

# The Reassembly of the Rideau Street Convent Chapel in Ottawa

Harold Kalman

Fig. 1. The Rideau Street Convent Chapel, Ottawa, Ontario, built 1887–1888, in the National Gallery of Canada. Photograph by Michael Bedford Photography, August 1988.



Not unlike piecing together a jigsaw puzzle, a magnificent nineteenth-century religious interior was dismantled and reassembled in the National Gallery of Canada.

The spectacular Rideau Street Convent Chapel was installed in the National Gallery of Canada in Ottawa in 1988 (Figs. 1 and 2). It had been disassembled hastily 16 years earlier in anticipation of the imminent demolition of the convent.<sup>1</sup> The story of dismantling the chapel and demolishing the convent was related in the *APT Bulletin* by the present author in 1986.<sup>2</sup> Architectural historian Luc Noppen subsequently wrote an architectural history of the chapel, drawing on his extensive knowledge of religious buildings in French Canada. He identified the people and organizations who rescued it.<sup>3</sup> This article describes the technical processes adopted in reassembling the chapel by the contractor, Commonwealth Historic Resource Management.<sup>4</sup> The complexity of the project was exacerbated by the hasty dismantling, by the constricted space of its new location in a museum gallery, and by the realities of budget.



Fig. 2. Interior of the Rideau Street Convent Chapel, in situ in the convent, 1972. All images courtesy of Luc Noppen, *Une des plus belles chapelles du pays* (Ottawa: Musée des beaux-arts du Canada, 1988), unless otherwise noted.

### Original Design and Construction

The Rideau Street Convent Chapel was constructed within the Convent of Notre-Dame-du-Sacré-Coeur in Ottawa in 1887–1888. The convent was built for the Sisters of Charity, also known as the Grey Nuns. It was consecrated on June 25, 1888.

The chapel had been designed by the incumbent priest, Georges Bouillon.

Convent records state that “We shall be in Father Bouillon’s debt for the magnificent plan he has proposed for our chapel. The vault is in the Tudor style, and execution of the plan promises to give us one of the most beautiful chapels in the land.”<sup>5</sup>

Georges Bouillon (1841–1932) was an accomplished architect, although he lacked a formal education in architecture. He joined the clergy of Ottawa’s Notre-Dame Cathedral in 1874 and became responsible for the cathedral’s lavish interior.<sup>6</sup> Bouillon traveled extensively throughout Europe and the Middle East in 1883 and 1884 to visit historic churches. He considered St. Peter’s Basilica in Rome to be “the finest and greatest of all Christian buildings.”<sup>7</sup>

Bouillon’s knowledge of both European architecture and Canadian construction

techniques served him well. The description of the pendant fan vaulting as being “in the Tudor style” certainly refers to the renowned fan vault in the Henry VII Chapel (1503–1509) in Westminster Abbey. It and other precedents—such as the vault of Cloister Court in St. Stephen’s Chapel (1526–1529), now incorporated into the Houses of Parliament—were vaulted in stone, whereas the ceiling of the Rideau Chapel was fabricated from wood.<sup>8</sup> The contrast between the European and Canadian ceilings illustrates the migration and transformation of Tudor models and structural systems from Europe to the New World.

The decorative scheme for the Rideau Chapel was altered several times, most recently in 1944. Interventions made at that time included changing the color scheme, adding wall stenciling, decorating the columns, and installing new floors and lighting. These and many other changes would complicate planning for restoration.

The Sisters of Charity placed the convent property on the real-estate market in December 1970. It was purchased by a local developer, Glenview Realty. Ottawa’s heritage community responded by calling for the chapel’s preservation. Mary Roaf, voice of the neighborhood advocacy group Action Sandy Hill, led the reaction. She alerted the Heritage Committee of A Capital for Canadians, headed by the husband-and-wife team of R. A. J. and Mary Anne Phillips.<sup>9</sup>

At that time, providing protection to historic properties was challenging. In Canada, this is the responsibility of the provinces, which in turn can empower local governments. However, the federal government protects only property that it owns or administers. In 1970 neither Ontario nor Ottawa had legislation in place to safeguard other historic buildings. Thus, the preservation of threatened property responded only to community activism.

### Demolition

In March 1972 Glenview Realty announced its intention to raze the convent, including the chapel, and to

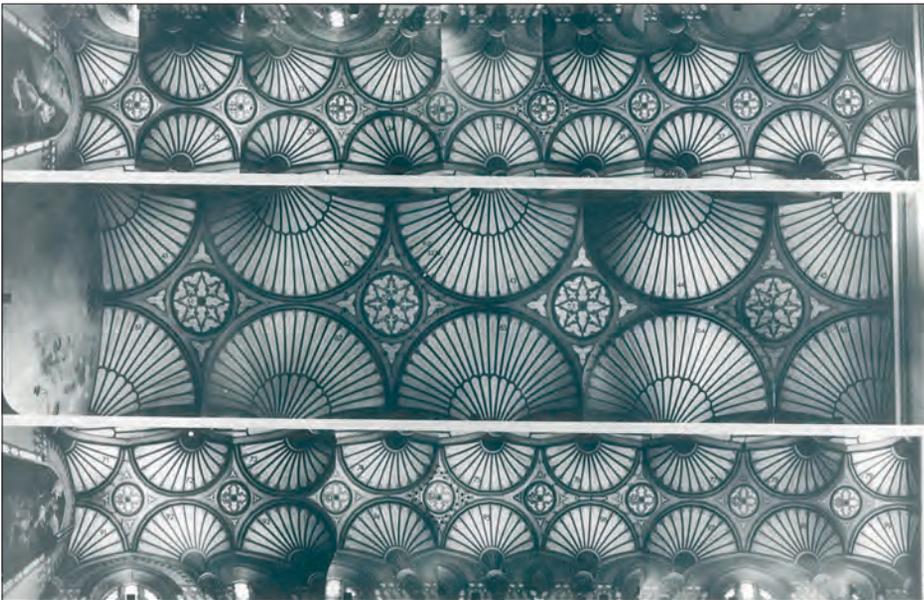


Fig. 3. Composite photogrammetric image of the fan vaulting, 1972. Courtesy of Parks Canada.

replace it with commercial development. The City of Ottawa issued a demolition permit on April 21. Five days later, the Historic Sites and Monuments Board of Canada designated the chapel a National Historic Site, declaring that “the chapel interior is of national significance on architectural grounds and the owners should be encouraged to preserve it if at all possible.”<sup>10</sup> While the federal designation was only honorific, the new status enabled Jean Chrétien, the federal minister responsible for all national historic sites and a future prime minister, to request that the National Capital Commission (NCC), which oversees federal projects in Ottawa, find a solution.

Mary Anne Phillips staged an effective media event on May 6, 1972, lighting a votive candle in front of the padlocked doors of the convent. Five days later, an agreement was reached among Glenview Realty, the NCC, and the National Gallery of Canada. Glenview abandoned the planned demolition. The NCC and the National Gallery agreed to share the costs of dismantling and storing the interior of the chapel for eventual inclusion in a future National Gallery building. A community group, the Friends of the National Gallery, worked to raise \$500,000 for incorporating the chapel into the National Gallery.<sup>11</sup>

Glenview Realty’s eagerness to proceed with the redevelopment of the site made removing the chapel a hasty rescue mission. Professionals from Parks Canada and the National Research Council and students from Algonquin College of Applied Arts and Technology documented the chapel thoroughly. Their measured record drawings and photogrammetry, produced in 1972, proved indispensable in the reassembly (Fig. 3).

An NCC work crew dismantled the interior of the chapel in a matter of days, quickly but crudely, using power saws. The salvaged fragments were stored in a large warehouse in Ottawa South (Figs. 4 and 5). They would stay there, untouched, for 14 years. The cast-iron columns were stored outdoors in an NCC works yard, exposed to the weather.

#### A New Home for the Rideau Chapel

In 1984 the National Gallery confirmed that the chapel would be installed in its new building, then in the early stages of planning. Prime Minister Pierre Elliott Trudeau created the Canada Museums Construction Corporation to construct the National Gallery and two other new museums.<sup>12</sup> Architect Moshe Safdie of Parkin/Safdie was selected, many believed by Trudeau, to design the National



Fig. 4. The fan vaults were transported on a flatbed truck from the condemned convent to the Connelly Building, a warehouse in Ottawa South, May 1972.

Fig. 5. The large components of the disassembled chapel were stored in the warehouse before the trial assembly. Photograph by Craig Sims, 1985.

Gallery.<sup>13</sup> Cornelia Hahn Oberlander was retained as landscape architect. The new building would open its doors on May 21, 1988.

The National Gallery purchased the components of the chapel from the NCC. Planning for installation was undertaken jointly by the National Gallery, Parks Canada, and Commonwealth Historic Resource Management.<sup>14</sup>

An initial challenge was choosing the date to which the chapel's appearance should be restored. Four options were considered: returning it to the time of its dedication in 1888; to its first redecoration in 1910; to 1944, when the decorative scheme was changed for the second and last time; or to 1972, when it was dismantled. The National Gallery, with advice from Parks Canada and Commonwealth, opted for 1944. This choice would present the chapel as the current population remembered it and would require the least intervention.

The next question was what to restore and exhibit. The gallery chose to display the ceiling, altar, windows, and floor of the chapel interior as accurately as possible. New work would include reproducing the interior walls and finishes, rebuilding the balcony, and reconstructing the window frames to accommodate the restored sash.

This decision followed preservation doctrine. The primary resource was the *Venice Charter for the Conservation and Restoration of Monuments and Sites*, published in 1964 by ICOMOS. Article 12 of the charter states that "Replacements of missing parts must integrate harmoniously with the whole, but at the same time must be distinguishable from the original so that restoration does not falsify the artistic or historic evidence." The meaning of "distinguishability" was clarified by ICOMOS Canada: "New work should be identifiable on close inspection or to the trained eye, but should not impair the aesthetic integrity or coherence of the whole." The Rideau Chapel followed this approach.<sup>15</sup>

## Identification and Stabilization

The components of the chapel had been stored randomly in the warehouse, pieces stacked against pieces (see Fig. 5). No one knew how many there were, whether any were missing, or where any particular piece might be found. The largest components were the 18 half-fan vaults from the ceiling of the nave, each measuring 4.4 by 3.3 meters (14.44 by 10.83 feet) and requiring six persons to lift (see Fig. 4). Their original locations were determined by comparing small distinguishing features—notches, scratches, and splashes of paint—to the photogrammetric images. The cast-iron columns each took 10 persons to lift. Other pieces were more manageable: the aisle fan vaults, ceiling roundels and trefoils, arcade spandrels, window sash, cast-iron corbels, and the disassembled altar. Among the smallest were several dozen altar finials, many under 300 millimeters (about 1 foot) long. Countless bits of molding trim were strewn across the warehouse floor.

The first step was getting to know the fragments. Every piece was tagged and numbered. Some 1,123 components, or groups of components, were entered into a computer database. This was 1985, early in the evolution of personal computers. The team used the first portable computer, the Osborne 1, with the industry-standard database software, dBase II. The computer's portability allowed it to be carried between the office and the warehouse.<sup>16</sup>

Every object was described in the database by its material, finish, color, dimensions, and condition. Roman numerals that had been inscribed on the window units at the time of original construction and the numbers that had been written on masking tape and adhered to the wood pieces during the salvage operation were also recorded. Each piece was assigned coordinates to mark its location on the warehouse floor or on the industrial shelving.

The relational features of dBase II enabled identification of adjacent, but missing, fragments. Patterns appeared in what had appeared to be random

attributes, much like understanding the pips, slots, and partial images of jigsaw puzzle tiles. The meaning of the Roman numerals also became clear. Other clues that helped identify the fragments' original locations and adjacencies were blobs of paint and nail holes. With these aids, missing pieces could be identified and retrieved.

All components of the chapel required cleaning and securing. They bore years of accumulated grime. An industrial vacuum cleaner, fitted with a soft brush, removed loose dirt effectively without causing abrasion. After testing a range of cleaning solutions, staff at the National Gallery's Restoration and Conservation Laboratory found that water alone cleaned as well as the various solutions of surfactants and wetting agents and that water plus ammonia cleaned slightly more efficiently, particularly in rust-stained areas. Application with soft sponges resulted in the loss of small flakes of already loosened paint and some pigment. Local consolidation of paint layers was impractical. Three students retained by the NCC did the surface cleaning. They were trained by the National Gallery and supervised by Commonwealth.

Commonwealth, in discussions with Parks Canada and the National Gallery, proposed the following stabilization principles:

- No aspect of the stabilization work would be irreversible.
- No historic fabric would be permanently altered, although minor modifications for stability and to facilitate positioning were permitted if hidden from view.
- All new material would be marked as such.
- Loosened trim would be fixed with new screws and fasteners.
- All work would be carefully documented.

The surfaces of the components were repaired, rather than left as found, to lessen the visual impact of the many cracks, holes, and stains caused by the hasty dismantling. Filler and infill paint were applied sparingly.

### Trial Assembly and Final Installation

It was necessary to do as much preparation work as possible in the warehouse. Time for reassembly in the new gallery would be short and would require coordination with the gallery's complex and tight construction schedule. No time was available for trial and error.

A framework of wooden joists, simulating part of the chapel's ceiling support system, was constructed in the warehouse. A moveable scaffold provided access (Fig. 6). Three assembly methods were tested to determine the best way to lift the fan vaults and fasten them to the joists. The process allowed the team to understand the subtleties of the structural system and to ensure the replication of the original curvatures as closely as possible.

A padded cradle was built to accommodate the fan vaults and enable photography and stabilization. The Heritage Recording Services Section of Parks Canada took stereophotogrammetric pairs of images with a 75 mm camera and used a 35 mm camera for additional photographs. A stabilization report was prepared for every fan vault.

The original window frames, which had been poorly constructed, had been damaged during demolition and were discarded. Most of the sash had been salvaged. The profiles of the wood mullions resembled the stone tracery of early institutional buildings in Europe and New France. The team chose to fabricate new joinery to high standards. They made mock-ups of two frames and four sash based on the photogrammetric record, as-found dimensions, and clues from surviving components. The frames that were fabricated were made of sugar pine from the American Northwest, while the sash were made of sugar pine from California.

The mock-ups of the window sash had mortise-and-tenon joints, which were secured with oak pegs and furniture-grade hardwood plywood splines (thin wood strips). The original wood screws had caused the wood to split. The 18 sash



Fig. 6. Dennis Carr, carpenter, left, and Craig Sims, site manager, move a roundel into place during the trial assembly, 1986.

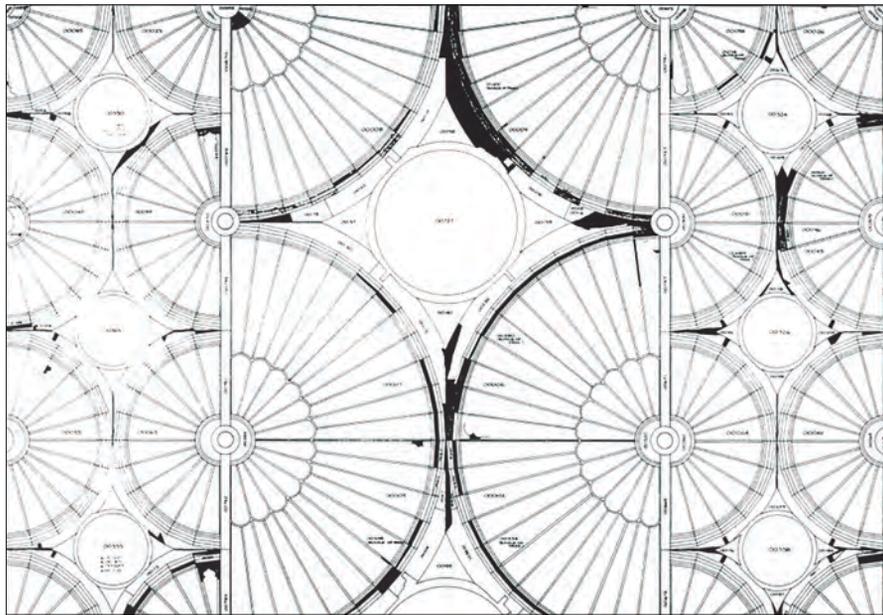


Fig. 7. A portion of the reflected ceiling plan; the dark areas indicate missing wood that required infill. Drawing by Caroline Guay, 1986.

that did not require reconstruction were stabilized. The remaining frames and sash were tendered to a separate contractor, one of many subcontracts issued by the National Gallery. Cost was a significant factor, and as a result, despite the extensive preparatory work, the contractor did not replicate the traditional

joinery. The pieces were fastened with glue.<sup>17</sup>

In February 1987 the cleaned and stabilized components of the chapel were placed on a flatbed truck, covered with tarpaulins, and moved from the warehouse to the National Gallery. A large



Fig. 8. A view of the chapel with the ceiling completed, December 1987. The railing of the balcony at the far end has not yet been installed.

opening had been left in an exterior wall to serve as a pass-through.

The chapel was installed in a purpose-built space: a plain, large, windowless reinforced-concrete room. Advance planning had addressed the intended uses, patterns of visitor circulation, fire and building codes, and new mechanical and electrical services in the context of best conservation practices.

The walls and ceiling of the space were framed with modern, dimensioned lumber. One-by-six tongue-and-groove pine was nailed to the joists and studs. A conventional mechanical hoist was used.

The first ceiling components to be installed were the large fan vaults. They were lifted with a hoist and guided into place manually (see Fig. 6). The team fixed the fan vaults to the joists, further supporting each vault on a cast-iron column. The heritage recording provided the dimensions between the plaster walls

and the columns, and between the columns. Matching the two sides of the saw cuts, which had been made when the ceiling was dismantled, further helped to achieve the correct fit. The reassembled ceiling was only one inch longer than the original 106-foot-long ceiling; this was corrected by removing a sliver of material. The deviation of 0.08 of 1 percent was considered an acceptable margin of error.

Installation of the adjacent rosettes and trefoils followed. Their precise placement was again assisted by aligning the saw cuts. The components were nailed directly to the sheathing. The original ceiling had been constructed of pine, likely local white pine, and so pine was selected. The spaces between the components were filled with scraps of historic wood and new boards that had been sourced to match the old (Fig. 7). The surviving scraps did double duty, in that they provided evidence of the wood and the finishes, which enabled reconstruction of the wainscot.

Parkin/Safdie, the National Gallery's architects, had provided only a very restricted working space within which to reassemble the chapel: only a few inches separated the top of the reconstructed ceiling structure from the underside of the new concrete ceiling beams. The Commonwealth crew adapted to these constraints by fastening the components from underneath. The architects' early designs for the National Gallery had made no accommodation for the chapel.

The balcony of the chapel was reconstructed to resemble the original. The railing had been salvaged and was reused, with some of its parts replaced and repaired. Visitors have no access to the balcony, although the staircase was partially reconstructed (Fig. 8).

A new hardwood floor was substituted for the original pine floor (likely red pine) to withstand anticipated traffic. The long lengths of flooring could be sourced only from the United States. The floor was painted to resemble pine. Hardwood had been used for the altar and wainscot. Conservators at the Canadian Conservation Institute identified the

wood of the altar and wainscot as cherry, probably black cherry. Other trim may have been basswood and ash.<sup>18</sup> This information helped with the selection of the wood for repair and replacement.

The surviving Gothic revival altar and choir screen, resplendent with intricate tracery, were designed by Georges Bouillon (see Fig. 2). Missing portions were replicated and the original communion rail was reused. Paint was infilled as needed on the ceiling and the wall stenciling. The rag-rolling decoration on the cast-iron columns was replicated, using the original technique. The column capitals were gilded.<sup>19</sup>

The east wall, beyond the altar, was originally painted with trompe-l'oeil murals that appeared to extend the depth of the choir. It was subsequently repainted with a choir of angels. Neither scheme was reproduced in the reassembled chapel. The choir walls were painted a neutral color to provide a quiet backdrop to the altar and a foil to the ceiling and also to distinguish new work from old.<sup>20</sup> The walls and ceiling display the blue-and-gold color scheme from the 1944 repainting, consistent with the overall conservation approach. The windows are glazed with plain colored glass, believed to have been installed in the 1920s.

The chapel is approached through the National Gallery's landscaped and sky-lighted Garden Court. The principal entrance and exit, along the western part of the north wall, pass through the same door through which most worshippers entered when the chapel was on its original site. Because of the constricted space, the orientation of the chapel had to be skewed to provide room for an entrance. A secondary exit, which was required by fire and safety codes, was provided at the east end, behind the altar. The chapel is separated from the remainder of the building by a one-hour, fire-rated enclosure constructed of gypsum wallboard fastened to the perimeter wall. The alternative would have been to introduce sprinklers or a halon gas-suppression system, but either method would have required unsightly ceiling nozzles. Temperature and humidity are controlled by

the National Gallery's overall mechanical systems, which provide optimal conditions for conservation.

Since no natural light reaches the interior of the chapel, multiple lighting systems simulate the former daytime appearance, when the sisters last held prayers in the chapel. Suspended fixtures, resembling the appearance of those that had been found in place, provide the ambient lighting. A gentle light washes over the half-dome of the apse. Contemporary museum lighting illuminates the exhibits.

Artificial light also enters through the windows, which are backlit with fluorescent tubes, which were selected to reduce the frequency of replacement. Accessing the fixtures is difficult because of the slenderness of the gap between the back of the chapel walls and the new concrete walls. The gap also accommodates HVAC ductwork and serves as a plenum (air return) for the entire south wing of the National Gallery. The space is too narrow to enable proper access for cleaning the backs of the windows. This problem was resolved by hanging the windows on steel rollers, which allow them to be slid to the side and cleaned by reaching through the window openings. Spring-loaded fasteners allow the sash to be removed from the frame.

## Conclusions

Several lessons emerged to guide future projects of this kind. When a historic interior is dismantled, even under pressures of time, the work must be done by conservators and certainly not by a construction crew using chainsaws. Every piece should be cataloged and labeled. The conservation design should address not only the final appearance and the visitor experience but also future maintenance and housekeeping. Consideration must be given to enabling mundane chores, such as replacing light bulbs, cleaning the far sides of windows, and enabling minor repairs. Sufficient space must be left around and above the interior to provide proper access for these tasks.

Processes aside, the conservation practices at the Rideau Chapel remain valid. The *Venice Charter* and the *Appleton Charter* (1983), which provided the applicable doctrine, have been supplemented by later doctrine, but both charters continue to guide conservation. Interventions adopted the approach defined in the charters as "reassembly" (or "reconstitution").<sup>21</sup> The chapel follows the charters' other principles as well, including respect for traditional patterns of movement, the retention of patina, and a preference for reversible processes. Three decades after its installation, the Rideau Street Convent Chapel continues to set a precedent for future reassemblies.

## The Many Facets of the Rideau Chapel

The reassembled Rideau Street Convent Chapel is many things: a precious artifact in the National Gallery's collection, a deconsecrated religious space, a reassembled historic architectural interior, a museum gallery, and an events venue. Each facet has its own curatorial and operational needs.

Firstly, the Rideau Chapel is a permanent exhibit in the National Gallery's Collection of Canadian Art. The National Gallery's website calls it a "rare example of Canadian architectural history," which, in turn, accommodates several accessioned artifacts. Both the chapel and the smaller artifacts require ongoing curatorial care, interpretation, and conservation. Curatorial staff devotes considerable attention to resolving these competing demands.

Despite its deconsecration and the many visitors, the chapel remains "a space of tranquility and spirituality."<sup>22</sup> The piety is heightened by Georges Bouillon's altar and choir screen, whose delicate tracery evokes reverence. The colored-glass windows contribute further. The spirituality is enhanced by an audio installation, *Forty-Part Motet*, by artist Janet Cardiff. Each of 40 speakers, arranged around the chapel, plays one voice of *Spem in alium* by Thomas Tallis. The ensemble becomes a virtual choir. Fittingly, the Renaissance composer was born during

the reign of Henry VII, whose chapel in Westminster Abbey helped inspire Georges Bouillon's design.<sup>23</sup>

The Rideau Chapel is also a historic architectural interior. The National Gallery displays one other reassembled room: Mr. and Mrs. William Croscup's Painted Room, the former main parlor of the Hall-Croscup House in Karsdale, Nova Scotia, built and decorated in the 1840s.<sup>24</sup> Projects of this kind were few and little known in Canada in the 1980s. All are much smaller than the Rideau Chapel. The conservation architects at Parks Canada may have been expert at recording, structural stabilization, restoration, and reconstruction, but neither they nor the consultant team was familiar with other large reassembled interiors.<sup>25</sup>

Finally, the Rideau Chapel is a museum gallery. Five life-size statues of angels and saints stand along the walls. They belong to the National Gallery's permanent collection and bear no iconographical relationship to the chapel. The chapel also accommodates other exhibits, endures heavy traffic, serves as a respite for tired visitors, and fits into the National Gallery's overall presentation plan. The first exhibit held in the chapel was a selection from the Henry Birks Collection of Canadian Silver. The display cases, originally placed in the center, have been moved to a corner, beneath the balcony. The chapel is now furnished with seats, to encourage visitors to linger as they experience the space. The emphasis has shifted from the artifacts to the room itself.

The Rideau Street Convent Chapel is also used as a venue for events. Hosting events helps animate it and attract revenue. These may not have been the objectives of Georges Bouillon, but his was solely a sacred space. The present secular role illustrates how the values of historic places may be conserved as their contexts change over time.

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*Planning: Principles and Process, 2nd ed. (London: Routledge, 2020), and A History of Canadian Architecture (Toronto: Oxford University Press, 1994). He can be reached at hal@haroldkman.ca.*

## Notes

1. A shorter and less technical version of this article appeared in *L'architecture de l'identité*, ed. by Lucie K. Morisset (Montréal: Del Busso, 2020), 274–287, a festschrift dedicated to Luc Noppen. Historical data is drawn from the publications cited in notes 2 and 3 below. Files compiled by the author are now at the City of Vancouver Archives (Rideau Street Convent Chapel project, AM957–Commonwealth Historic Resource Management fonds, Box 132). Additional material came from the recollections of Craig Sims, Judy Oberlander, Dennis Carr, Caroline Guay, Fern Mackenzie, and Ken Elder. Research on restored interiors and other assistance were provided by Seyedhamed Yeganehfazand and Lindsay Kaisla.

2. Harold Kalman, "Restoration of the Chapel of the Rideau Street Convent," *APT Bulletin: The Journal of Preservation Technology* 18, no. 4 (1986): 18–29. Judy Oberlander, a member of the Commonwealth team, delivered two related presentations: "Preserving a Nineteenth-Century Fan-Vaulted Chapel: The Rideau Street Convent Chapel in Ottawa, Ontario" (Association for Preservation Technology annual conference, San Francisco, Calif., Sept. 1985), and "The Restoration of the Rideau Street Convent Chapel" (International Institute for Conservation–Canadian Group, Winnipeg, Manitoba, May 1986). Several unpublished reports prepared by Commonwealth have been deposited with the City of Vancouver Archives. The project is described in Kay Kritzweiser, "The Rideau Street Chapel," *Canadian Art* 5, no. 2 (Summer 1988): 74–75; and Emily Soldera, "'In Limbo': Sacred Spaces and Secular Environments: An Examination of the Representation of the Rideau Chapel in the National Gallery of Canada and the Basilique-cathédrale Notre Dame d'Ottawa" (master's thesis, Carleton University, 2008), 25–28.

3. Luc Noppen, *Une des plus belles chapelles du pays* (Ottawa: Musée des beaux-arts du Canada, 1988). Luc Noppen, *In the National Gallery of Canada: "One of the most beautiful chapels in the land"* (Ottawa: National Gallery of Canada, 1988).

4. The author, a principal of the firm, was project manager for the reassembly.

5. *Chroniques du personnel Notre-Dame-du-Sacré-Coeur, 1869–1908* (March 1887), 70, archives of the Sisters of Charity, Ottawa, cited in Noppen, 68.

6. Notre-Dame Cathedral is described in the Notre-Dame Cathedral website, accessed Nov. 12, 2019, <https://notredameottawa.com/>.

7. "Letters of 6 March 1899 and 12 February 1900, Georges Bouillon file," archives of the parish of Saint-François-de-Sales,

Gatineau [Québec], cited in P. Alexis [de Barbezieu], *Historie de la Province Ecclésiastique d'Ottawa*, vol. 1 (Ottawa, 1897).

8. Noppen suggested that the vault of the Cloister Court in St. Stephen's Chapel is the closest precedent; Noppen, 23, 42–46. The interior dimensions of the chapel are 31.1 by 13.5 by 7.9 meters high (102 by 44.3 by 25.9 feet).

9. The Heritage Committee of A Capital for Canadians was the predecessor of Heritage Ottawa and Heritage Canada (now the National Trust for Canada). R. A. J. Phillips was the first executive director of Heritage Canada; see Heritage Ottawa, accessed December 21, 2018, <https://heritageottawa.org/>. Peter Roaf and John Roaf confirmed the role of their mother, Mary Roaf.

10. Historic Sites and Monuments Board of Canada, resolution, April 26, 1972.

11. "The Rideau Street Convent Chapel," *Heritage Ottawa Newsletter* 12, no. 11 (Jan.–Feb. 1984): 1–2.

12. The other museums were the National Aviation Museum and the National Museum of Man (renamed the Canadian Museum of Civilization and now the Canadian Museum of History).

13. Parkin/Safdie was a joint venture of Parkin Associates, which in 1977 had won a competition for a National Gallery on another site, and Moshe Safdie. Public Works Canada was the co-client; see "Our History," National Gallery of Canada, accessed Dec. 29, 2018, <https://www.gallery.ca/about-the-gallery/our-history>, and "National Museums of Canada," *Canadian Encyclopedia*, accessed Dec. 29, 2018, <https://www.thecanadianencyclopedia.ca/en/article/national-museums-of-canada>.

14. The National Gallery was represented by Deborah Tunis, project coordinator; Geoffrey Hoare, associate coordinator; and Charles C. Hill, curator of Canadian Art. Parks Canada was led by architect Ken Elder, architect Julian Smith, and engineer Claude Levesque. Commonwealth was under the direction of the author.

15. *Appleton Charter for the Protection and Enhancement of the Built Environment* (Ottawa: ICOMOS Canada, 1983), accessed Nov. 11, 2019, <https://www.icomos.org/charters/appleton.pdf>. The parallels between the *Appleton Charter* and the Rideau Chapel project were not happenstance. The charter was composed at the home of Julian Smith, in Appleton, Ontario, by members of ICOMOS Canada, including the present author.

16. The Osborne 1 was about the size and weight of a sewing machine and ran the DOS operating system. The absence of a hard drive and the limitations of the software required the creation of six separate data files. Fern Mackenzie created and maintained the database.

17. The members of the Commonwealth crew all came to the project with skills in both preservation and carpentry. Craig Sims was the site supervisor. The others were Dennis Carr, Caroline Guay, Pat Fraser, James Silversides, Ian Hunter, and Peter Newlands. Silversides and Hunter were employed by Commonwealth,

and Guay was later recruited by Parks Canada. Newlands, who worked primarily on the altar, was a cabinetmaker seconded from another federal department.

18. Gregory Young, report on the identification of wood species used in the Rideau Chapel, Analytical Research Services, Canadian Conservation Institute, Oct. 9, 1986. Barbara A. Ramsay-Jolicoeur, of Parks Canada's Restoration and Conservation Laboratory, analyzed the painted windows and recommended the treatment.

19. Parks Canada supervised a team of skilled craftspeople: Sharin Sasges, Stanislav Dusko, Andrzej Kwiecinski, Ted Boulerice, and Peter Molin. Other individuals and organizations involved in the project are listed in Ken L. Elder, "Rideau Convent Chapel Update," *Monumentum: The International Journal of Architectural Conservation* (1988): 9–10.

20. Memoranda from Judy Oberlander and Harold Kalman to the National Gallery, Sept. 3–4, 1987, citing doctrine developed by the National Trust for Historic Preservation in the U.S.

21. Article 15 of the *Venice Charter*, in the context of archeological excavations, used the archaic term "anastylosis." It described this as "the reassembling of existing but dismembered parts. . . . The material used for integration

should always be recognizable." Reassembly and other conservation treatments are defined in Harold Kalman, *Heritage Planning: Principles and Process* (London: Routledge, 2014), 150–162.

22. The phrase is from Jill Dolan, "Conference (P)review #1: Rideau Street Convent Chapel," National Council on Public History, April 8, 2013, <https://ncph.org/history-at-work/preview-rideau-street-convent-chapel/>.

23. The music and the space can be appreciated in an inspiring video by Peter Simpson sponsored by the *Ottawa Citizen*; Ottawa Citizen, "Big Beat video: Forty-Part Motet," Feb. 25, 2013, YouTube video, 2:11, [https://www.youtube.com/watch?v=mq\\_zFimYAO](https://www.youtube.com/watch?v=mq_zFimYAO). Janet Cardiff's description is available at KQED Arts, "One Collective Breath: Janet Cardiff's 'The Forty Part Motet'," Dec. 4, 2015, YouTube video, 5:26, <https://www.youtube.com/watch?v=rZXBia5kuqY>.

24. "Mr. and Mrs. William Croscup's Painted Room," National Gallery of Canada, accessed Oct. 24, 2019, <https://www.gallery.ca/collection/artwork/mr-and-mrs-william-croscups-painted-room-0>. The Croscup room was acquired by the National Gallery in 1976 and installed in the new gallery building in 1988. Its move to a new location in the National Gallery in 2016 required that the panels be disassembled and rejoined.

25. Luc Noppen cited two proposed reassembly projects, one in Montréal and the other in Québec City, but neither came to fruition; Noppen, 27. Ken Elder confirmed in conversation with the author that the Parks Canada team was unfamiliar with the other reassembly projects and identified the various procedures with which the Parks Canada team was experienced.



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