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Nomadism to Settlement;
Grain Elevators on the Canadian Prairies

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Contribution on Leduc historic place by Tom Ward

As they crested the ridge, the cupolas of the wheat elevators at Plainville came into view, (p 90) . . . . Gander drew up in the straggling street that skirted the railway track . . . on his left the huge bulk of the grain elevators, each with its squat little engine room from which came the intermittent spit . . . spit . . . of the gasoline motor. The air was filled with the dust of wheat; around the elevators were drifts of chaff in which one or two outlaw cows of the town were browsing; from the railway track came the sound, like rushing water, of wheat being piped into cars for shipment, first to Fort William or Port Arthur and later to those hiving lands of Europe now so assiduously engaged in a business of their own, but a business which could not be carried on for long without the help of that little red kernel, mightier than siege guns and battleships . . . (p 120). (1)

. . . many hopeful signs of a growing architectural sense in Canada have been brought to our attention. There are the possibilities of the new "engineering architecture" symbolized in Canada chiefly by grain elevators whether in wood as is typical on the prairies or in concrete about the Great Lakes. On the architectural merits of these, opinion differs; one of our informants finds them honest and no more, another admits a beauty in "simplicity of form, unbroken surface texture and the play of shadow". (2)

The above quotations present two perspectives on Canadian grain elevator structures. The first quote, from the 1926 novel Grain, paints a picture of pioneer farm life in Manitoba between 1896 and the 1920's. The main character, Gander Stake, represents the first generation of settler's children to be born and raised on the prairies. While his parents may have experienced urban life in large cities, if only through the immigration or settlement process, Gander's own life and experience does not yet extend very far past the boundaries of his family's farm. From Gander's viewpoint, the line of grain elevators in the fictional small town of Plainville are the largest buildings he has ever encountered and they connect his farming activities with the global market for wheat, an early example of what we now know as globalization. They also validate the settlement pattern of the Canadian prairies, embraced by his parents, which saw land surveyed into a grid composed of ¼ mile by ¼ mile square plots of 160 acres called quarter sections, with towns laid out along the railway line at approximately 8 to 10 mile (13 to 16 km) intervals, a distance that a farmer could reasonably travel in one day with a horse drawn wagon load of grain.

The second quote from the Massey Report of 1951 casts the grain elevator, both the concrete terminal-style and the wood crib construction type found in small towns, in a pivotal role in Canada's architectural history. In general, Canadian architecture is largely the product of outside influence, often regionalized by local materials and responding to local landscape and climate. There is little in Canadian architecture that has not been imported from elsewhere. The grain elevator, however, is one of the few building types that was developed in North America and proliferated in both Canada and the United States.

The plan for the settlement of the Canadian west had its roots in the "National Policy" of 1879, a policy of tariff protection that also envisioned a populated, agrarian west providing a market for eastern manufactured goods. (3) Beginning in the 1870's, the First Nations (or Native Canadians) were systematically resettled on reservations after the prairie bison that sustained them, a creature perfectly adapted to the extreme climate, was essentially eradicated. Beginning in 1876, before the completion of the railway from Winnipeg to Port Arthur on Lake Superior in 1883, wheat was exported from Manitoba to Great Britain via shipments south on the Red River connecting with American railways. The building of the Canadian Pacific Railway across the area now known as Manitoba, Saskatchewan and Alberta after 1881 provided the transportation infrastructure for settlers and manufactured goods to reach the remote area. It also provided the means for agricultural products produced in the region to reach outside markets. In 1883, the Canadian Pacific Railway began the construction of a terminal elevator at Port Arthur and by 1884, a shipment of wheat was sent to Glasgow Scotland by means of an all-Canadian route to seaboard (4). Country grain elevators first appeared on the Canadian prairies in the 1880's as a solution for weighing, grading, storing and quickly loading grain onto railway cars (5). Such structures benefited from new technologies of "cribbed" wood construction and elevating devices. The settlement of the Canadian prairies can be viewed as a modernist project, rooted in enlightenment philosophy and based on the ideas of mechanized agriculture, railway transportation and the control and modification of the natural environment that included the rejection of both indigenous peoples and fauna such as the bison.

One conclusion that can be drawn from this analysis is that the most extraordinary point in the evolution of this region and one most worthy of recognition and commemoration is

the point of transition from the nomadic culture of the First Nations to the settlement culture of mainly European and American pioneers. (6) The transition from nomadism to settlement occurred quickly, through mechanized means, in the late 19th century during the formative years of modernist architecture. The railway itself, along with train stations, trestles and the surveyor's grid that redrew the landscape and illustrate a large scale environmental transformation, are very tangible elements of this transition. However, from an architectural viewpoint, it is the grain elevator that best symbolizes this important point in the social, economic and cultural development of the region, and possesses wider significance through its influence and iconic form. These simple, functional buildings not only symbolized the values of the pioneer settlers, but also attracted European modernist architects and artists, who viewed them as an example of "honest form" and an early representation of the beauty of the modern world. It is the only building type common to the Canadian prairies that has had a significant influence on the development of modernist architecture. (7)

The first grain elevator appeared in Buffalo, New York in 1841 and is attributed to American entrepreneur Thomas Dart and engineer Robert Dunbar, a Scot educated in Canada. (8) These structures displayed characteristics which became common in later elevators including wood crib construction and continuous elevating belts with attached cups. This basic formula was embraced on the Canadian prairies with the Canadian Pacific Railway implementing a standard for elevator construction. A plentiful supply of dimensioned lumber was available, with 70 percent of the lumber output of British Columbia shipped to the Canadian prairies in the years before 1914 (9). The terminal elevator embraced concrete technology around 1900, but the construction of wood crib grain elevators in small towns continued into 1980's.

At their highpoint in the early 1930’s, there were over 5000 wood crib grain elevators in Manitoba, Saskatchewan and Alberta. (10) The gradual abandonment began in the 1980’s as the traditional wood crib construction was superseded by concrete terminal elevators spaced over larger intervals and usually located in larger communities, a recognition that grain delivery, had for some time been accomplished by large trucks rather then by horse drawn wagons. As the building of the railway across the prairie provinces in the late nineteenth century promoted the development and construction of the wood crib elevator, so too the systematic abandonment of the rail lines serving rural

communities led to the death of the prairie icon; “the 1990s saw the full impact of this demise with the ending of the Crow Rate in 1996 and further rail abandonment” (11) The new reality proved shocking for many who believed that the giant icons would always mark their small rural community on the vast landscape. In some cases, the structures were sold to farmer-owned cooperatives or dismantled in order to salvage the wood. But often the destruction was brutal and wasteful, where the now redundant elevator was toppled over, crushed and burned.

The accelerating loss of the country grain elevator sparked an interest in the identification and protection of some of the remaining key examples, an interest that came from not just rural communities, but also from heritage departments and agencies at the provincial and national level. In 1995, a row of five elevators at Inglis Manitoba was designated as a National Historic Site. The agenda paper which supported the nomination, entitled “Framework and Criteria for the Evaluation of Country Grain Elevators”, recognized the significance of a “line” or row of elevators, a pattern that resulted from competition between various grain handling companies. (12) It also presented a chronological framework that assists with understanding prairie grain elevator development and decline. The paper identified four time periods in the development of the grain industry: Genesis (1876-1900), Expansion (1900-1930), Maturity (1930-1970) and Attrition (1970- present). The chronology recognized that the grain elevator form, most apparent in the shape of the roof and size of the elevator and its various annexes, evolved through each time period. Hip-roofed elevators with cupolas were common in the Genesis stage; the “sloped-shoulder” design became prevalent in the Expansion stage; and the Maturity and Attrition stages include simple flat roofs and more complex roofs that combine “sloped shoulders” with gables.

The form of the grain elevator, especially when grouped together in a line, offers a skyline to the minimalist prairie landscape, and is analogous to such European icons as the historic windmills of the Netherlands. Indeed, at Expo 86 in Vancouver, the Saskatchewan pavilion took the form of a grain elevator and even in the context of a World Fair offered a memorable and immediately identifiable landmark. The fate of the wood grain elevator mirrors that of other modernist structures, such as industrial sites and airports, which are rendered obsolete when the technology that created them is superceded. Despite greatly reduced numbers, it is through heritage sites, postcard

images and tourist material that the grain elevator continues to survive as a symbolic representation of the prairie region.

Following are three examples of recognized grain elevators listed on the *Canadian Register of Historic Places*. Each represents a particular time period and conservation treatment.

Fleming Grain Elevator, Fleming, Saskatchewan.
Time Period: Genesis Stage
Constructed: 1895
Designation Status: Provincial Heritage Property
Conservation Treatment: Rehabilitation

The Fleming Grain Elevator was constructed in 1895 and is the oldest standing grain elevator on its original site in Canada and possibly the only surviving example of the Genesis stage (1876-1900). The hipped roof with cupola is the formal element that places the design in the first stage of grain elevator development. It was originally built for the Lake of the Woods Milling Company of Winnipeg and is located next to the Canadian Pacific Railway main line. Archival photos indicate that the unloading shed has been rebuilt with an enlarged version to accommodate the transition from horse drawn wagons to motorized trucks. Also, the office has been moved from the west to the south side of the elevator and a lean-to structure on the west side has been demolished, likely in response to a change from a system for powering the elevating leg that incorporated a drive shaft to one that utilized a rubber belt. The metal siding appears to be original and the original metal shingles were replaced with wood cedar

shingles at some point. The Town of Fleming took over ownership of the site in 2005 and applied for designation as Provincial Heritage Property under Saskatchewan's *Heritage Property Act*.

Analysis of the building, research of historic documents, mainly photographs, and discussion with representatives from the town and conservation officials from the provincial Heritage Resources Branch led to a decision to pursue a rehabilitation conservation treatment as represented in the *Standards and Guidelines for the Conservation of Historic Places in Canada*. The roofing material required immediate replacement and was accomplished using cedar wood shingles. The foundation and heavy timber frame supporting the grain bins were found to be in good condition. It appears that current concrete foundation is a non-original alteration.

The metal siding became the major conservation question. The original siding is still evident and consists of a painted ribbed steel panel 85cm x 65cm, attached to the building with nails that are visible on the surface. It was an inexpensive industrial siding material that became known as "Manitoba Siding" and is still manufactured today, but in a textured aluminum version rather than painted steel. At first it appeared that two options existed; one to repair or replace the siding with salvaged material and the other to replace the siding with new aluminum "Manitoba Siding". The appearance of the aluminum material was deemed to be incompatible with the historic place. The repair or replacement with salvaged material raised long-term durability concerns since the current material, at 112 years of age, is at the end of its life and any salvaged material would be of similar age and condition. A third option emerged when a manufacturer was found who replicated the panel in steel. The original colour was investigated and screws rather than nails are used to attach the panel. Traces of the original "Lake of the Woods" company signage are still evident below subsequent layers of paint and will be reproduced on the west side of the elevator. The east side may be utilized for revenue generating advertising and the use of the elevator is currently open awaiting a decision on the location and nature of a tourism office.

Inglis National Historic Site, Inglis, Manitoba
Time Period: Expansion Stage and Maturity Stage
Constructed mainly between 1920 and 1925 with one elevator constructed in 1941
Designation Status: National Historic Site
Conservation Treatment: Preservation

The five elevators in Inglis are not only the last example in Manitoba of an elevator row; they are also the best remaining example in Canada. They were built over the course of forty years, during Expansion (1900-1930) and Maturity (1930-1970) stages, which could be viewed as the "Golden Age" of grain elevator construction. They also represent the full range of ownership types, from the large Canadian and American-backed companies, the smaller family-owned concerns, to farmer co-operatives.

The uniqueness of the Inglis elevators was identified in 1992 when Manitoba Culture, Heritage and Tourism undertook an inventory of the remaining elevators in Manitoba. But, even with this uniqueness, their preservation was far from assured. With a population of less than 200, first acquiring and then saving these sentinels of the prairies, was a project of daunting proportions. Fortunately, strong individuals with a sense of purpose and mission formed the Inglis and Area Heritage Committee (IAHC), which led to a community commitment to preserve the row and both federal and provincial designation.

In 1997, Canadian Heritage completed a report entitled “Long-Term Conservation Plan and Strategy” for the site. The report enabled the IAHC to secure substantial capital funding to complete the project through federal, provincial, municipal and private

sources. The basic conservation of all five elevators has been successfully completed but the project still faces challenges. For example, although the site is monitored for fire and security, fire suppression remains a major dilemma; the buildings can be easily sprinklered but there is an inadequate supply of water in Inglis to service the sprinklers in case of a fire. Construction of a costly water retention facility has put the installation of sprinklers on hold until further substantial funding can be found.

The overall conservation approach was primarily preservation. Minimal restoration was required as the elevator row had changed very little since the 1940s. Each of the five elevators has been thoroughly cleaned, a unique issue in elevator conservation where grain accumulation is a distinct fire hazard and attraction for rodents. Several foundations had failed, necessitating the raising of the elevators and the replacement or repair of the existing concrete foundations. One elevator, which had a picturesque but structurally dangerous lean, was raised to a more vertical position. All five elevators are constructed with wood cribbing, dimensional lumber laid flat, stacked and nailed to create a thick solid wood structure. Where the cribbing had rotted, usually at grade level, those sections were replaced in-kind. Additional preservation work was required for wood frame structures, such as the cupolas above the cribbed elevator walls, the attached driveways and the separate office buildings. Original materials – siding, windows, mechanical components and so on – were preserved unless too deteriorated for reuse. Elevator and annex roofs were re-roofed with cedar shingles, as they had been originally.

Although largely a preservation project, the conservation strategy for three of the five elevators included rehabilitation for new uses. One elevator is now an interpretive centre, incorporating modern washrooms and displays built into the cribbed bins of the elevator and interpretive displays installed in the driveway. The attached balloon annex (similar in construction to a balloon-framed house) has been internally adapted to accommodate group events and large displays on the main floor with curatorial offices on a newly constructed mezzanine. This required the removal of several minor interior elements, such as the internal bin walls. The elevator office has also been rehabilitated as the office for the site and the interpretive complex. As a whole, the elevator and attached balloon annex and office building form a well preserved complex that subtly incorporates new functions essential to the development of the site as a tourist

destination. Indeed, the elevators attract a large number of international visitors annually. Eventually, it is hoped that two other elevators will be rehabilitated in a similar fashion for commercial uses related to grain storage, agricultural products or tourism.

The remaining two elevators, which share a common driveway, have been designated as operational demonstration elevators to complement the interpretive program for the site. In this case, some restoration has taken place, particularly the office interior which has been restored to its “Golden Age” appearance.

Alberta Wheat Pool Grain Elevator Site Complex, Leduc, Alberta
Time Period: Attrition Stage
Constructed 1978
Designation Status: Provincial Heritage Property
Conservation Treatment: Preservation

Constructed in 1978 on the CPR line between Calgary and Edmonton, the heritage value of the single composite Alberta Wheat Pool Grain Elevator in Leduc lies in its status as one of the last wood crib grain elevators built in Alberta. The site was designated and protected by the province of Alberta, under the Historical Resources Act,

in 2003 for its strong landmark and symbolic values associated with the marketing and distribution of grain in rural Alberta throughout the twentieth century, and as a representative of the Attrition (1970-present) or final phase of grain handling through the rural elevator system. Adding to the heritage value of the site is the authenticity of building and mechanical components, as well as extant landscape features and three ancillary structures; two storage warehouses and a small fertilizer elevator, all erected in a line with the grain elevator, adjacent to the railway right-of-way. The 3,050 tonne capacity AWP grain elevator in Leduc, complete with its modern power train and dust collection machinery, foreshadows the trend toward large centralized concrete and steel inland grain terminals that were to come.

In the fall of 1998, the Leduc AWP grain elevator was decommissioned by its owner, Agricore United, and a permit was issued by the city for its demolition. Once retired, it seems these purpose-built structures are, for a number of reasons, considered by many to be a liability and safety risk for the community. Word of the pending demolition circulated quickly and concerned citizens mobilized support for the preservation of the community landmark. A petition delayed demolition and in 2000 the fledgling Alberta Legacy Development Society (ALDS) was formed with a stated mission to “save, preserve and develop the Leduc Grain Elevator for future generations.” In May of 2001, ownership of the grain elevator property was officially transferred to the Society.

The challenge in the preservation of this grain elevator site has not been the lack of community volunteer support nor the consensus required on how to proceed with conservation work. In fact, the Society has been eager to respond to projects such as careful window conservation with an approach calling for minimal intervention as recommended by the *Standards and Guidelines for the Conservation of Historic Places in Canada.* The primary obstacle has been building code issues that arise with occupancy changes from traditional industrial use to assembly use when a new owner society wishes to interpret the site to the public.

The primary objection by safety code officials to opening Alberta grain elevators to the public has been the "limiting distance" building code requirement which these sites, given their close proximity to railway lines and property boundaries, invariably contravene. Limiting distance is best described as the required distance, for life and

building safety, between a building's exterior wall and the property line. The intent is to provide an appropriate level of protection and fire-spread rating; buildings closer together or close to a property boundary require a higher fire rating of its materials to mitigate risk. The limiting distance requirement is a challenge for all wood crib elevators due to the combustible nature of their building materials as well as the fact that all, by necessity of function, were constructed directly adjacent to property boundaries so that rail cars on active railways and spur lines could be served.

The challenges imposed by current building codes are jointly being moved toward a positive resolution by provincial heritage staff, society members and government ministries responsible for the code. By working toward the mitigation of identifiable risk with projects such as the removal of volatile grain dust and creating non-combustible fire breaks around the structures, solutions to allow for public use of designated grain elevators becoming possible. The Alberta Legacy Development Society has moved decidedly in this direction. In 2005, nine tons of grain dust and debris was safely removed from the elevator and annex by a company specializing in the removal of toxic waste for the oil and gas industry. Although not typically considered to be conservation work, the removal of grain dust goes a long way to preserving the site by reducing the flame spread rating of the interior surfaces and thereby acknowledging the imperative for public safety by mitigating risk.

The chosen primary conservation treatment type for this relatively unchanged modern historic resource has been *preservation*, which will ensure the retention of all character-defining elements as well as its evolved mechanical systems. In addition to work required under the code, the Alberta Legacy Development Society has also proactively taken on other more visible conservation projects such as the repair of wood window sashes, where as much original material as possible was saved in the process. This year, all buildings on site were painted in Alberta Wheat Pool blue and original wall signs were uncovered and refreshed. By systematically addressing the material conservation issues and need for code compliance, the AWP elevator in Leduc will be preserved as a treasured addition to the landscape while enabling the public to view and use the property for a variety of functions thereby ensuring the economic viability of the site.

Notes

1. Stead, Robert J.C.; Grain (Toronto: McClelland and Stewart Limited, 1963, George H. Doran Company, 1926) pages 90 and 120.

2. V. Massey, chairman, “Royal Commission on National Development in the Arts, Letters and Sciences,” section on “The Artist and the Writer: Architecture and Town Planning,” in Massey, Part I, Ottawa: King’s Printer, 1951, p. 218

3. Fowke, V.C., *The National Policy & the Wheat Economy, (*Toronto: University of Toronto Press, 1957, 1978) page 3-4.

4. Fowke, V.C., *The National Policy & the Wheat Economy, (*Toronto: University of Toronto Press, 1957, 1978) page 105. The following offers a concise description of the beginnings of the grain export market in the Canadian west and the dramatic change that the arrival of the railway and the technology of grain elevators brought to the region:

The first shipment of wheat from the Canadian West took place in 1876, before the coming of the railway, when R.C. Steele of Toronto, a founder of the Steele, Briggs Seed Company, came to Winnipeg to purchase seed wheat. He wished to secure 5,000 bushels but was able to purchase only 857. The wheat was sacked and shipped south from Winnipeg by steamer on the Red River to Fisher's Landing in Minnesota. Steele secured another 4,000 bushels of wheat in northern Minnesota and the total shipment was taken by rail from Fisher's Landing to Duluth, by boat to Sarnia, and by rail to Toronto. The growers in the Red River settlement were paid 85 cents per bushel and the freight to Toronto was 35 cents per bushel.

5. Pedersen, Maureen, Saskatchewan Grain Elevators: An Inventory-Based Research Project, (Saskatchewan Heritage Foundation, October 1999) page 4.

6. Parks Canada, *Framework for Selecting Cultural Sites for Canada's Tentative List* (2000). The themes of nomadism and settlement are drawn from:

"The broad lines of the thematic framework of the National Historic Sites of Canada System Plan (2000), which is persuasively national in scope, are, overall, consistent with the directions of the framework adopted by the World Heritage Committee in 1994 and its two principal themes: “Human Coexistence with the Land” and “Human Beings in Society”.

7. Mahar-Keplinger, Lisa, *Grain Elevators*, (New York, Princeton Architectural Press, 1993) images on pages 8-11.

8. Pedersen, Maureen, Saskatchewan Grain Elevators: An Inventory-Based Research Project, (Saskatchewan Heritage Foundation, October 1999) page 4, and *Buffalo Architecture and History.org.*

9. Fowke, V.C., *The National Policy & the Wheat Economy, (*Toronto: University of Toronto Press, 1957, 1978) page 72.

10. Inventories completed by Manitoba, Saskatchewan and Alberta suggest that a total of 5728 (Everitt, page 95) existed in the three provinces in 1933.

Everitt, John. A Study of Grain Elevators in Manitoba. Report prepared for the Historic Resources Branch, Government of Manitoba, 1992.
This inventory for Manitoba suggests a peak number of 737 in the early 1930's and identifies 18 significant remaining elevators in 1992. The Inglis site is the only recognized heritage elevator site in the province.

Pedersen, Maureen. Saskatchewan Grain Elevators: An Inventory-Based Research Report. Report prepared for the Saskatchewan Heritage Foundation, September 2000.
This inventory for Saskatchewan lists a peak number in 1932 of 3,240, subsequent updates identify approximately 700 in 2000 and 425 in 2005. The 2005 update identifies 12 significant elevators above and beyond one that is recognized as provincial heritage property and seven that are recognized as municipal heritage property.

Larmour, Judy & Les Bergen. Heritage Prairie Grain Elevator Project: Research Report. Report prepared for the Provincial Museum of Alberta, April 1998.
This inventory for Alberta lists a peak number in the 1930's of 1,781 and 979 in 1982 with subsequent updates identifing156 in 2005. There are currently 12 recognized as provincial heritage property.

11. Larmour, Judy & Les Bergen. Heritage Prairie Grain Elevator Project: Research Report. Report prepared for the Provincial Museum of Alberta, April 1998, page 188.
"The Crows Nest Pass Agreement of 1897 granted a subsidy to the CPR of $3,500,000 cash and a land grant to build a line from Lethbridge to Nelson in British Columbia, in exchange for a reduction of freight rates to 14 cents per hundred weight on grain and flour moving east from Winnipeg to the Lakehead, and on machinery and settlers effects going west." The Crow Rate came into effect in 1899 taking various forms until it was ended in 1996.

12. Fulton, Gordon, "Framework and Criteria for the Evaluation of Country Grain Elevators", Historic Sites and Monuments Board of Canada Agenda Paper, 1995.

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