

The Logs of Canada

Marc de Caraffe

Introduction

Canadian cottages, such as the two we see here (fig. 1), cast a strong sense of selfhood in which are embedded notions of remoteness, privacy, naturalism and freedom, fundamental characteristics of the rugged individuality of a true woodsman, like the one we can see on this picture.¹ These two cottages were built for an early conservationist, known as Grey Owl, and his wife, Anahareo. They used the lakeside cottage to raise beavers in order to protect the species from extinction. This is why a cabin was constructed with one side projecting out over the water in order to allow the beavers access to the cabin directly from the lake in all seasons. Both structures were built from local spruce logs, with saddle-notched corners, and were ideally suited for rugged outdoor people and animals.²

This story conveys the full lure that living in a log cabin located in the remote forests of Canada can offer, except for a few small quirks. Grey Owl was not a Native of Canada, but a Scotsman whose real name was Archibald Bellamy. He did not build the cabins himself and these cabins were located in a national park of Canada, which had a mandate to protect the local fauna. Park authorities built them for someone they thought was a famous Native naturalist who could draw attention to this park and to the fate of the beavers and, at the same time, attract more visitors. Furthermore, while the park's authorities were willing to let this Native couple and their beavers live within the park's limits, they had no hesitation in expelling, a few years before, local Natives who were living there on their ancestral lands long before the park was established. Finally, the beavers of Canada were never threatened, but they did make a pair of interesting pets that were very easy to feed and clean.

In more ways than one, the history of log construction in Canada reflects this convoluted story. Canadian logs come in two forms, squared and rounded. I know, this is not very original, but I am more concerned here with the historical meaning carried by each type of construction. One form is native to Canada and has been developed over time, while the second one is an importation. It is interesting, however, to note that the imported one has by now almost replaced the native form though some examples of the latter still survive and are still used. Let me illustrate this point with a simple exercise. Can you tell what these two buildings have in common (fig. 2 and 3)?

¹ Gabrielle M. Lanier, "John Archer, Architecture and Suburbia: From English Willa to American Dream House, 1690-2000", *Building & Landscapes, Journal of the Vernacular Architecture Forum*, vol. 16 No. 2 (Fall 2009), p. 121.

² Edward Mills, "Rustic Building Programs in Canada's National Parks 1887-1950; part 2 The Resource: Pre-1950 Rustic Buildings in the National Parks", manuscript on file, Historic Sites and Monuments Board of Canada, November 1992.

The first building was built of squared logs in the first half of the 19th century and it is prominently located in downtown Ottawa, across from the Catholic cathedral and the National Gallery. The second one was also built with squared logs in the latter part of the 20th century in a suburb of Ottawa. Both have been covered to hide their log assemblage. It is interesting to see that this round log structure (fig. 4) that was also built in the latter part of the 20th century, in the same suburb, has maintained its original appearance (fig. 5). Why is that? I would venture to guess that round logs are more difficult to cover than squared logs but, more importantly, round logs have become fashionable while squared logs have lost a part of their charm and are slowly disappearing.

In this presentation, I will deal with the changing meaning of log structures erected in Canada. I will provide an overview of various types of log construction found in Canada, including Native plank houses on the West Coast, Euro-Canadian settlers' cabins in the East, fur trading posts on the prairies, rustic buildings in national parks, the largest log construction in the world, and preassembled resort cabins and lodges of the present time. After briefly considering the forces of culture, politics and economics that shaped these structures, I will look at the ethnocultural aspects of their builders and make specific reference to influences coming from European countries and from the United States as they transformed a practical building type into an opulent structure of comfort and leisure, reserved for the upper classes.

An overview of the various construction techniques for log structures will also be presented which will include First Nations six-beam assemblage, the French *poteaux sur sol* (known in English as posts on sill), *poteaux en coulisse* and *pièce sur pièce*, dovetailing and saddle notching, and Red River frame (an adaptation of the *poteaux en coulisse* technique), European influences as well as modern prefabrication techniques. This overview will be accompanied by a discussion of the evolving meaning of log structures. I will address the issue of foreign influences that transformed a practical building type mostly used by settlers into an idyllic rustic cottage, "home to the middle classes". I will conclude this presentation by stating that the image of a romantic log cabin located on the shore of a remote lake, an iconic image of Canadian architecture, is as much the result of foreign influences as the natural evolution of a building type.

Natives log buildings on the West Coast

Nomadic and semi-nomadic peoples, Natives of Canada developed an architecture mostly characterized by lightness for easy transportation. The climatic and natural conditions, however, allowed the First Nations living on the West Coast of Canada to develop an architecture characterized by massive posts, beams and planks taken from the giant cedar trees growing in the area and known as plank houses.³ Unfortunately, most of these structures have been lost. Records show that houses built by the Natives of the West Coast could reach dimensions as large as 14.3 by 14.9 metres (some were even larger and could accommodate several hundred people) and that they were built in close proximity to one another, as was the case in the Haida village of Skidegate (fig. 6). The two houses on the left of this illustration were built in the 1860s-1870s. The poles are totems

³ Harold Kalman, *A History of Canadian Architecture*, vol. 1 (Oxford University Press, 1994), p. 365.

representing family crests and are divided between frontal poles and corner house-posts with images at the top.⁴

The largest Haida houses (fig. 7) were known as six-beam houses and consisted of a frame made of six large roof beams. The following description of a Haida six-beam house, provided by architectural historian Harold Kalman, demonstrates the complexity of this type of architecture:

*Posts were raised at the four corners, and grooves at their bases received the ends of the wall plates. Massive sloping roof plates, made from cedar planks as large as 75 by 15 centimetres were inserted through slots in the corner posts and supported at the centre by pairs of posts, against which the frontal pole was placed. Six large beams spanned the depth of the house and rested on the plates, while a seventh beam at the ridge was broken in the middle to allow an opening for the smoke hole. Vertical wall boards were set into grooves on the edges of the bottom and top plates, often with battens securing the joints, and planks or sheets of bark were laid loosely across the roof beams and held down with stones. The exterior walls were left unpainted.*⁵

The results were quite impressive as can be seen in this illustration (fig. 8). Note the entrance located in the stomach of the thunderbird at the base of the frontal pole, and the six projecting beams and the rising corner posts. A fire pit was located in the central part of the interior of these large houses (fig. 9). People occupied the interior of these houses according to rank, and up to 800 people could gather in these structures during major festivities, which were known as potlash.⁶

Euro-Canadian Settlers in the East

The first European pioneers in Canada settled on the East Coast and had no contacts with the Natives on the West Coast. They came from northern France in the 17th century, and they brought with them their building traditions, which, they soon realized, were not appropriate for a northern climate. Half timbering, which was common in France, was not really suited to a cold climate simply because the plaster and stone infilling, often only 15 cm thick, did not insulate houses properly, in particular because it would not remain in place under the effects of the freeze-thaw cycles. Houses would have to be built entirely of wood in order to maintain an appropriate interior temperature,⁷ and despite what the *Michelin Guide* for Scandinavia says, the French settlers did not wait for immigrants from Scandinavia, who would arrive two centuries later, to show them how to build with logs.⁸ We can see here (fig. 10) an illustration of the first Inhabitation erected in Québec City in 1608.

⁴ *Ibid.*, p. 366.

⁵ *Ibid.*, pp. 366-67.

⁶ *Ibid.*, p. 371.

⁷ Peter N. Moogk, *Building a House in New France; an Account of the Perplexities of Client and Craftsmen in Early Canada* (Toronto, McClelland and Stewart, 1977), p. 8.

⁸ *Scandinavie*, Le Guide Vert Michelin, 2006, p. 88.

Surrounded by forests, the first European settlers developed two main types of log structures, vertical posts and horizontal logs (fig. 11). This is an illustration of a pioneer shack, the first cabin that a settler in a new territory would build for himself. Its construction is very crude, not the product of an artisan builder, but it is certainly able to keep out the cold winds of winter.

Vertical posts were either directly fixed in the earth or were laid on a foundation made by a horizontal log, a sill, laying on stones. In order to fight decay, posts were made of cedar, hemlock, or spruce.⁹ These posts would be between 20 and 30 centimetres wide and have a depth of 30 centimetres and would be laid between 18 and 23 centimetres apart. Houses made of vertical posts were quite rare and the only known extant example in the province of Quebec is this house (fig. 12). Built in two periods, the half-timbered section dates from the 18th century while the section made only of vertical posts is an addition dating from the 19th century (fig. 13). This addition clearly shows that the inhabitants of the house finally realized that building only in wood was more efficient than having half-timbered structures.

A larger number of structures were erected with horizontal logs and they were known as *pièces sur pièces* houses (fig. 14). According to historian Peter Moogk, logs were fully squared and a “*tongue was made at each end which fitted into a vertical groove in the upright posts of the frame. The mortise thus formed was sometimes secured with a wooden pin as were the joints in the frame.*”¹⁰ The standard form of assemblage consisted of a retention by tongue and groove with corner posts, and this construction system was called *poteaux en coulisse* (fig. 15). This assemblage technique was popular because the chinking of insulation material such as moss, cedar bark, clay or plaster would prevent it falling down and structures would remain weather tight.

An analysis of the construction contracts for these modest wooden houses indicates that economic conditions were the primary factor for selecting this particular type of construction. The terms of the construction contracts were carefully selected in order to save as much money as much possible (fig. 16). A contract would be concluded before a notary, usually in the fall. Wintertime was used to cut timber as trees had the least amount of sap in them. The fallen trees were dressed in the woods before being transported to the construction site. According to Moogk, “*The carpenter was usually engaged to provide only his skilled labour and the client provided all of the building materials and transported them to the foundation, which, in most cases, he had built for himself. The employer or a helper supplied by him would be present to dress the timber and to help the carpenter raise the frame* (fig. 17).”¹¹ In March and April, the client would build the stone foundations needed to separate the wooden frame from the dampness of the ground. In late April, the foundations and joints were completed. It was

⁹ Georges Gauthier-Larouche, *Évolution de la maison rurale traditionnelle dans la région de Québec; étude ethnographique* (Québec, Presses de l’université Laval, 1974), p. 67.

¹⁰ Peter N. Moogk, *op. cit.*, p. 30.

¹¹ *Ibid.*, p. 34.

important that houses be completed before the end of June in order to free people for haying in July and grain harvesting in August and September (fig. 18).¹²

Sherman Hall, an American who watched French-Canadians build their houses at the beginning of the 19th century in Wisconsin, in the northern part of the United States, described the entire process of erecting a wooden structure in the following manner:

When the building is to be put up, the timber of the sills, beams and posts is cut and hewed into suitable sticks, usually with a common axe, for a hewing broad axe is seldom seen here, and nobody knows how to use it. The sills and beams are generally locked, or halved together at the corners of the building, for few can frame them together with tenons and mortise. (There is a contradiction in his testimony as he goes on to say) A mortise is made in the sill for a post wherever it is needed and another in the beam. A groove is made in each post from top to bottom about 5 centimetres in width, and 8 to 10 centimetres deep. Timbers are then hewed 15 or 18 centimetres thick and the ends cut till they are fitted to the groove in the post, and of sufficient length to reach from one post to another. They are then introduced one after another till the walls of the building are completed (fig. 19) Whenever a window or a door is required, posts are erected, into which the ends of the horizontal timbers are introduced, instead of the main posts, and thus the required hole is made in the wall. A post is placed at the centre of each of the building which is continued above the beam as high as the top of the roof is intended to be. A stick of timber is then laid on top of these posts reaching from one end of the building to the other, and forms the ridgepole. The roof is then formed by laying one end of timbers on this ridgepole and the other on the plate till the whole is covered.¹³

In 1776, a German officer described the interior of these houses in the following way:

In the interior the walls are covered with smoothly planed boards; likewise the ceiling All the partitions of the house are built with wooden boards. For this reason, you will find the three following inconveniences. First: should any one be walking about the rooms, you will hear a slight creaking; secondly: should anyone be walking on the floor overhead, the one underneath would be in momentary expectation of having him drop down upon his head; and, thirdly: should one talk, every word can be heard, either in the next room or in the kitchen The kitchens are so clean that they are used as a 'living room' until the arrival of the cold weather.... Next to the kitchen is a room generally used as a sleeping room. Houses containing two bedrooms are scarce; and when they contain three are considered very genteel.¹⁴

¹² *Ibid.*, p. 40-41.

¹³ Sherman Hall at Lac du Flambeau, Wisconsin, to Aaron Hall, Sept. 20th 1832, quoted in Moogk, *op.cit.*, p. 39-40.

¹⁴ W.L. Stone (ed.), *Letters of Brunswick and Hessian Officers during the American Revolution* (Albany, N.p., 1891), p. 16-18.

These two testimonies are very interesting because they reveal a lot about points of view on houses built by foreigners in the 18th and 19th centuries (fig. 20). They disclose a lot of condescension on the part of their authors, and they lead me to believe that foreign architectural influences are accepted only when they come to fill a technical need. For instance, it is interesting to note that, in the 19th century, the corner posts erected by French Canadians were gradually, under the influence of English speaking immigrants coming from other parts of North America, being replaced by dovetailing (fig. 21), “*a common method, according to Moogk again, of putting together squared log building in the English colonies*”.¹⁵ According to Kalman, Swedish and German settlers brought dovetailing to the new world.¹⁶ The following illustrations show examples of squared log construction (fig. 22). It is interesting to note that these structures are disappearing fast, being covered or replaced with the more popular round logs (fig. 23). About thirty years ago, I was able to spot six squared log structures in the village of Luskville, now I am only able to find this one and one other outside the village (fig. 24).

Fur trading posts in the West

Peter Moogk describes the process by which the *poteau en coulisse* construction technique crossed the continent in these words: “*the French-speaking employees of the fur trading companies carried this technique in the nineteenth century across western Canada where it was known as ‘Red River Frame’*”.¹⁷ Some examples of Red River Frame can be found in British Columbia, over 4,000 kilometres from the homeland of this technique (fig. 25). Examples are also found in the United States, along the Mississippi Valley, where French fur traders brought with them their construction techniques, as described by Sherman Hall.

The construction technique made popular by French Canadians, the poteaux en coulisse (known in English as the grooved post), became a trademark for fur trading posts in North America. In this construction system, vertical posts were installed at intervals of between 1 to 3 metres on wood sills. Posts were squared and prepared with tongues at the bottom to fit into slots in the sills. Then, horizontal infill logs were slid between the vertical posts fitting tongues in vertical grooves in these posts. According to Kalman,

*This construction technique was ideal for the environmental conditions. In an area where wood was available, yet limited in size and supply, a house could be built mostly with short logs. The posts had to be only about 2.5 metres in length, and the only long members were the sills and the top wall plates. Few nails were needed, since wooden pegs were used as fasteners. The structure could endure extreme changes of temperature and humidity because the horizontal logs were free to expand and shrink without threatening its stability. Windows and doors were easy to insert (fig. 26), and the building was easily enlarged with the addition of more structural bays.*¹⁸

¹⁵ Moogk, *op. cit.*, p.30.

¹⁶ Harold Kalman, *op. cit.*, p. 160.

¹⁷ *Ibid.*, p. 32.

¹⁸ Harold Kalman, *op.cit.*, p. 328.

The following photograph shows a Mounted Police post built by craftsmen working for a fur trading company in the West (fig. 27). The post measured 46 by 37 metres and buildings, constructed in Red River frame, formed the western and northern walls of the compound and the rest was enclosed by a palisade made of vertical logs. It is reported that 6 000 cottonwood trees were required to build this post.¹⁹ Employing the Red River frame technique, builders could use these small trees to erect substantial log structures which could serve many purposes. This raised fish cache is an example of this adaptability (fig. 28). The Convent of the Grey Nuns, in St Boniface, Manitoba (fig. 29) is a better example of this construction technique. Built between 1846 and 1851, this two-storey building measures 30 metres by 12. Here again, we can see that the exterior was covered with vertical siding at some later point.

Rustic buildings

According to Edward Mills, an architectural historian for Parks Canada, rustic buildings have been closely associated with Canada's national parks since the establishment of the system at the end of the 19th century.²⁰ The log cabins erected by fur trappers and prospectors before the opening of the first national park in the Canadian Rockies in 1885 established the characteristics of the vernacular architecture of the area. It was decided that rustic structures built from native timber created the ideal décor for the park's guests, and that the main buildings would be built "*in the Swiss style, of timber of the mountains*",²¹ as a means of attracting tourists (fig. 30), while secondary structures, rudimentary log cabins constructed at minimal cost by local builders, would continue to be built in the local rustic manner.

In the second half of the 19th century, the popular writings of John Ruskin, Andrew Jackson Downing and of Calvert Vaux convinced their many readers that a building should relate to its environment by using native building materials, such as logs and fieldstones (fig. 31). For the national parks of Canada located in the Rockies, these teachings would first result in so-called "Swiss cottages" made of rough hand-hewn logs, an appropriate rustic design for these structures. As a matter of fact, during the second half of the 19th century, "*the terms 'rustic' and 'Swiss' were frequently combined by experts to describe the most appropriate design approach for modest buildings in remote wilderness settings*", according to Mills.²² All sorts of construction, ranging from shelter pavilions on golf courses to bathhouses and luxury hotels (fig. 32), were constructed with horizontal logs to resemble Swiss chalets; even the road-side fences, signs and public benches were given a Swiss design (fig. 33).

It should be noted that the reason Swiss design was so actively promoted was mostly economic. As Switzerland was a popular tourist destination in the second half of the 19th century, it was thought that tourists would flock to the Canadian Rockies to find another

¹⁹ *Ibid.*, p. 344.

²⁰ Edward Mills, "Rustic Building Programs in Canada's National Parks, 1887-1950", manuscript on file, Parks Canada, National Historic Sites Directorate, August 1994, p. 13.

²¹ Canada. Department of the Interior. *Annual Report of the Department of the Interior for the Year 1887* (Ottawa: Queen's Printer, 1888). Part VI, "Report of the Superintendent of Rocky Mountains Park."

²² Edward Mills, "Rustic Building...", p. 16.

Switzerland (fig. 34), more conveniently located for North American visitors.²³ Also, in remote locations where everything had to be carried over long distances by railway, locally available materials, which could be used by an unskilled workforce, were greatly appreciated for the cost economy they provided. There was, however, a drawback as noted by Mills: “*Park officials were quick to note that rustic design, if applied with a rigorous insistence on the use of native building materials, would have a devastating environmental impact on the forests...*”²⁴ In order to save wood, the design for the buildings in the national parks of Canada was changed. It would now follow the influence of the English Arts and Crafts aesthetic and become a replica of Tudor Revival (fig. 35), complete with mock half-timbering.²⁵ This design impetus led to the construction of several structures in the Tudor style in a park located near the town of Erikson, Manitoba, by Swedish workers.

Scandinavian workers constructed many buildings in the national parks of Canada and these structures are notable for their use of peeled logs and double-dovetailed corners. Often, marine oakum would be strung between logs. The presence of skilled log craftsmen ensured the high quality of construction of these buildings. Their presence also demonstrated that workers were able to adapt themselves to any style of construction, and still display their craftsmanship (fig. 36).

Chateau Montebello

The Chateau Montebello (Fig. 37), a large hotel made of logs located in the eastern part of Canada, has an interesting story. A Swiss-American entrepreneur, Harold M. Saddlemyre, who wanted to recall the castles of his Swiss Alps, built this gigantic log structure in 1930 as a private wilderness retreat for business and political leaders. Victor Nymark, a Finnish master-builder, supervised this construction project that would accommodate 211 rooms. The 10 000 red-cedar logs used for the project came by train from the west coast of Canada, located approximately 5 000 kilometres away. A crew of 3 500 workers, most of them coming from countries as far away as Italy and who were looking for relief work during the Depression, assembled these logs in four months.²⁶ It is interesting to note that no local workers were hired for this project because they had lost the art of building with logs.

Yet, in my mind this is another example of a Canadian rustic building and it should be accepted as vernacular architecture. Despite its foreign influences, despite the fact that it was built using industrial assembly methods, and despite the fact it was designed to be used by a selected happy few, its value lies in the fact that it would serve as the standard of reference for log constructions. After this, building with squared logs in the Province of Quebec would be seen as outmoded. Attempts would be made to revive squared logs construction, but these were covered up, as we have seen at beginning of this

²³ *Ibid.*, pp. 21-23.

²⁴ *Ibid.*, p. 46.

²⁵ *Ibid.*, p. 49.

²⁶ “Château Montebello” Wikipedia, the free encyclopaedia (http://en.wikipedia.org/wiki/Ch%C3%A2teau_Montebello)

presentation. Log structures would, from this point on, have to look like what Americans thought were Swiss castles in the Alps.

Modern log constructions

With modern log houses, we can see that some of the traditions described before are still maintained despite the industrial process used for this type of construction. Things, however, have changed since colonial times. Logs are machine milled for pre-assembly (fig. 38). Work crews arrive when the foundation is complete and build the sub floor to suit the plan. The log wall system is installed (fig. 39), and then covered by a trussed, post and beam or framing lumber roof system.²⁷

Logs, either White Pine, Red Cedar, Douglas Fir, Red Pine, White Cedar or White Spruce, are left as natural as possible (fig. 40). This is done so that buyers feel that they are living in a handcrafted log house that offers the amenities of a modern luxury home and that they are buying a work of art (fig. 41). Logs are assembled by using different techniques. These are described as the full scribe fit method (known as the Scandinavian style) (fig. 42), the hand hewn, the round log chinked, the round log post and beam, the timber frame and even the *pièce-sur-pièce* method.²⁸ It would thus appear that vernacular architecture can also cross the frontiers of time.

Why are these log cabins so popular? I would venture three explanations. The first pertains to the attractions of nature. Many people want to get out of a noisy and polluted city to find some peace and quiet in the woods. The second reason relates to a strong sense of selfhood and a rugged individualism that are characteristics of many sturdy Canadians who like to relate to the way of life of their pioneer ancestors, but with all the modern amenities that civilization has to offer (fig. 43). The last, and the most important, is a question of fashion. Following American and European influences, as we have seen in this presentation, living in a luxurious log cottage in the woods has become a status symbol. Thus modern log cottages result from the fusion between the ruggedness of living in the North American woods and the comfort and sophistication of European models that were so much appreciated by tourists. They are not the produce of a natural evolution, but the combination of different cultures.

²⁷ See <http://www.cedarlogstructures.com/exteriors.htm>, consulted on 18 March 2010.

²⁸ See <http://www.coyoteloghomes.ca/our-log-homes.aspx>, consulted on 18 March 2010.