

Before Scarborough

John Andrews in the Office of Parkin Associates 1959-1961

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Abstract

Before Australian architect John Andrews began his eponymous practice in Canada with the much lauded project for Scarborough College, he worked for the Toronto-based John B Parkin Associates for a brief period between 1959 and 1961. Andrews came into the practice as senior designer, a major role for the then 25 year-old Australian, who had only graduated from the Master of Architecture program at the Harvard Graduate School of Design the previous year. Andrews' work in the Parkin office reveals his early interest in prescribing relationships between spatial pattern and structural form – a design approach that would become a mainstay of his later practice. Under closer examination the Parkin work also reveals Andrews' use of founding precedents, projects by other architects which act as a point of reference. Yet any such claims need to be carefully presented and argued. Andrews was not one to quote sources for himself in the work of others, preferring to see his practice as based on the discovery of solutions to unique design problems. In negotiating issues of precedent in the work there is a need to address both the presence of sources and Andrews' self-described methods. This paper lays out a discussion of precedent in Andrews' early work for Parkin, identifying sources and their origin, as a means to uncover little known aspects of the architect's early formation. More particularly it asks questions of the utility of precedent for Andrews and how the work of others reflected a broader contextual circumstance for the architect. This context included his emersion in the North American scene and the contacts he made there as well as his early experience and training brought from Sydney to Toronto via Harvard.

Introduction

In the late 1950s, John B Parkin Associates was one of Toronto's – and Canada's – most influential architectural practices. The Parkin office was founded in 1947 by John Burnett Parkin, his brother Edmund T Parkin, with John C Parkin – who was unrelated to the other Parkins – as design partner.¹ John Andrews was recruited to work there on the basis of the design submitted by him and a group of colleagues from his Master of Architecture class at Harvard's Graduate School of Design for the Toronto City Hall competition of 1957. The Andrews design had placed second in the competition, beating out established names such as Perkins and Will (also shortlisted), Harry Weese, and Kenzo Tange. The winning project was by the Finnish architect Viljo Revell.² John B Parkin partnered with Revell and his Finnish team to develop their competition winning design into a realizable project; it was for this endeavor that Andrews was recruited by the Parkin office.

While in this paper, we are continuing our larger investigation of Andrews' architecture and its sources and development, the case of his early career throws light on the broader issue of how architects of his generation dealt with influence. It was something that was inevitable, perhaps, but it troubled them, such that direct quotation mostly had to be disavowed. Like many large and ambitious commercial practices of the post-war period, John B Parkin Associates was by the late 1950s heavily under the sway of Mies van der Rohe in particular. In the 1960s, in association with Bregman & Hamann Architects, the firm was to partner with Mies to deliver the Toronto-Dominion Bank Centre, completed in 1967.³ But many projects in the office show the influence of other architects. Andrews had little interest in Mies, but he was mindful of several other architects whose stars in the 1950s were waxing.

Elsewhere, through a comparison of Andrews' work with that of James Stirling, we have considered how members of 'the third generation' of modern architects who started to come to professional prominence in the 1960s all in one way or another had to come to terms with operating in the shadow of the late work of Le Corbusier.⁴ While Andrews' education at Harvard under Josep Lluís Sert had introduced him to the post-war Le Corbusier, it was not until after he had left the Parkin office for his 1961 tour of Europe, the Middle East and India that he was able to experience Le Corbusier's buildings first hand. On that trip he visited the Unité d'Habitation in Marseille, Ronchamp, and Chandigarh – the capitol buildings still mostly under construction. But the influence of Le Corbusier was to manifest itself in Andrews' work only after he established an independent practice. Saarinen, and especially Kahn and Rudolph – the second generation – came first.⁵

Andrews and Rudolph

Before going to the United States for graduate study, Andrews' stint at Edwards, Madigan and Torzillo in Sydney included contributing to their competition entry for the Sydney Opera House in 1956/57. Like the Toronto City Hall competition of a year later, Eero Saarinen was the star international judge at Sydney. Andrews recalls that the EMT design in which he played a lead role was influenced strongly by what could be gleaned of Saarinen's design approach. Before TWA, this meant the General Motors Technical Center in Warren, Michigan.

Andrews' year at Harvard introduced him to the work of another key American architect, Paul Rudolph, whose drawing style would influence that adopted by Andrews for Scarborough College, and whose signature hammer-finished concrete fins would appear on Andrew's 1967 design for the Weldon Library at the University of Western Ontario. In 1958, the young Australian even sought an interview with Rudolph just prior to taking the position with John B Parkin's office in Toronto. As noted by Jennifer Taylor in *Architecture a Performing Art*, it is Rudolph who advises Andrews on the merits of Parkin's offer, particularly for the design experience it would afford.⁶ Though Rudolph had an office in Cambridge until 1960, this interview may have taken place in New Haven where Rudolph then spent most of his time as in 1958 he assumed the role of chair of Yale's Department of Architecture. Tantalizingly, it is possible that the venue for Andrews and Rudolph's meeting was in the Louis Kahn

designed Yale University Art Gallery, where the Yale architecture program occupied upper-level spaces until the completion of Rudolph's Yale University Art and Architecture Building in 1963.⁷



Figure 1. Paul Rudolph, Art and Architecture building, Yale, just before completion. Photograph: John Andrews collection.

Andrews clearly admired Rudolph's work for its material, aesthetic and spatial qualities, as the Art and Architecture building revealed. Among the limited architectural photographs Andrews kept from his North American period are slides of both the Yale Art and Architecture building taken just before it was completed late in 1963 (Figure 1), and of Rudolph's Temple Street Parking Garage. Also in New Haven, the Parking Garage was completed earlier the same year.⁸ These buildings share the same aesthetic language of off-form cast concrete, with the parking building's surfaces bearing the imprints of its immaculately arranged timber form work and those of the Art and Architecture building the brush-hammered 'corrugated concrete' which would become Rudolph's signature. Both these treatments were to appear in Andrews' work in the mid-1960s in two early major projects of his independent practice, respectively Scarborough College and – as already mentioned – the Weldon Library.

However, in the late 1950s Rudolph's growing reputation lay not in the off-form concrete of the peak of his fame but rather in the steel-framed regional modern works he designed for the Sarasota community in Florida, projects including houses and schools, which were featured in the North American journals such as *Architectural Forum* and *Architectural Record*. One of Rudolph's key works of the period was the Riverview High School (1958) for Sarasota that featured a two-storey steel-framed structure with a rhythm of alternating pop-up sections justified on environmental grounds as promoting flows of light and air through the building's spaces. In the February 1959 issue of *Architectural Record* in which the Riverview project appears, a detailed drawing of the building's distinctive sectional profile is shown, clearly illustrating the clerestory effect obtained. Andrews' design for the Federal Equipment Complex of the same year for the Parkin office features a similar steel framed structure with alternative pop-up sections, which appears to be a quotation of Rudolph's Riverview scheme (Figure 2). The justification of this sectional arrangement is also made on practical and environmental grounds.⁹ For Andrews, operating in the colder conditions of Canada, the quickly erected steel frame allows the interior fitout to proceed in a controlled environment and the pop-up sections allowed the efficient gathering of light to the building's deep volumes. The young architect may appear to adopt the Rudolph project as a model but his intent is not to merely copy. Instead Andrews repurposes it to the unique design problem he encounters, and for what is a vastly different environmental context and brief.

During the 1950s Rudolph stressed the need for architects to expand their design thinking beyond what he described as the limited focus of early modern architecture. In his 1956 essay 'The six determinants of architectural form' published in *Architectural Record*, Rudolph lists factors such as the site environment, regional characteristics of climate and landscape, material choices and the psychological demands of users as a part of greater set of design parameters to be addressed by architects.¹⁰ Such a set of architectural demands accorded well with Andrews' own approach to design as an exercise in comprehensive problem-solving within unique conditions. For example, the Toronto City Hall competition project (1958), undertaken with Harvard colleagues, with its parasol roofed 'summer court' took on regional character and climate while the unbuilt scheme for the Malton Hotel at Toronto Airport (1959), executed in the Parkin office, used its canted sectional forms to protect users from the noise of air traffic and an adjacent freeway – a clear case of the site environment affecting architectural form. By 1962, as apparent in the famous Scarborough College scheme, Andrews' interest in determining architectural form through environmental considerations marked a central aspect of his design approach.



Figure 2. John B Parkin Associates, Federal Equipment Building, Toronto. Photograph: Panda Associates, 1960. Canadian Architecture Archives 181a_84-02_PAN_601117-1

The influence of Rudolph on Andrews in the early period of his career can be seen across various aspects of architectural practice and thinking. It is formal, material and aesthetic and yet also impacts Andrews' underlying theoretical position on architecture – that form emerges as a logical solution to clearly identified problems or parameters – precisely the kind Rudolph was extolling in his writings of the 1950s.¹¹

The design that Andrews undertook while at John B Parkin for the Federal Equipment building is related to another project he did at the same time, also within the Parkin office. This was for the Primrose Club, a private Jewish men's club in Toronto. It followed the same constructional strategy as Federal Equipment: an outer steel frame structure was first built and temporarily enclosed to allow construction to continue within during challenging winter conditions. Like Federal Equipment, the Primrose design also appears to allude to the work of Rudolph in the treatment of the roof. Instead of the pop-up elements that the Federal Equipment building had apparently appropriated from Rudolph's Riverview High School, the Primrose Club adopts the shallow vaults that Rudolph deployed on the Hook House in Florida of 1952-53, and the unbuilt US Embassy design for Amman, Jordan of 1954-58.¹² On the exterior of the Primrose design, these vaults signal a void connecting two floor levels at the centre of the building. Very late in the development of the project, these vaults were removed, and the external treatment of the building returned to an approximation of the Miesian orthodoxy which at

the time was the John B Parkin norm. However, Andrews continued to include drawings of the Primrose Club design with the original design's roof vaults in his professional portfolio (Figure 3).

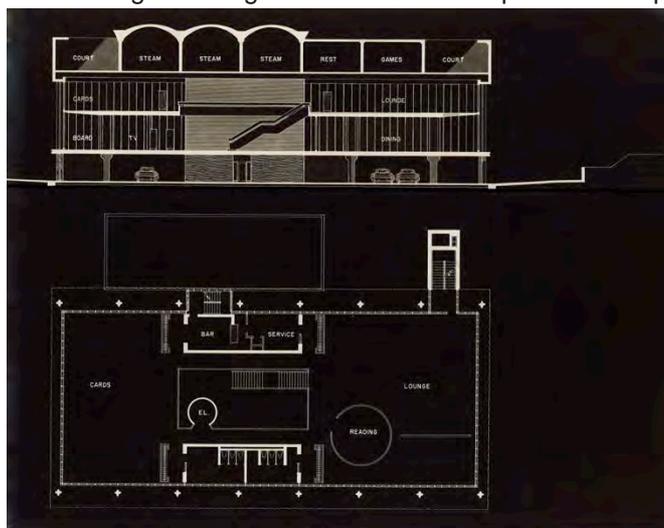


Figure 3. John B Parkin Associates, Primrose Club, Toronto. Image from John Andrews' professional portfolio.

Andrews and Kahn

The last minute changes to Primrose apparent in the drawings of the project held in the Parkin fonds at the Canadian Architecture Archive at the University of Calgary are not limited to the roof. Other key changes include the replacement of a circular reading room that was a feature of the principal floor with an octagon, and of a cylindrical lift shaft that cut through the building with one which was conventionally rectangular in plan.

In considering the original plan layout of the main floors of the Primrose Club, we want to propose that Andrews was mindful of the precedent of another key American architect of the period: Louis Kahn. The footprint of the Primrose building is a rectangle. On the major floor, the subdivision of this overall rectangle into various spaces to serve different club activities is in large part achieved through zoning the plan into three areas, and through the disposition of the cylindrical volumes that contained the reading room and the lift. The cylinder lift shaft was dramatized by its being placed in a void at the building's centre. The tri-partite plan arrangement at Primrose and the strategy of using these cylinders to articulate its interior echoes Kahn's comparable but much more overt plan strategy at the Yale Art Gallery. Kahn's early designs for the Yale Art Gallery apparently included shallow ceiling vaults – possibly an alternative source to Rudolph for the similar roof vaults of the original Primrose design – but it is very unlikely this could have been known by Andrews.¹³ The unbuilt Primrose cylinders of course connect this project not only to Kahn's Yale Art Gallery, but to another famous post-war project, Philip Johnson's Glass House at New Canaan of 1949. (The apparent connection of these designs by Kahn and Johnson has been noted by Goldhagen.)¹⁴

Andrews had seen Johnson's house: in the middle of his Harvard year, Andrews spent the 1957/58 Christmas/New Year break in New York where he visited a business associate of his uncle's. This man's son was the young Richard Lepplatrier, already interested in design and contemplating returning to Sydney to study architecture. Andrews recalls driving to New Canaan with Lepplatrier to see Johnson's house. Andrews also recalls visiting several Kahn buildings, most likely during his Harvard sojourn or soon thereafter: the Trenton Bathhouse, and the Richards Laboratories in Philadelphia, and the Yale University Art Gallery. As we have already mentioned, it is possible that Andrews' interview with Paul Rudolph in 1958 took place in the Yale architecture studios that then occupied upper areas in Kahn's gallery.

The influence of Kahn on the early Andrews is perhaps the most evasive of those that played on him. There are no photographs of Kahn buildings in Andrews' collection as it stands today, while – as already mentioned – there are photographs of Rudolph buildings taken in the early 1960s. There are also photographs of Le Corbusier buildings taken in Andrew's trip to Europe and India in 1961, and of the Carpenter Center at Harvard apparently taken soon after its completion in 1963. Andrews does not recall ever meeting Kahn, nor hearing him lecture or talk. And yet he avers that Kahn was important to him, and Taylor – the critic who knew Andrews best when he was at the height of his career – is also adamant on the significance of the connection.¹⁵ As with Rudolph's, it seems probable that Andrews first learnt of Kahn's work through the architectural press. By the mid-1950s, Kahn had become well-known for the Yale Art Gallery design. The final project had been widely published in the mid-1950s; Kahn in particular was a favoured architect in *Perspecta*, the journal of the Yale University School of Architecture, with several articles substantially or partly about his architecture appearing early in the journal's life. The first of these was an article in *Perspecta* 2, 1953, on Kahn's work on downtown Philadelphia, including the triangulated design for the City Hall building undertaken with Anne Tyng.¹⁶ The second was an article on Kahn's Yale building, extensively illustrated by drawings and photographs, which appeared in *Perspecta* 3 in 1955.¹⁷ Significantly, this was accompanied by a poetic piece by Kahn himself, titled 'Order Is' which includes the lines 'From what the space wants to be the unfamiliar may be revealed to the architect./From order he will derive creative force and power of self criticism/to give form to this unfamiliar.'¹⁸ This is repeated by Kahn, again in *Perspecta* 3, in the description of his Adath Jeshurun synagogue design: 'It is what the space wants to be. A place to assemble under a tree.'¹⁹ This is very close to the architectural ethos of the mature Andrews, articulated by Jennifer Taylor precisely in relationship to such formulations by Kahn.²⁰

But it is not so much Kahn's philosophical ponderings on architecture in *Perspecta* 3 that interest us here. The article on Kahn's Yale Art Gallery, and the illustrations accompanying it, focus on analysing the strategy adopted by Kahn for the building's structure, in particular the very deep floor slabs with their complex triangulated structures. Voids within the three-dimensional geometry of the floor slabs facilitate the horizontal distribution of electrical and ventilation services, while also achieving a disciplined aesthetic for the exposed concrete of the coffered ceilings. The drawings also document the clear zoning of the art gallery plan. Early issues of *Perspecta* were held at the University of Sydney library when Andrews was doing his Bachelor's degree there in the mid-1950s. Andrews was himself to explore complex three-dimensional roof structures in his Bachelor of Architecture graduation project at Sydney (1956), in the design for the Toronto City Hall competition (1958), and in his building for Harvard's Graduate School of Design, George Gund Hall (1968-72), and these perhaps owe something to Kahn's Yale floor structures.

The echoes of Kahn are explicit in other projects Andrews undertook at John B Parkin. The first of these was the Sault Sainte Marie School. The overall plan strategy for this building was established by 1955, well before Andrews had joined the office. A centrally placed gymnasium is surrounded by ranks of classrooms arrayed along corridors on three levels on each side of the gym. The 1955 drawings suggest that the designers of this scheme anticipated a very sober approach to the elevations, which – with the resolutely symmetrical, axial planning – might intimate the influence of the Smithson's Hunstanton School, completed and widely published in 1954. In the 1955 Parkin scheme for Sault Ste Marie, the individual interior spaces are conceptually the outcome of the projection of plan upwards and of the extrusion/stacking of elements in elevation inwards. In contrast, the approach adopted by Andrews focused rather on the individual spaces of the classrooms as a generating logic for the project's architectural expression. Each room is constructed with a concrete 'tent' supported by columns; behind the canted surfaces around the perimeter of the 'tent' are spaces to accommodate pipes and other services – in the Kahnian vocabulary, they are 'servant' spaces. The spatial effect in each room is to give it a kind of cap (Figure 4), to individuate it much as the pyramidal ceilings of Kahn's Trenton Bath house, built in 1955, to individualise each space in that building. (The connection

of Andrews' Sault Ste Marie to Kahn's Trenton Bath House is noted by Jennifer Taylor.)²¹ On the roof of the building, these caps were to be clearly expressed. This individuation of spaces using a pyramid ceiling (or variant thereof) is a strategy that Andrews will repeat in two key projects of the mid 1960s when he is in his own practice, the Bellmere School of 1965, and African Place for Montreal's Expo 67. In these schemes, the proliferation of the individual roof forms goes well beyond the four pyramids of the Trenton Bath House, but this building had originally been envisaged as part of a larger Jewish community centre for Trenton that was to have featured multiple individually roofed pavilion-like buildings. This larger scheme was published in plan and with a photograph of a part model in *Architectural Forum* in 1957.²²

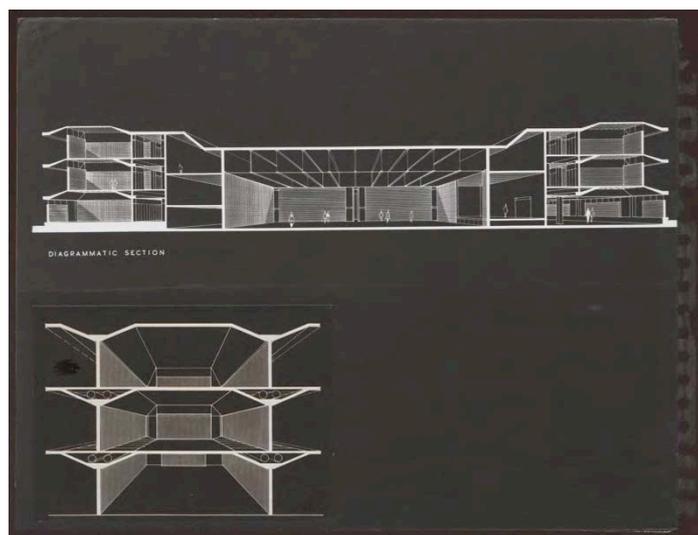


Figure 4. John B Parkin Associates, Sault Sainte Marie School.
Images from John Andrews' professional portfolio.

There is another Kahnian theme in the rooms at Sault Ste Marie. In those along the perimeter of the building, the exterior wall is pulled inward from the building's structural frame, aligning at the corners with the diagonal plan junction of the ceiling's canted surfaces. In each room at Sault Ste Marie, the arrangement of the external wall produces diagonally inflected spaces at the room's outer corners.²³ While the arrangement has the practical purpose of offering windows shade from snow glare, it is aesthetically emphasised by the geometry of the fenestration.²⁴ Outwardly, the resulting articulation of the elevation is difficult to understand – the building's external composition has become a subsidiary matter to its internal organization. This is a defining characteristic of much of Kahn's architecture.

This brings us to the last of the Kahnian themes in Andrews' pre-Scarborough work. This is the clear articulation of served and servant spaces, not just in section as at Sault Ste Marie but expressed overtly in the elements composed in the building's apparent form. Thus, while by itself the Primrose Club could be construed to channel both Johnson and Kahn, the appearance of the Kahnian theme of servant space across several other projects by Andrews while at John B Parkin suggests he was the more important influence. This is particularly so in relation to two towers on which Andrews worked: the control tower for Toronto's international airport, and an unbuilt project for an office tower. These projects establish the paradigm of the triangle plan tower that Andrews would revisit several times across his career: in his preferred version of the CN Tower design, as a bundle of three concrete tubes; in the King George/American Express tower in Sydney, designed from 1970 and completed in 1976; to early designs for a telecommunications tower for Singapore Telecom done in competition in the late 1980s, again as a bundle of three concrete tubes – becoming four in the definitive (but unpremiated and unbuilt) version of the project.²⁵ In each of these designs, the building's appearance is dominated by vertically extruded concrete piers or tubes, containing services and vertical circulation. In the Parkin projects – the built Malton control tower and the unbuilt Toronto office block –

the corner elements are rectangular concrete piers; in the later Andrews projects, the corners are always concrete tubes, most clearly apparent in American Express.

These towers in our view generally manage the dilemma entailed in the Kahn strategy of pulling vertical servant spaces to the perimeter of the building plan to prioritise the interior world of the building. The problem to which this leads – that secondary, servant spaces dominate the outward appearance of the building, usurping the potential of its taking a representational stance in relation to its surroundings – is particularly apparent in the third of the Kahn projects Andrews recalls visiting: the Richards Medical Laboratories in Philadelphia of 1957-61. This had been published in *Architectural Record* in 1959. At Richards, the extruded brick-clad volumes that house stairs, toilets, fume cupboards and so on, dominate the exterior of the building, veiling its core laboratories from the public realm beyond the building. This is a dilemma that also occurs in later John Andrews buildings from time to time – the exterior of the Sydney Convention Centre, for example, being dominated by the concrete and glass block vertical circulation cylinders that surrounded it, while nevertheless giving it a degree of external articulation often missing from this building type.

The best of Andrews' triangle-plan towers, however, make an overall figure of the building while giving formal expression to the conceptual significance of the corner elements. This is very clear in the American Express tower [figure 5], where the robust concrete of the corner tubes, and the spanning walls of the office volumes – decked in the built design with the glitter of an apparently scaleless system of triangulated stainless rods supporting screens and walkways for cleaning and maintenance – and the overall profile of the building in the cityscape each have clear and equivalent weight in the architectural composition.

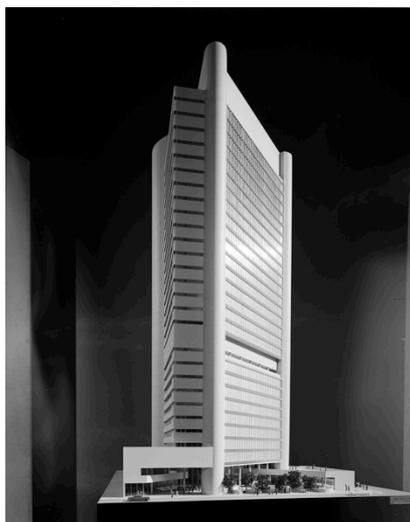


Figure 5. King George Tower, Sydney, model. John Andrews Architects, Toronto, 1970. The building was subsequently renamed the American Express Tower, and was completed in 1976. Photograph: Panda Associates, 1970. Canadian Architecture Archive 261A_98-02_PAN-70824-2.

While Andrews' family of triangle-plan towers has a possible forebear in Kahn and Tyng's design for the Philadelphia City Hall – as it does in the triangle towers of Sert and Le Corbusier's Plan Macià for Barcelona of 1933-35 – the space-frame screens of American Express also have a strong likeness to the drawings of the Kahn/Tyng project's façade treatment, published in *Perspecta* in 1953.²⁶ In Andrews' *oeuvre*, American Express has a direct antecedent in the unbuilt project for an office tower with a triangular plan done by Andrews in Toronto. While the drawings for this project are archived with the Andrews fonds in the Canadian Architecture Archive at Calgary, Taylor and Andrews in their 1982 book *John Andrews Architecture a Performing Art* identify it as a project undertaken by Andrews

at John B Parkin, and its formal likeness to the Malton control tower design suggests a strong connection between these projects.²⁷

Conclusion

Andrews thought of himself as working from first principles, addressing an architectural brief and a given site as a problem for which there was a unique 'discoverable' solution. This conception of design was one which found it difficult to acknowledge the influence of other architecture. As a result, Andrews would not have thought of himself, at the time, as working closely with precedent. He joined those architects for whom any claims for the use of precedent were rhetorically unnecessary, and frank quotation too troubling to admit. Andrews shares this reluctance with most architects of his generation.

And yet it does seem to be the case that during his years at John B Parkin Associates, Andrews developed his design repertoire in part through an awareness of the achievements of architects whose reputations were growing strongly at that time, particularly Paul Rudolph and Louis Kahn. Both were producing bodies of work which freshly developed the direction of modern architecture, and did so in service of a newly confident and expansive American public realm. Andrews' knowledge of their work was very likely drawn both from publications, and where he occasionally had opportunity, from visits to their buildings. Moreover, working in a large office such as John B Parkin Associates had drawn Andrews into an ambience in which many influences were likely to be current.

We are not suggesting that the demonstration of potential influence exhausts possible sources for Andrews' work or discounts its inventiveness. Rather, projects by other architects were for Andrews points of reference. He was selective about which references he used, and he synthesized them such that they became directly relevant to the particular challenges and opportunities of the projects in which they were deployed. It is, we think, very significant that while Andrews worked in an office which revered the work of Mies van der Rohe, little or no Miesian influence can be found in his design. It was Andrews' particular orientation to find not just aesthetic prompts in the work of the architects he admired, but also strategic ones. The general climatic awareness of Rudolph's Florida work was as important to Andrews as any particular form he may have derived from Rudolph's published projects. And while Andrews' triangular plan towers may include veiled references to the triangle plan elements that appear in Kahn's work in the 1950s, more abstractly it is Kahn's served/servant hierarchy that is the key influence on Andrews. It is a measure of Andrews' accomplishment as an architect that his search for ideas and applicable methods would move his interests beyond any of the formal motifs that beguiled him in his first years in practice.

Through an analysis that seeks to identify the presence of sources and appraise their utility we have in part undone Andrews' work of synthesis – the profound integration of motifs and ideas that marked his earlier work. The cylinders of the Primrose Club design could be from Kahn, and they might be from Johnson: they are probably from both. The Primrose Club's shallow roof vaults are most likely to have their precedent in various projects by Rudolph. But they also echo an early version of the ceilings in Kahn's Yale University Art Gallery: Kahn was to make this motif his own when it reappeared in his Kimbell Art Gallery twenty years later. And while the Sault Ste Marie School is clearly mindful of lessons drawn from Kahn, in drawings of its section we might see the splayed treatment of the column heads of Rudolph's Greely Memorial Laboratory at Yale.

In considering such examples retrospectively, we can see that in the period of modern architecture's 'third generation' in the 1950s and 1960s there was significant borrowing of forms between architects, used to similar or different ends. Circulating across the work of various architects were common but distinct families of forms. While the origins of these formal repertoires can perhaps never be precisely ascertained, they constituted a collective design vocabulary in which individual architects nevertheless sought with various levels of success to find their own voices.

Endnotes

- ¹ 'Parkin, John Burnett', *Biographical Dictionary of Architects in Canada 1800-1950*
<http://dictionaryofarchitectsincanada.org/node/1973>
- ² George Thomas Kapelos, *Competing Modernisms: Toronto's New City Hall and Square*, Halifax: Dalhousie Architectural Press, 2015; Christopher Armstrong, *Civic Symbol: Creating Toronto's New City Hall 1952-1966*, Toronto: University of Toronto Press, 2015.
- ³ Christopher Armstrong, *Making Toronto Modern: Architecture and Design 1895-1975*, Montreal & Kingston: McGill-Queen's University Press, 2014: 282-289
- ⁴ Paul Walker & Antony Moulis, 'Finding Brutalism in the Architecture of John Andrews', *Fabrications* 25: 2 (2015): 214-233
- ⁵ According to Philip Drew, Rudolph belongs to the 'third' rather than the 'second' generation of modern architects. But he is the oldest of the architects in that group considered by Drew, while Andrews is the youngest. Drew, *Third Generation: the changing meaning of architecture*, New York: 1972.
- ⁶ Jennifer Taylor & John Andrews, *Architecture a Performing Art*, Melbourne: Oxford University Press, 1982: 22.
- ⁷ Timothy M Rohan, *The Architecture of Paul Rudolph*, New Haven & London: Yale University Press, 2014: 60
- ⁸ Rohan, *The Architecture of Paul Rudolph*, 69
- ⁹ Taylor & Andrews, *Architecture a Performing Art*, 23.
- ¹⁰ Paul Rudolph, 'The Six Determinants of Architectural Form,' *Architectural Record*, 120 (1956): 183-190.
- ¹¹ See also Paul Rudolph, 'The Changing Philosophy of Architecture,' *American Institute of Architects Journal*, 22 (1954): 65-70.
- ¹² Rohan, *The Architecture of Paul Rudolph*, 25-28; 33-40.
- ¹³ Sarah Williams Goldhagen, *Louis Kahn's Situated Modernism*, New Haven: Yale University Press, 2001: 56.
- ¹⁴ Goldhagen, *Louis Kahn's Situated Modernism*, 55.
- ¹⁵ Taylor & Andrews, *Architecture a Performing Art*, 17; Jennifer Taylor, 'John Andrews, architecture', *Architecture Australia* 70:2 (May 1981): 30-37.
- ¹⁶ Louis I Kahn, 'Toward a Plan for Midtown Philadelphia', *Perspecta* 2 (1953): 10-27.
- ¹⁷ 'Order and Form', *Perspecta* 3 (1955): 46-58. Other early issues of *Perspecta* that featured Kahn's work were *Perspecta* 4 (1957) which included Kahn's prose poem 'Architecture is the thoughtful making of spaces' (2-3) and an article by Kahn titled 'Order in Architecture' (58-63). Kahn's work is briefly discussed by James Stirling, "'The Functional Tradition" and Expression', *Perspecta* 6 (1960): 88-97; Sybil Moholy-Nagy, 'The Future of the Past', *Perspecta* 7 (1961): 65-76; and James Gowan, 'Notes on American Architecture', *Perspecta* 7 (1961), 77-82. Other articles on or by Kahn in widely available architectural journals from the period include Walter McQuade 'Architect Louis Kahn and his strong-boned structures', *Architectural Forum* 107 (October 1957): 134-143; 'Louis Kahn and the Living City', *Architectural Forum* 108 (March 1958): 114-119; 'Logic and art in pre-cast concrete: medical research laboratory, University of Pennsylvania', *Architectural Record* 126 (September 1959): 233-238; and Louis I Kahn, 'Form and Design', *Architectural Design* 31 (April 1961): 145-154.
- ¹⁸ Kahn, 'Order is', *Perspecta* 3 (1955): 59
- ¹⁹ Kahn, 'A Synagogue (Adath Jeshurun of Philadelphia)', *Perspecta* 3 (1955): 62.
- ²⁰ Taylor & Andrews, *Architecture A Performing Art*, 17.
- ²¹ Taylor & Andrews, *Architecture A Performing Art*, 23.
- ²² Goldhagen, *Louis Kahn's Situated Modernism*, 103-111.
- ²³ This can be seen clearly in the images of Sault Ste Marie being demolished at <https://www.flickr.com/photos/68678468@N06/6246466970/in/photostream/>
- ²⁴ Taylor & Andrews, *Architecture A Performing Art*, 23.
- ²⁵ For more on Andrews' towers, see Paul Walker, 'No. 2 Bond Street', in *Augmented Australia: Regenerating Lost Architecture 1914-2014*, Australian Pavilion, 14th International Architecture Exhibition, La Biennale de Venezia, ed Philip Goad, Canberra: Australian Institute of Architects, 2014: 70-73.
- ²⁶ Walker & Moulis, 'Finding Brutalism in the Architecture of John Andrews', 230.
- ²⁷ Taylor & Andrews, *Architecture A Performing Art*, 23-24.