall Stone in government construction provided institutional validation that bolstered local esteem and perceived value of this material.



**FIG. 12.**  
 MANITOBA LEGISLATIVE  
 BUILDING CONSTRUCTION,  
 PHOTOGRAPHED IN 1915.  
 ARCHIVES OF MANITOBA L.B. FOOTE  
 FONDS. 1984-129. FOOTE 587,  
 CONSTRUCTION OF LEGISLATIVE BUILDING,  
 5 OCTOBER 1915, P7394/8, N2187.

**FIG. 13.**  
 CANADIAN NATIONAL RAILWAYS  
 UNION STATION, WINNIPEG,  
 WARREN & WETMORE, 1908-09,  
 PHOTOGRAPHED C.1940-49.  
 LIBRARY AND ARCHIVES CANADA /  
 RONNY JAQUES FONDS / E010980620.



Mythic image-making was not only the purview of government-sponsored public construction; it was also realized through the establishment of commercial entities pushing westward, especially in the form of standardized bank branches and department stores spanning the Prairies and Northern Ontario.<sup>46</sup> The public-private enterprises of the CPR, the Grand Trunk Pacific Railway, and the Canadian National Railways added Tyndall Stone flourish to their expanding networks, fashioning train stations and landmark hotels decorated in mottled stone (fig. 13).<sup>47</sup> Elsa Lam has traced how paired ideas of wilderness and nationalism permeated construction and Canadian identity formation from the 1830s to the 1930s. Lam draws on political scientist Benedict Anderson's ideas about nationalism to explain how Canada was "imagined into existence" via alignment with abstract interpretations of landscape.<sup>48</sup> While considering railway-marketed nature-oriented luxury

tourism, Lam notes that “seen from the civilized safety of a train window or from a hotel terrace, wilderness was experienced as a picturesque setting,” an antidote to urban life and its stressors, attainable from the comforts of a refined mediating setting.<sup>49</sup> Tyndall Stone became a vehicle of this imagined creation, explicitly, in its contribution to the ornamented interiors of railway hotels, and, increasingly, through the aura exuded by the stone’s materiality.

## A Medium of Prairie Modernism

By the 1930s and 1940s, Manitoba architects began looking at local precedent as a source of inspiration to propel practice into the modern period. In 1937, Milton S. Osborne, long-time dean of the University of Manitoba School of Architecture, zeroed in on the Winnipeg Civic Auditorium, a recently completed Depression relief project, as a shining emblem of “Prairie-ness.” Osborne praised the Tyndall-clad art deco building’s “plain wall surfaces, simple masses and horizontal lines” suggesting that “our local building materials are most beautiful and effective when used in the plain, broad wall surfaces of the modern style” (fig. 14).<sup>50</sup> Glowing admiration for the warm, dappled stone continued into the mid-century. In 1954, a group of six University of Manitoba students co-wrote “Red River Skyline” for the RAIC Journal, chronicling regional architecture from “early pioneer structures” to contemporary construction. The six authors criticized the eclecticism of previous generations, summarizing early twentieth century architecture as a “grand detour...a circuitous route through phases of imitation.”<sup>51</sup> They echoed Osborne’s praise for the Winnipeg Auditorium and celebrated the wide vistas, open-plan, and “light-enclosing volumes” of the University’s recently opened, decidedly internationalist, Tyndall-clad Elizabeth Dafoe Library. In their view, the library used old materials in new ways, “...preserv[ing] a sense of continuity with older traditions, as evidenced in the library’s masonry enclosure.”<sup>52</sup>

**FIG. 14.**  
WINNIPEG AUDITORIUM,  
NORTHWOOD AND CHIVERS,  
SEMENS, PRATT AND  
ROSS, BUILT 1932.  
CITY OF WINNIPEG ARCHIVES. CITY OF  
WINNIPEG ARCHIVES PHOTOGRAPH  
COLLECTION (P02 FILE 26), [HTTPS://  
WINNIPEGINFOCUS.WINNIPEG.CA/I01428].



Conveniently skipping over the array of neoclassical Tyndall Stone building stock, the six authors' interest in local architecture focused on mid-nineteenth century buildings—the stone and timber-frame buildings of the Red River Settlement. Emerging Prairie modernists increasingly sought out “authentic” and “honest” architectural tradition.<sup>53</sup> In this quest, the student-authors of “Red River Skyline” rhetorically asked, “can we expect to find an expression of the prairies, of the dignity and the progressive spirit of its people, through the use of local building materials?” They go on to affirm, “materials such as tyndal stone[sic], most handsome when used in the broad wall surfaces...possess the character and dignity of the early buildings of the pioneer period.”<sup>54</sup> An association with early regional building and material practices was thus seen as key to developing an authentic architectural practice on the Prairies. Importantly, this signalled an expansion of architectural reference points, from a focus on European and American precedent to pre-Confederation building typologies that were, notably, being read as ‘Canadian’ by these mid-century theorists. The use of local materials like Tyndall Stone could be seen to legitimize and ground the radical modernism and coming heroic gestures of Prairie Expressionism, by emphasizing continuity with early Red River buildings. These building precedents were held up as symbols of pragmatic ‘pioneers,’ abstracted from the complex socio-cultural reality and varied material practices of the Red River Settlement period.

As architectural historian Jeffrey Thorsteinson has identified, modern architecture in Canada is broadly read as being especially landscape-oriented, a kind of “contextual modernism” rooted in connection to or reverence for nature. This view permeates popular architectural discourse, architects' own writing, and certain historical analyses.<sup>55</sup> It also crucially reinforces an ongoing self-definition of Canada as especially aligned with nature—a concept that underpins assessment of why and how local building materials are used and critically misrepresents Canada's foundational and ongoing relationship to land and natural resource extraction. Thorsteinson, Elsa Lam, and others have demonstrated how the search for “Canadian-ness” in culture and architectural output often lands on picturesque representations of untouched, unpeopled landscape.<sup>56</sup> The desire to differentiate from other nations, namely Britain and America, or to turn to landscape as a supposedly “culturally neutral” means of unifying a young multicultural settler-oriented nation, undoubtedly motivates this kind of image-making.<sup>57</sup> However, such reverence and metaphoric allegiance with the more-than-human world appears characteristic of ongoing attempts to root settler-Canadian culture and architecture within the territory. Tyndall Stone, in its material extraction and symbolic abstraction as a Canadian stone, can become wrapped up in this process of colonial overbuilding or erasure.

## Conclusion

In providing a broad overview of the mottled limestone's history of use, this paper begins to tease out the multiplicity of ways this stone has supported regional habitation. Tyndall Stone and its rock body of origin, the Selkirk Member of the Red River Formation, are part of the substrate of this specific place—bearing ever-present witness to life and livelihood unfolding on the surface. In its materiality, this rock and detached stone contain an archive of ancient tropical sea life, rendering the palaeoequator tangible from the marshy grasslands and urban environs of the now Canadian Prairies.

It is illuminating to make visible the pathways from excavated stone back to its bedrock formation of origin. Just as the relationship between rock formation and ancient equatorial



seabed connects distant environments, the rock formation's relationship to its distributed material-shed provides a framework through which to perceive how constructed use links disparate places. Through stone extraction, exchange, and material use, construction on the banks of the Red and Ottawa Rivers became entwined. This connection speaks to the wide spectrum of physical and conceptual means by which Canadian nationalism asserted itself across distant, heterogeneous regions. To begin to unravel this overlay requires seeing the differences and complexities eclipsed by national definition.

Analyzing the past requires careful attention. When looking at the banks of the Red River, Robert Coutts cautions, "those forms of architecture that often service from an earlier period, such as the stone churches and houses that dot the river edge in St. Andrew's, as opposed to those that have not survived...can often influence our view of the past and bias what we might consider typical of life in the settlement."<sup>58</sup> Merely looking at preserved stone buildings obscures much about the sociocultural history of the Red River Settlement. So doing overlooks the period's far more common, yet still varied and culturally distinct practices of harvesting rubble rock and burning limestone to limewash timber-frame buildings. Even more so, if architecture alone is the lens through which stone use is analyzed, the seasonally attuned horticultural practices that made use of the limestone rapids ecosystem are rendered unseen. These non-masonry material stories are important and may indeed provide the interstitial basis on which to reconnect stone excavations with their rock formation of origin.

On the Ottawa River, Douglas Cardinal's Canadian Museum of History provides another perspective shift. Against the backdrop of Centre Block's colonial stone collage, Cardinal's building-as-bedrock is indicative of the conceptual shifts made possible by changing socio-political direction and authorship (fig. 15). In the museum's opening days, architectural critic Trevor Boddy summed up its inspiration as "landscape mythically transformed." Boddy details Cardinal's references as geologic tectonics, mythic tales of natural genesis, and the spiritually animated within the inanimate.<sup>59</sup> Now, three decades on, Cardinal's work has affected popular conceptions concerning Canadian architecture and identity, while

**FIG. 15.**  
CANADIAN MUSEUM OF  
HISTORY, GATINEAU,  
QC, LOOKING TOWARD  
PARLIAMENT HILL, OTTAWA,  
ON, PHOTOGRAPHED 2018.  
ABIGAIL AULD.



influencing the direction of Indigenous architectural activism and practices across nations. Through Cardinal's hand, Tyndall Stone also gained new signification, as bedrock itself. The mottled limestone beacon, set in a symbolic nexus for Canadian nationalism, crystallized a certain political moment while presenting a future-focused challenge. How might an expanded view of Tyndall Stone's material origin respond to and further building practices that recognize materials in all their layered complexities? Might awareness of the stone's fluidity and malleability also provide grounds to reassess seemingly 'set in stone' conceptions of prairie identity and social history? Regardless of whether it is perceived as such, stone is not static. It moves great distances and shapeshifts through many altered states over seemingly immeasurable time. To begin to perceive of these subtle, durational shifts, opens a whole range of expansive conceptual and material possibilities.

## Notes

1. There is a slight discrepancy within historic and contemporary records about which quarry company first began operations and when they did so. The Garson Quarry Company, operated by William C. W. Garson, and John Gunn & Sons both began operations sometime between 1895 and 1898. The town of Garson is named for William Garson.
2. Parks, William A., 1916, "Report on the Building and Ornamental Stones of Canada: Volume 4, Provinces of Manitoba, Saskatchewan and Alberta," 388, Mines Branch Report, Ottawa, Canadian Department of Mines, p. 40.
3. Parks, p. 45.
4. Major producers included Garson Quarry Co.; Northwest Quarries; Western Stone Co.; G.W. Murray; Carter + Hall; Tyndall Quarry Co.; and Gillis Quarries Limited. Manitoba Mineral Resources, "Manitoba Mining Through the Centuries: Companies," Manitoba Rocks, [<http://www.manitoba.ca/iem/min-ed/mbhistory/mininv/966.htm>], accessed July 27, 2022.
5. Tyndall Stone, Gillis Quarries Limited. (1995, July 38), 0758298, [<https://ised-isde.canada.ca/cipo/trade-mark-search/0758298>], accessed July 27, 2022. Other common names included Tyndall limestone and Garson stone.
6. Of note is the symbolic use of Tyndall Stone in Canadian Embassies, including Kanada Haus (Berlin, 2005, Kuwabara Payne McKenna Blumberg Architects with Gagnon Letellier Cyr Architects and Smith Carter Architects + Engineers) and interior renovations to Canada House (London, 2015, Stantec).
7. Wilkins, Charles, 1986, "Manitoba's Magnificent Limestone," *Canadian Geographic*, vol. 106, n° 1, February-March, p. 32.
8. Zimmerman, Nathan B., 1942, "Tribune Trumps," *Winnipeg Tribune*, 6 August, p. 6.
9. Matoff, Theodore, 1964, "City Hall: Prudence in Tyndall stone porridge," *Winnipeg Tribune*, 5 December, p. 13.
10. Gillis Quarries Ltd., 2003, "Malcolm Holzman interview," *Tyndall Stone*, [promotional video], at 2:07 of 08:35.
11. Cooper, Barry J., B. R. Marker, D. Pereira, and B. Schouenborg, 2013, "Establishment of the 'Heritage Stone Task Group' (HSTG)," *Episodes Journal of International Geoscience*, vol. 36, n° 1, p. 8-10.
12. Cohen, Jeffrey Jerome, 2015, *Stone: An Ecology of the Inhuman*, Minneapolis, University of Minnesota Press, p. 11.
13. Cohen, p. 8-10.
14. 'Material-shed' is a working term I am using to conceptualize the connection between quarried material and the ecosystem from which it is excavated, drawing inspiration from a water basin and its tributaries. This metaphorical analogy also builds on the term 'fibershed' and related non-profit developed by Rebecca Burgess in 2010 to advocate for regional and regenerative fiber systems. Burgess, Rebecca, 2019, *Fibershed: Growing a Movement of Farmers, Fashion Activists, and Makers for a New Textile Economy*, White River Junction, Chelsea Green Publishing.
15. Thorson, Robert M., 2002, *Stone by Stone: The Magnificent History in New England's Stone Walls*, New York, Walker and Company, p. 238.
16. Garneau, David, 2015, "Rocks, Stones, Grandfathers," In *Rocks, Stones, and Dust*, curated by John G. Hampton, Toronto, The Justina M. Barnicke Gallery and the University of Toronto Art Centre, [[https://rocksstonesdust.com/essays/Rocks\\_Stones\\_Grandfathers.pdf](https://rocksstonesdust.com/essays/Rocks_Stones_Grandfathers.pdf)], accessed April 27, 2023.
17. Bridge, Gavin, 2015, "Archipelago: Spatial Aesthetics and Resource Ecologies," in Inke Arns (ed.), *World of Matter*, London, Sternberg Press, p. 64-69.
18. Hutton, Jane, 2020, *Reciprocal Landscapes: Stories of Material Movements*, New York and London, Routledge, p. 3. Hutton discusses Smithson's writing, including Smithson, Robert, 1968, "A Provisional Theory of Non-Sites," in Jack Flam (ed.), 1996, *Robert Smithson: The Collected Writings*, Berkeley, University of California Press, p. 364.
19. Lippard, Lucy R., 2014, *Undermining: A Wild Ride through Land Use, Politics, and Art in the Changing West*, New York, The New Press, p. 4.
20. Lippard, p. 10.
21. School of Art Gallery, University of Manitoba, dir. 2022, *Virtual Panel: KC Adams, Mariana Muñoz Gomez, and Graham Young: Orienting Self, Place, and History*, at 19:50 of 1:53:10, [<https://www.youtube.com/watch?v=Kb4b7V8WoJs>], accessed July 27, 2022.
22. Young, Graham A., Robert J. Elias, Simon Wong, and Edward P. Dobrzanski, 2008, "Upper Ordovician Rocks and Fossils in Southern Manitoba," Canadian Paleontology Conference, Field Trip Guidebook n° 13, Geological Association of Canada, St. John's, Newfoundland, p. 43.
23. Kendall, A. C., 1977, "Origin of Dolomite Mottling in Ordovician Limestones from Saskatchewan and Manitoba," *Bulletin of Canadian Petroleum Geology*, vol. 25, n° 3, p. 480-504.
24. Cowan, John, 1971, "Ordovician and Silurian stratigraphy of the Interlake area, Manitoba," in Turnock, A. C. (ed.), *Geoscience Studies in Manitoba: Geological Association of Canada, Special Paper 9*, p. 235-241.
25. Barkwell, Lawrence J., 2016, *The Metis Homeland: Its Settlements and Communities*, Winnipeg, Louis Riel Institute, p. 181.

26. Corkery, Timothy, M., 1996, "Geology and Landforms of Manitoba," In John Welsted, John Everitt, Christoph Stadel (eds.), *The Geography of Manitoba: Its Land and Its People*, Winnipeg, The University of Manitoba Press, p. 16-18.
27. Province of Manitoba, 1985, *The Prehistory of the Lockport Site*, Manitoba, Historic Resources Branch. See also Valerie McKinley, 2001, *Population Migration, Social Boundaries and Ceramic Analysis: The Lockport West Site (EaLf-2), A Case Study*, University of Manitoba, Anthropology, MA Thesis; and Flynn, Catherine, 2002, *Cultural responses to the medieval warm period on the northeastern plains: the example from the Lockport Site (EaLf-2)*, Manitoba, University of Manitoba, Anthropology, MA Thesis.
28. Buchner, A. P., 1988, "The Geochronology of the Lockport Site," *Archaeology Today* vol. 12, n°2, p. 27-31.
29. Berthelette, Scott A., 2020, *Between Sovereignty and Statecraft: New France and the Contest for the Hudson Bay Watershed, 1663-1782*, Doctoral Thesis, University of Saskatchewan, p. 10.
30. Sprague D. N. and R. P. Frye, 1983, *The Genealogy of the First Metis Nation: The Development and Dispersal of the Red River Settlement 1820-1900*, Winnipeg, Pemmican Publications, p. 28.
31. Keating, William Hypolitus, 1825, *Narrative of an Expedition to the Source of St. Peter's River, Lake Winnepeek, Lake of the Woods, [Etc.] Performed in the Year 1823, by Order of the Hon. J.C. Calhoun, Secretary of War, under the Command of Stephen H. Long*, vol. 2, London, G. B. Whittaker.
32. Owen, D. D., 1852, *Report of a geological survey of Wisconsin, Iowa, and Minnesota; and incidentally of a portion of Nebraska Territory*, Philadelphia, Lippincott, Grambo & Co. See also Hind, Henry Youle, 1860, *Narrative of the Canadian Red River Exploring Expedition of 1857 and of the Assiniboine and Saskatchewan Exploring Expeditions of 1858*, London, Longman, Green, Longman, and Robert Palliser, John, 1863, *The Journals, Detailed Reports, and Observations Relative to the Exploration, by Captain Palliser, of That Portion of British North America, Which, in Latitude, Lies between the British Boundary Line and the Height of Land or Watershed of the Northern or Frozen Ocean Respectively, and in Longitude, between the Western Shore of Lake Superior and the Pacific Ocean during the Years 1857, 1858, 1859, and 1860*, London, G. E. Eyre and W. Spottiswoode.
33. Simpson's letter to the Company governing board in London (July 19, 1831), reprinted in Watson, Robert, 1928, *Lower Fort Garry: A History of the Stone Fort*, Winnipeg, Hudson's Bay Company, Print 3.
34. Coutts, Robert, 2000, *The Road to the Rapids: Nineteenth-Century Church and Society at St. Andrew's Parish, Red River, Calgary*, University of Calgary Press, p. 123.
35. Butterfield, David, 1988, *Architectural Heritage: the Selkirk and District Planning Area*, Winnipeg, Manitoba Culture, Heritage, and Recreation, Historic Resources, p. 19-20.
36. Fortin, David T., 2018, "Mixing It Up: Métis Design and Material Culture in the Canadian Conscious," In Elizabeth Grant, Kelly Greenop, Albert L. Refiti, and Daniel J. Glenn (eds.), *The Handbook of Contemporary Indigenous Architecture*, Singapore, Springer Singapore, p. 2533-81 at p. 259. See also Chandler, Graham, 2003, "The language of Métis folk houses," *The Beaver*, Aug-Sept, p. 39-41; Burley, David V. and Gayel A. Horsfall, 1989, "Vernacular Houses and Farmsteads of the Canadian Métis," *Journal of Cultural Geography*, vol. 10, n° 1, p. 19-33.
37. Burley, David, 2000, "Creolization and Late Nineteenth Century Métis Vernacular Log Architecture on the South Saskatchewan River," *Historical Archaeology* vol. 34, n° 3, p. 27-35.
38. Fortin, David, Jason Surkan, and Danielle Kastelein, 2018, "Métis Domestic Thresholds and the Politics of Imposed Privacy," In Rebecca Kiddle, Luugigyoo Patrick Stewart, and Kevin O'Brien (eds.), *Our Voices: Indigeneity and Architecture*, Novato, California, ORO Editions, p. 76-84.
39. McCharles, Alex, 1886, "The FootSteps of Time in the Red River Valley with Special Reference to the Salt Springs and Flowing Wells to be Found in it," *MHS Transactions*, Series 1, n° 26, Read 16 December.
40. The first three quarry operations were the Garson Quarry Company, William Henry & Company, and John Gunn & Sons.
41. Wright, Janet, 1997, *Crown Assets: The Architecture of the Department of Public Works, 1867-1967*, Toronto, University of Toronto Press, p. 50.
42. Wright, p. 50. See also Fram, Mark and Jean Simonton, 1988, "Public Buildings," In Ball, Norman R. (ed.), *Building Canada: A History of Public Works*, Toronto, University of Toronto Press, p. 262.
43. Fram, p. 262.
44. Fram, p. 262 and Wright, p. 37.
45. Wright, p. 73.
46. Including seven T. Eaton Co. and three Hudson's Bay Co. stores, and many Bank of Montreal and Canadian Imperial Bank of Commerce branches from the 1910s through the mid-century.
47. Including nine railway hotels and seven railway stations between Quebec City and Victoria.
48. Lam, Elsa, 2008, "Wilderness Nation: The Myth of Nature in Canadian Architecture," *Journal of the Society for the Study of Architecture in Canada*, vol. 33, n° 3, p. 15-16; Anderson, Benedict R., 1991, *Imagined Communities: Reflections on the Origin and Spread of Nationalism*, London, Verso.
49. Lam, p. 15.

50. Osborne, Milton, S., 1937, "The Architectural Heritage of Manitoba," In Rupert Clendon Lodge (ed.), *Manitoba Essays*, Toronto, Macmillan Company of Canada, p. 53-88.
51. Ackerman, R. F., B. H. Green, M. R. Johnson, D. A. McQuaig, K. R. Webber, and H. A. Elarth, 1954, "Red River Skyline," *RAIC Journal*, vol. 31, n° 3, p. 83.
52. Ackerman et al., p. 85.
53. Ackerman et al., p. 81.
54. Ackerman et al., p. 85.
55. Thorsteinson, Jeffrey, 2016, "'Only Half an Architecture': Nature, Nation, and Interpretations of Modern Architecture in Canada," *Journal of the Society for the Study of Architecture in Canada*, vol. 41, n° 2, p. 51.
56. Lam, p. 17 and Thorsteinson, p. 56-57.
57. Thorsteinson, p. 57.
58. Coutts, p. 112.
59. Boddy, Trevor, and D. Cardinal, 1989, *The Architecture of Douglas Cardinal*, Edmonton, NeWest Press, p. 95.