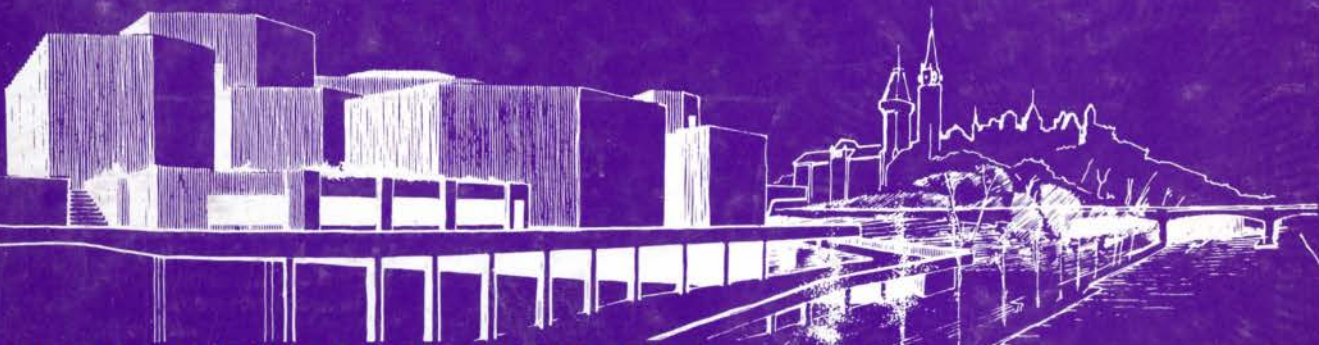


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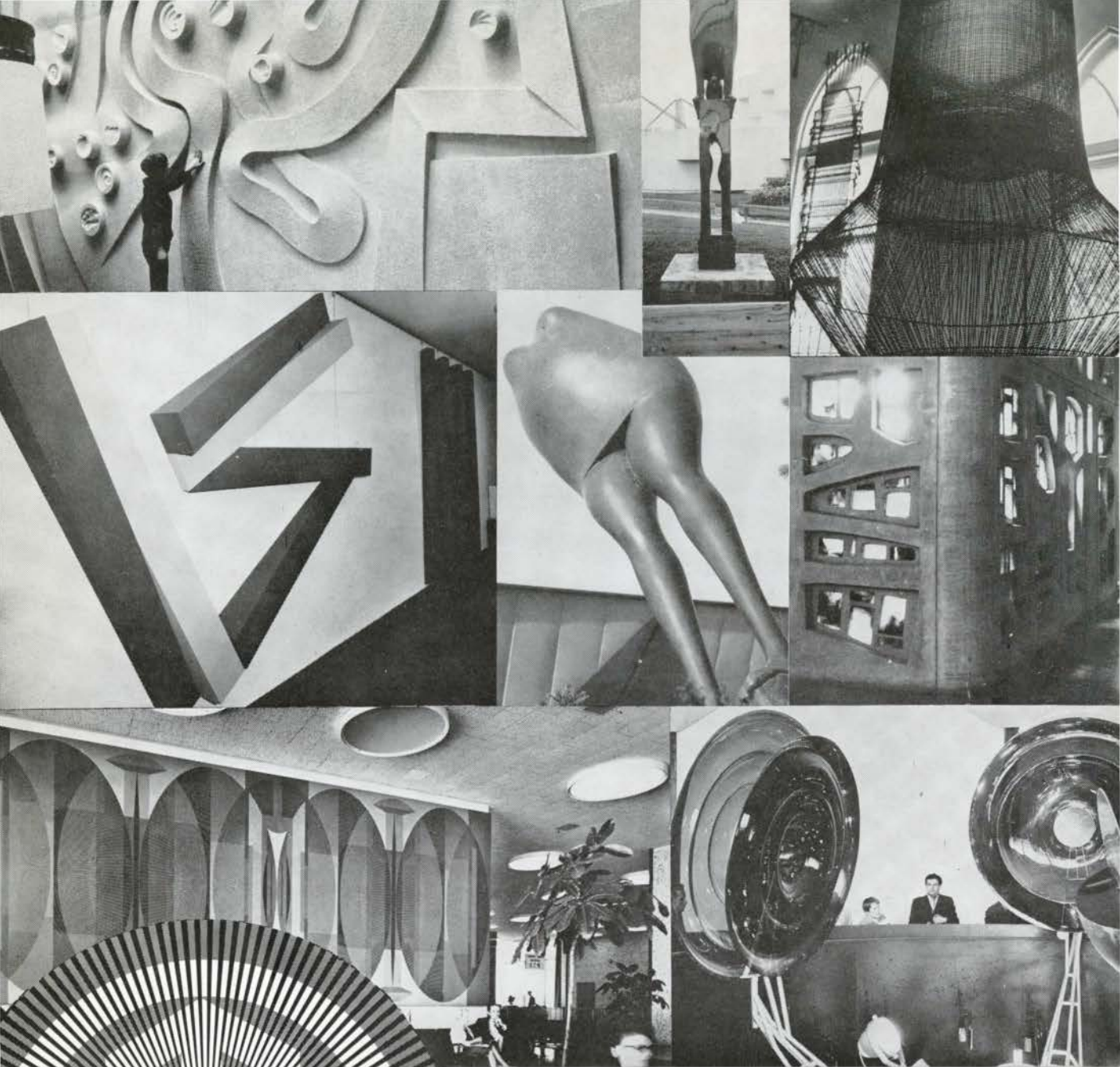
May 1969 Mai Number 5 Volume 46 Journal RAIC La Revue de l'IRAC



National Arts Centre/Centre national des Arts, Ottawa
AIA RAIC 1969 Joint Convention Issue
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AIA-RAIC Joint Convention



Chicago, host city for 6,000 North American architects at AIA-RAIC Convention

Planning is now completed for the first Joint Convention of the Royal Architectural Institute of Canada and the American Institute of Architects which will bring some 6,000 architects, their wives, families and friends to the Palmer House in Chicago over 22-26 June.

For the RAIC the occasion will mark the first Assembly held outside Canada and the first with undergraduate students from each School of Architecture participating as invited guests. It will also be the first conducted under the new bylaws, which define the Institute as a confederation of the nine Provincial Associations directed by a council composed of nine provincially appointed representatives and alternates, plus four officers named by the council.

For Canadians who have not yet visited the Windy City, the convention will provide an opportunity to see the architecture which, beginning before the turn of the century, made Chicago famous.

The Joint Convention Planning Committee (Frank Nicol of Toronto heads the Canadian section) has produced a program in which keynote speakers and panelists in a variety of workshops, on the theme of "Focus Now", will explore action needed if the profession is to meet today's environmental problems

and fulfill its social and economic responsibilities.

Keynote Speakers

The AIA's annual Purves Lecture will be given by Dr Hans Selye, professor and Director of the Institute of Experimental Medicine at the University of Montreal, the Canadian internationally known for his research into the nature and problems of stress. The other keynote speakers will be Patrick Moynihan, Special Assistant for Urban Affairs to the US President; Albert J. H. Dietz, professor of architecture at MIT; and Marvin H. Bernstein, Dean of the Woodrow Wilson School of Public and International Affairs at Princeton University.



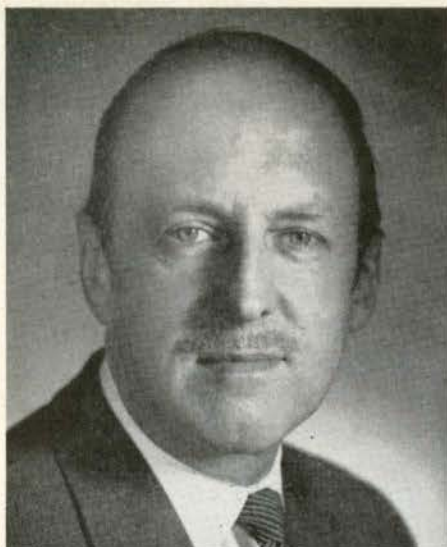
Keynote speaker, Dr. Hans Selye

Design Critiques on Montreal & Chicago

One of the features of the Convention will be design critiques of Montreal and Chicago by teams of architects from each Institute. The RAIC team to report on Chicago will consist of Guy Legault, architect and urbanist and, since 1967, Directeur du Service de L'Habitation de la ville de Montréal; Arthur Erickson of the Vancouver firm of Erickson Massey, winner of the design competition for Simon Fraser University and, more recently, the competition for the Canadian Pavilion at Expo '70 in Osaka; and Clifford Wiens, Regina, Vice-President of the Saskatchewan Association of Architects and winner of six Massey Medals for Architecture. The AIA team to study and report on



RAIC Design Critique Team, Arthur Erickson, Guy Legault, Clifford Wiens



RAIC President, N. H. McMurrich



Chairman of Canadian Section of the Convention Planning Committee, Frank J. K. Nicol



Co-Chairman of the Canadian Section of the Convention Committee, Jean-Louis Lalonde

Montreal will be John Fisher-Smith, Jacqueline Robertson and Archibald Rogers. The team will be welcomed to Montreal by PQAA President Jean-Louis Lalonde.

The city's architectural history, some of the more striking new work and how Chicago finds itself today are described in a guest article on page 8 by Rob Cuscaden, editor of "The Inland Architect," the publication of the AIA Chicago region chapters.

College of Fellows

The RAIC College of Fellows annual business meeting will be held Monday afternoon and the annual Convocation Tuesday afternoon. A joint AIA-RAIC Fellows and wives banquet will be held that evening at the Union League Club.

Convention Social Program

The social program begins Sunday afternoon, June 22, at 6:30 with a cocktail party by the F. W. Dodge Corporation. At 6:30 p.m. Monday the AIA-RAIC Presidents' reception will be held at the Palmer House. Wednesday afternoon at 5:30 there will be a cocktail party at the Mid America Club at the B & O Station. This will be followed by the Gala Party at the Auditorium, the reported scale and program of which staggers the imagination. The Joint Annual dinner of both Institutes will be held at the Palmer House, Thursday evening, June 26.

Workshops and Panels

Members of the RAIC participating in the 12 theme workshops to be held Thursday and Friday are:

1. *Professional Inter-Action*: Moderator, James E. Searle, (F), Toronto, RAIC Immediate Past President and partner in the recently merged firms of John B. Parkin Associates and Smith Carter Searle; and panelist, Raymond T. Affleck of Affleck Dimakopoulos Lebensold, Montreal.

2. *Factors Affecting Size and Nature of Practice*: Moderator, Guy Desbarats, (F), Dean, Ecole d'Architecture, Université de Montréal; and panelist, W. Randle Iredale, partner in the Vancouver firm of Rhone and Iredale.

3. *The Client and Society*: Panelist, John C. Parkin, (F), of the Parkin firm in Toronto.

4. *Student-Professional Dialogue - "What is and What Should Be"*: a Canadian student panelist yet to be named.

5. *The High Cost of Responsibility*: Panelist, Robert E. Briggs of the Toronto firm of Bregman and Hamman and chairman of the RAIC Committee on Legal Documents.

6. *The Economics of Service*: Moderator, Henri P. Labelle, Montreal, a past President of the PQAA; and panelist, P. M. Keenleyside, (F), Toronto, Councillor and Past President of the OAA, and a member of the working group which conducted the RAIC Survey of the Profession in 1966.

7. *Component Systems*: Panelist, Roderick G. Robbie, Toronto, of Robbie Vaughan and Williams, and Technical Director of SEF, the Study of Educational Facilities for the Metropolitan Toronto School Board.

8. *Information Evaluation and Retrieval*: Moderator, Gordon Arnott, (F), Regina, RAIC Honorary Secretary. A panelist will be Donald G. Laplante, MEIC, P. Eng., Chief of the Construction Division of the Materials Branch of the Federal Department of Industry, Trade and Commerce, which is administering and implementing the Department's BEAM program.

9. *Construction Management*: Panelist, Eberhard H. Zeidler, (F), of the Toronto firm of Craig Zeidler and Strong.

10. *Programming*: Panelist, Melvin Charney, Associate Professor in charge of Graduate Studies, Ecole d'Architecture, Université de Montréal.

11. *Office Production Techniques*: Moderator, C. F. T. Rounthwaite, (F), of the Toronto firm of Marani Rounthwaite and Dick, President of Margroup Ltd and Chairman of the RAIC Standing Committee on Architectural Services on Federal Government Work.

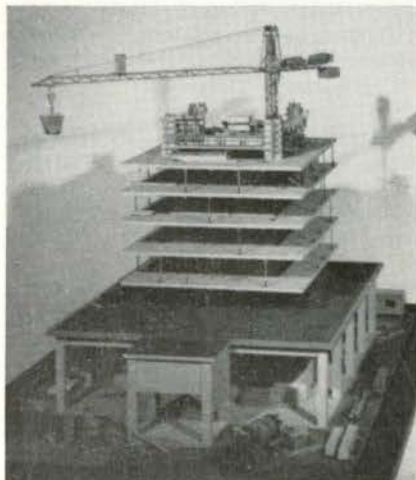
12. *Historic Buildings*: Panelists, William S. Goulding, Chairman of the RAIC Committee

on Historic Buildings, and John Bland, (F), Director of the School of Architecture, McGill University.

RAIC and DOI Exhibits

The RAIC Exhibit at the Convention will include continuous co- or s:ide shows of contemporary Canadian architecture and of the allied arts (the latter chiefly examples illustrated in Volumes 1 and 2 of the *RAIC Allied Arts Catalogue*), the winning entry in the 1969 Pilkington Traveling Scholarship Competition; the 1969 Design Canada Award for industrial design; and the RAIC traveling photographic exhibit of Historic Architecture in Canada.

One of the problems faced by the RAIC in the planning of this first Joint Convention with the AIA was to make the word joint meaningful in terms of facilities and program participation. In this the Canadian section of the Joint Convention Committee was aided substantially by the Materials Branch of the Department of Industry, Trade and Commerce. The branch has arranged a government sponsored exhibit in which 11 Canadian manufacturers will display architectural products. A feature of the Depart-



Going up..... DOI convention exhibit

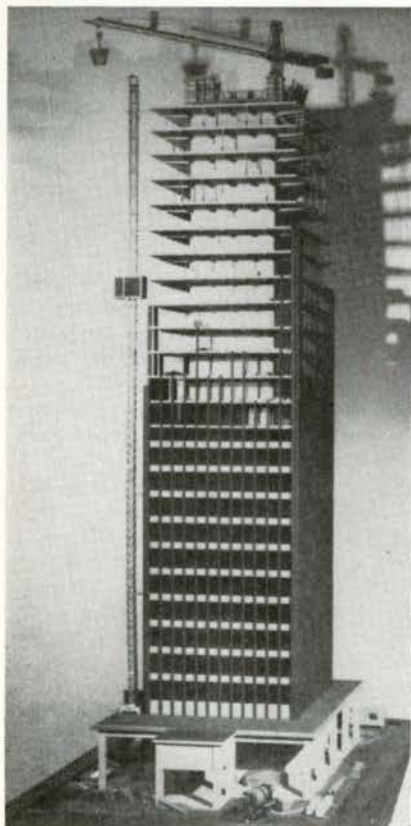


Coordinator for Canadian Section of Ladies' Committee, Mrs. F. J. K. Nicol

ment of Industry, Trade and Commerce is an exhibit which depicts the BEAM program will be a working model of a 25-storey office building produced for the Amalgamated Construction Association of BC. One of the Department's senior officers, Donald G. Laplante of the Materials Branch, is a panelist in the convention workshop on Information Evaluation and Retrieval.

Student Program

As previously announced, the RAIC has invited the nine Schools of Architecture to send two students each to the Convention as guests of the Institute. Peter Dandyk, the



working model of office building depicting BEAM program

Waterloo School Student Editor for *Architecture Canada* who is acting as coordinator of the Canadian student delegation, writes about the student program in the Schools section (7) of this issue. The student program starts Sunday afternoon, June 22, when student officers and Institute officers, with audience participation, will discuss architects and architecture in today's world.

Ladies' Activities

The program starts Tuesday June 24 with the annual breakfast of the Women's Architectural Leagues, followed by a gala luncheon on Wednesday. Wives of Canadian architects attending the Convention are expected to take a special interest in the Women's Architectural League movement in the light of suggestions that WAL activities be organized in Canada.

Merchandise Mart Program

The Mart is sponsoring the first National Exposition of Contract Interior Furnishings from Sunday June 22 to Friday June 27. Architects are invited to be guests of the Mart for brunch on Sunday followed by a session on how the interior environment affects people. Friday will be Post Convention Workshop from 9:00 AM to 4:00 PM. Registration for the Workshop, including breakfast and lunch, is without charge. Luncheon speaker will be architecture critic Wolf von Eckhardt. He will afterwards moderate a panel discussion in which George Robb of Toronto will participate.

Convention Tours

The AIA Chicago Chapter Tour Committee has arranged a wide variety of tours of its architecturally notable city. The list includes:

1. Frank Lloyd Wright Tours (19 Buildings)
2. South Side Historical Tour
3. Chicago School of Architecture Tour
4. Chicago High Rise Tour
5. Schools: (a) North; (b) South
6. Hospitals Tour
7. Religious Buildings
8. Urban Renewal - City Planning
9. Urban Crisis Tour
10. Transportation (Airport, Expressways)
11. Architectural Preservation
12. Lakefront Boat Tours
13. Five One-Hour Walking Tours: South Loop, West Loop, North Loop, North Michigan Avenue and the Gold Coast.

Canadian Section Convention Committee

In Addition to President Norman H. Mc Murrich, the RAIC section of the Joint Convention Committee consists of F. J. Nicol, Chairman, with Mrs Nicol representative on the committee for the Ladies' program; Jean Louis Lalonde, coordinator for the Chicago-Montreal design critiques program; Peter Goering, hospitality; G. Davis, exhibits; Wilson A. Salter, DPS, speakers, assisted by Maurice Holdham and Earl Mayo of RAIC Headquarters and Walter Bowker, editor of *Architecture Canada*. Peter Dandyk of the Waterloo School of Architecture is coordinator for the student delegation.



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Raymond T. Affleck



Guy Desbarats



W. Randle Iredale



John C. Parkin



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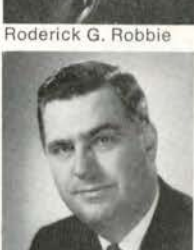
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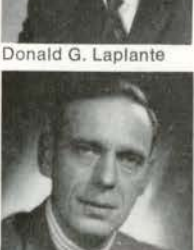
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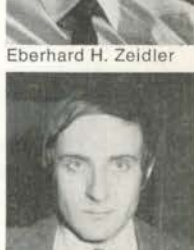
Donald G. Laplante



Eberhard H. Zeidler



C. F. T. Rounthwaite



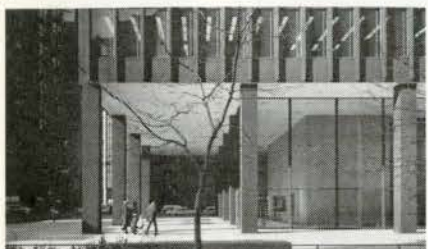
Melvin Charney

Chicago - Still the Boss City of Architecture?

Rob Cuscaden



1



2



3



4

In 1881, as probably an apocryphal but certainly a possible legend has it, a boisterous conductor announced his train's arrival into "Chicago – the boss city of the universe!"

If in no other endeavor, Chicago was the boss city of the universe in architecture at the time. Indeed the 1880's and 1890's were a kind of architectural golden age in the Windy City, with its architects and engineers developing the main elements of modern building techniques – most especially the steel-framed, multi-storey building.

Steel and elevator made the skyscraper, and it in turn made Chicago. As the editors of *Architectural Forum* wrote in a special issue devoted to the city: "Here is where it all began."

Much of this architectural heritage remains – Burnham & Root's gentle, almost feminine, but soaring Reliance Building; the same firm's Monadnock Building, the last of the tall masonry buildings, still amazes with its pure design. Adler & Sullivan's Romanesque Auditorium Theatre has had its lights blazing once again on a plethora of cultural activities for the past two years; and there is

Mr Cuscaden is Editor of the Inland Architect, Chicago

William LeBaron Jenney's slightly formidable Manhattan Building.

These, so far, have avoided the developer's wrecking ball, as also have certain equally significant examples of residential architecture – Henry Hobson Richardson's Glessner House, the sole survivor of four works the Brookline master put up in Chicago; and Frank Lloyd Wright's mighty Robie House. (All of these structures and many more, incidentally, are included in a number of package tours available to those attending the joint AIA/RAIC Convention in Chicago June 22-26.)

And so, out of that historically respectable, even significant and certainly by now almost over-documented past, into what kind of bright (or otherwise) today? What, in short, has become of boss city?

It has much in common with all urban areas. It is tearing down a good deal of its architectural history and putting up buildings in such a diversity of styles that no two architects in any given square mile of congestion can agree for more than two minutes on any subject. It is arguing incessantly over urban renewal, although some insist that it should, by now, be termed more correctly "urban displacement." Its transportation woes mount hourly, with the inevitable vicious cycle of ever more expressways resulting in more automobiles, thus requiring more

expressways, which mean more automobiles, etc. The ghetto becomes ever more swollen and ever less tractable to paper solutions proposed by white planners in downtown towers who take the commuter leap each night over their black brothers for suburbia's green security blanket. And the pollution of land and air and water continues virtually unabated and, worse, essentially unnoticed by the great majority.

Nothing really new, in other words, though Chicago being Chicago, it is managing to do almost all of these things in its own slightly wacky, persistently unprecedented fashion.

Skidmore's Hancock Center, for instance. Why this monolith was ever dropped down in the very middle of the city's petite and tea-cozy Michigan Avenue neighborhood, with its Saks Fifth Avenue and Elizabeth Arden Salons, the ancient, toy castle of a Water Tower a scandalous short look away, is anybody's guess. It is the wrong building in the wrong spot. The Avenue, already hopelessly snarled with traffic every single rush hour, now faces the ghastly thought of thousands more people turned out of the building's offices at that precise, same time; not to mention the hundreds and hundreds of additional autos flushed out of the building's adjacent parking structure. The mind boggles at the coming chaos.

Certainly a building of Hancock's magnitude

1 Seventeenth Church of Christ, Scientist, Harry Weese & Associates

2 First unit of the three-building Federal Center. Architects, Mies van der Rohe; Schmidt, Garden & Erikson; C. F. Murphy Associates; A. Epstein & Sons. Already termed "one of the most expressive examples of Mies van der Rohe's genius."

La première partie du groupe de trois bâtiments du Federal Center par les arch—Mies van der Rohe; Schmidt, Garden & Erikson; C. F. Murphy Associates; A. Epstein & Sons; ce bâtiment est déjà coté parmi les oeuvres exprimant le mieux le génie de Mies van der Rohe.

3 Civic Center, C. F. Murphy Associates; Loeb, Schlossman & Bennett; Skidmore, Owings & Merrill. Picasso statue at right. Civic Center de C. F. Murphy Associates; Loeb, Schlossman & Bennett; Skidmore, Owings & Merrill. La statue à droite est l'oeuvre de Picasso.

4 Lake Point Tower, Schipporeit & Heinrich Associates/Perkins & Will Partnership

5 Chicago Circle Campus of the University of Illinois, Skidmore, Owings & Merrill; C. F. Murphy Associates; A. Epstein & Sons. The view is looking across the Central Court toward the 25-storey University Hall. Le Chicago Circle Campus à l'université d'Illinois par Skidmore, Owings & Merrill; C. F. Murphy Associates; A. Epstein & Sons; vue à travers la cour centrale vers University Hall, un pavillon de 25 étages.

6 First National Bank Building, C. F. Murphy



5



6

should have been sited over a major transportation artery, even as the Prudential Building was located directly over the city terminus of the Illinois Central commuter railroad. Although Hancock's oil-derrick-like design initially bemused or infuriated the city's populace (which one and all are great building watchers), it has since been taken affectionately to heart by most (the *pros* call it "Big John"; the *cons* term it the "biggest transistor in town").

Other recent buildings are perhaps less controversial, but no less news-worthy:

Lake Point Tower, for instance, perched out there at the edge of the lake, is smoothly impressive in its serpentine, clover-leaf shape. It was one of only three honor award buildings jury-chosen at the AIA's Chicago Chapter recent and annual presentation banquet. Still, despite its sleek modernity, it is one more slat in a fence which may someday completely shield the lake from those unable to afford an expensive, 35th floor apartment high up in its glassy body.

Harry Weese's Seventeenth Church of Christ, Scientist, may well be over-powered by its downtown, skyscraper neighbors, but it firmly anchors a difficult, corner site, and gives the city some rare, non-Miesian variety. A lot of non-Christian Scientists have been jamming the church during

Wednesday noon services to see the almost Wagnerian theatricalism of the auditorium.

The First National Bank Building, at the geometric center of the Loop (for those interested in little-known, curious facts), swoops finely skyward. "Purists" have been sneering at the "tricky" and form-not-following-function design of this building before the caissons were even dug. But in reality, the functional aspects of the building completely dictated the design: the bank needed a broad, unencumbered first floor for the banking public (elevators and service areas are segregated on either side), while the upward-narrowing floors were the direct result of a survey indicating that business rentals could only be accomplished in a day of almost superfluous rental space by having less floor space and more window area.

Just west of the Loop is the still-growing Chicago Circle Campus of the University of Illinois. It makes for fine architectural photographs in the journals, but its mile after mile of concrete has a certain dulling effect. Students complain, too, that the scale is somewhat out of proportion; they feel they rattle around out there like digits on a rendering instead of real people inhabiting an actual environment.

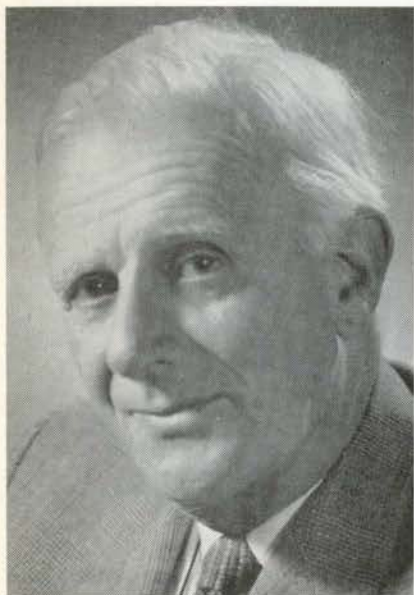
Preservation is a continuing topic of interest, but, unfortunately, mostly to the same group

of people. Everytime one more landmark building is threatened, the same faces show up to protest; there seems no broad, truly effective base of support for the city's architectural heritage.

The demolition of Adler & Sullivan's world-famous Garrick Theatre in 1961 (uniquely one year after it was proclaimed in public ceremony as a Chicago Architectural Landmark), stirred some outrage, but since that time the buildings continue to come down and few care. Recently torn down without the fanfare of a penny whistle have been Purcell, Feick & Elmslie's charming, intimate Edison Shop, Holabird & Roche's pioneering Republic Building, and the same firm's classic Chicago School Cable Building. Currently threatened are the Chicago Public Library's main building on Michigan Avenue, and Adler & Sullivan's old Chicago Stock Exchange Building.

And city fathers are even now considering the ultimate environmental disaster of a major jet airport just offshore the city itself in what's left of Lake Michigan.

Boss city of the architectural universe? Perhaps. But Chicago could lay greater claim to that title with a firmer idea of where its architecture has come from, and by integrating that historical past with its admittedly exciting present.



Eric R. Arthur, CC, MA, LL.D, FRAIC, FRIBA, RCA

Canada's highest decoration, Companion of the Order of Canada, has been conferred upon Dr Eric R. Arthur, of Toronto. This is the second recent honor for Dr Arthur. Last year he was awarded a Canada Council Medal for his many contributions to architecture.

Dr Arthur taught at the School of Architecture of the University of Toronto from 1923 to 1966. He was for 22 years editor of this Journal and is the author of many studies in the field of architectural history. His best known book is "Toronto, No Mean City" and another, on barns, is about to be published. He has conducted a number of notable architectural competitions in Canada, including those for the new Toronto City Hall and the Fathers of Confederation Memorial Building in Charlottetown. He is currently professional advisor on the competition for the RCAF Memorial at Trenton.

His latest appearance in print is as one of the contributing editors to "St. Lawrence Hall", the just published book commemorat-

ing the restoration of Toronto's historic concert and meeting hall, a project in which he played a leading role.

Dr Arthur is the 76th distinguished Canadian to be appointed a Companion of the order and the first architect. This Journal joins his many friends at home and around the world in congratulating him on his new honor.

RIBA Competition for New AA School Building

The Architectural Association, 34 Bedford Square, London WC1, has announced a competition for the design of a new building for the Association and for the AA School of Architecture. Members RIBA registered in the UK and Commonwealth countries and UK students in RIBA recognized schools and AA members at home and abroad are eligible to compete. Closing date for applications is 13 June.

Modular Coordination for DPW

Modular coordination in design and construction by the federal Department of Public Works came into effect March 31.



A. W. Cluff, MRAIC, partner in Toronto architectural firm of A. W. Cluff and P. J. Cluff, and Technical Editor of *Architecture Canada* was elected President of the Specification Writers' Association at their annual convention, April 23-26 in Toronto.

DBR Appointments

Dr N. B. Hutcheon has been appointed Associate Director of the Division of Building Research, NRC, Ottawa. Carl B. Crawford, P. Eng., head of the Soil Mechanics section and A. Grant Wilson, P. Eng., head of the Building Services section, have been appointed assistant directors.

New Edition National Building Code

The NRC Associate Committee on the National Building Code expects the new edition will be available early in 1970. Some 4,000 copies of drafts of revised sections have been sent out in response to requests, and it is hoped that the new Fifth Edition will be found to be so much improved over the earlier edition that it can be widely adopted by local municipalities without any of the local variations which affected the current edition.

Coming Events

Computer Graphics Course for Designers, University of Michigan, June 9-20. MIT Computer Program, June 17-27.

RAIC-AIA Joint Annual Convention, Chicago, June 22-26.

1969 Athens Ekistics Month, July 7-August 1.

Symposium on Architecture and Town Planning in Sweden, Sept. 8 - 15. Information from Swedish Institute, Box 3306, Stockholm 3.

National Association of Corrosion Engineers Eastern Regional Conference, September 30 - October 2, King Edward Hotel, Toronto.

"World Building 1968 - Cost and Control" CIB, International Council for Building Research, Studies and Documentation, Fourth Triennial Congress, Ottawa and Washington, DC, October 1968.

19th Olympiad Program for Meeting of Young Architects, Mexico City, October 7. 10 Details from RAIC Headquarters.

The Case for a Joint Committee for the Construction Industry

Although all members of the President's Consultative Committee (CCA, ACEC, SWAC and RAIC) agreed that their main problems are with the Federal Government, the meeting on March 11 still did not accept the recommendation of RAIC President N. H. McMurrich to convert the PCC to a National Joint Committee for the Construction Industry which would bring together senior officers of private sector organizations with senior officers of government agency committees. (*Architecture Canada*, March, 1969, page 7.) Studies presented by Mr McMurrich showed that of these 25 private and government organizations, nine (four of them government) already have representation on four or more of the 13 Joint Committees now functioning. (See Chart.) The PCC however, felt that the RAIC construction industry studies were constructive and should be continued.

The National House Builders Association is to be invited to join the PCC; and it was agreed that the PCC should be the parent body for the Canadian Joint Committee on Construction Documents and Procedures.


Le cas d'une commission conjointe pour l'industrie de la construction

Bien que tous les membres de la Commission des Conseillers du Président (CCA, ACEC, SWAC et IRAC) étaient d'accord que leurs principaux problèmes sont les rapports avec le gouvernement fédéral les participants à la conférence le 11 mars n'ont pas accepté la recommandation du président de l'IRAC N. H. McMurrich que la CCP soit transformée en une commission nationale conjointe pour l'Industrie de la Construction qui rassemblerait les hauts fonctionnaires de l'industrie et du gouvernement. (*Architecture Canada*, mars 1969, page 7.) Les études présentées par M. McMurrich ont indiqué que parmi les 25 organisations privées et du gouvernement 9 (4 du gouvernement) sont déjà représentées sur au moins 4 des 13 commissions conjointes qui fonctionnent actuellement. (Voir tableau.) Toutefois, la CCP a jugé que les études de l'IRAC et l'industrie de la construction étaient constructives et qu'il serait utile de les continuer. L'Association Nationale des Constructeurs d'Habitations doit être invitée à faire partie de la CCP, et il a été convenu que la CCP devrait être l'organisation mère pour la Commission canadienne conjointe pour les Documents de Construction et les Règles de Procédure.

Joint Committees:	Royal Architectural Institute of Canada	Association of Consulting Engineers of Canada	Canadian Construction Association	Specification Writers Association of Canada	Engineering Institute of Canada	Canadian Council of Professional Engineers	Canadian Manufacturers' Association	Canadian Standards Association	Canadian Institute of Mining and Metallurgy	National House Builders' Association	Canadian Aeronautics and Space Institute	Chemical Institute of Canada	Canadian Labour Congress	Confederation of National Trade Unions	Canadian Chamber of Commerce	Government	National Research Council (D.B.R.)	Department of Fisheries	Central Mortgage and Housing Corporation	Treasury Board	Canadian Emergency Measures Organization	Department of Industry	Department of Labour	Department of Public Works	Department of Manpower and Immigration	Department of National Defence
Presidents' Consultative Committee	○	○	○	○																						
Canadian Joint Committee on Construction Documents and Procedures	○	○	○	○	○																					
Canadian Joint Committee on Construction Materials	○	○	○														●									
National Joint Committee on Wintertime Construction	○		○		○		○			○				○	○	○	●		●				●			
RAIC/CMHC Joint Committee (on Housing)	○																		●							
Advisory Committee to Treasury Board	○																			●						
Architect-Engineer Committee on Winter Employment	○	○				○						○					●					●		●		
Technical Council of Canadian Standards Association	○		○		○			○	○			○			○		●				●	●	●	●	●	●
Advisory Committee on Building Research, NRC	○		○							○		○							●				●		●	
Emergency Planning Advisory Committee to Department of Public Works	○		○		○	○			○		○	○						●		●			●			
DOITC Advisory Committee on Modular Coordination Individuals from :	○	○	○														●		●		●		●			
DOITC Advisory Committee on Industrialized Building Techniques and Systems	○	○	○																		●		●			
DOITC Advisory Committee on Construction Information Systems	○	○	○														●				●		●			



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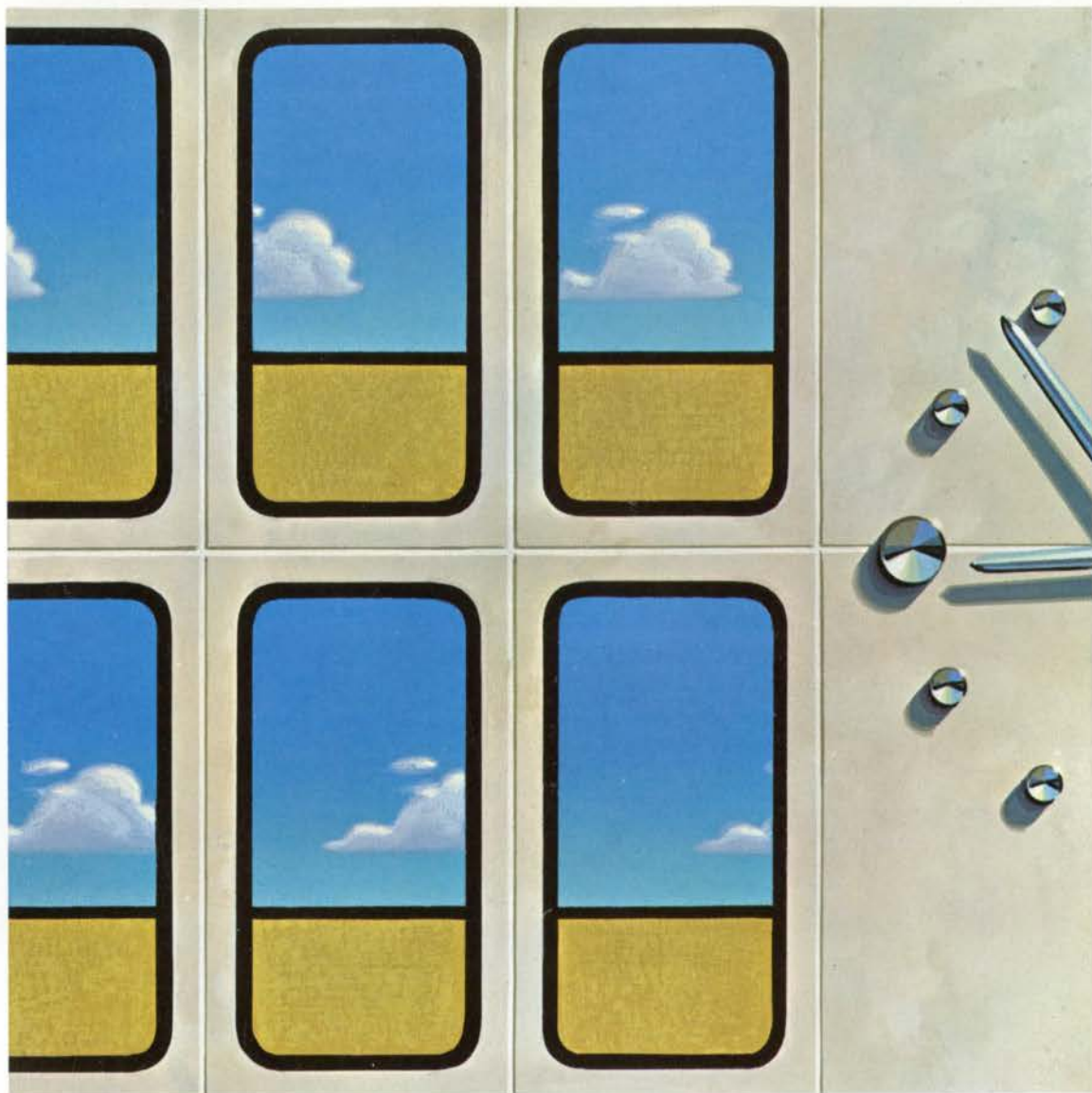
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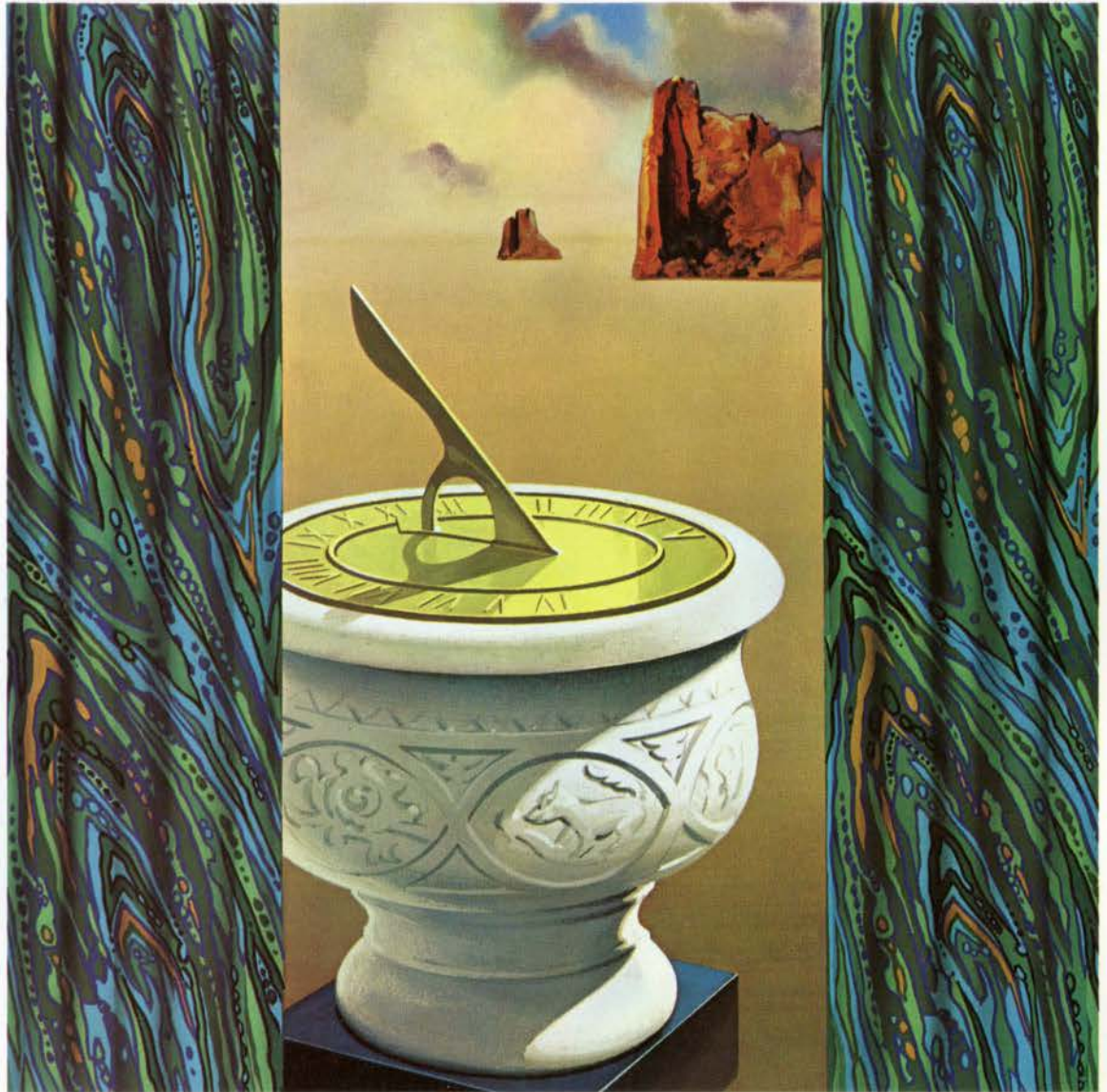
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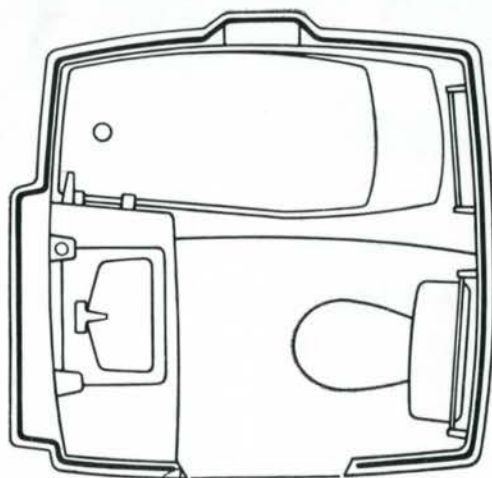
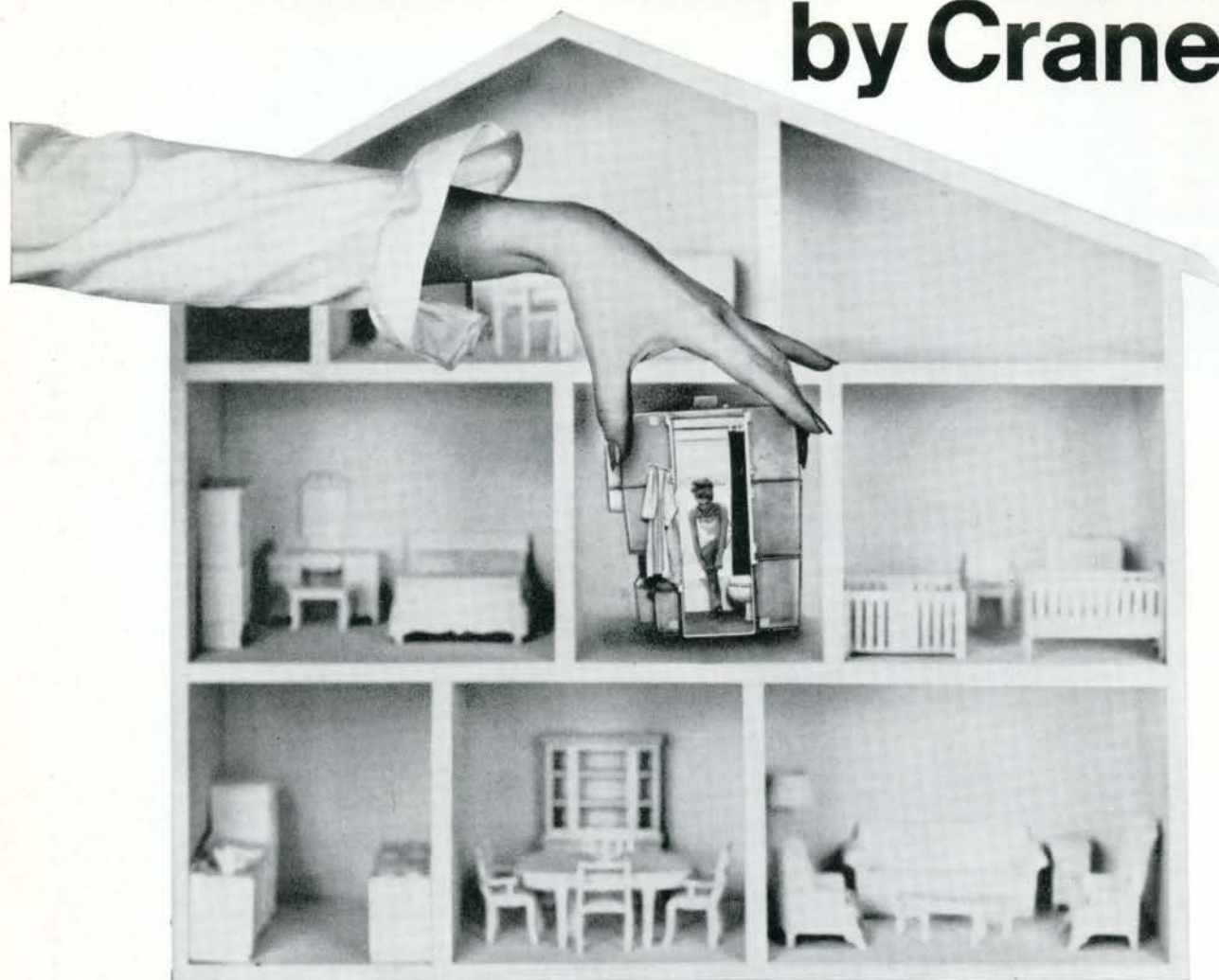
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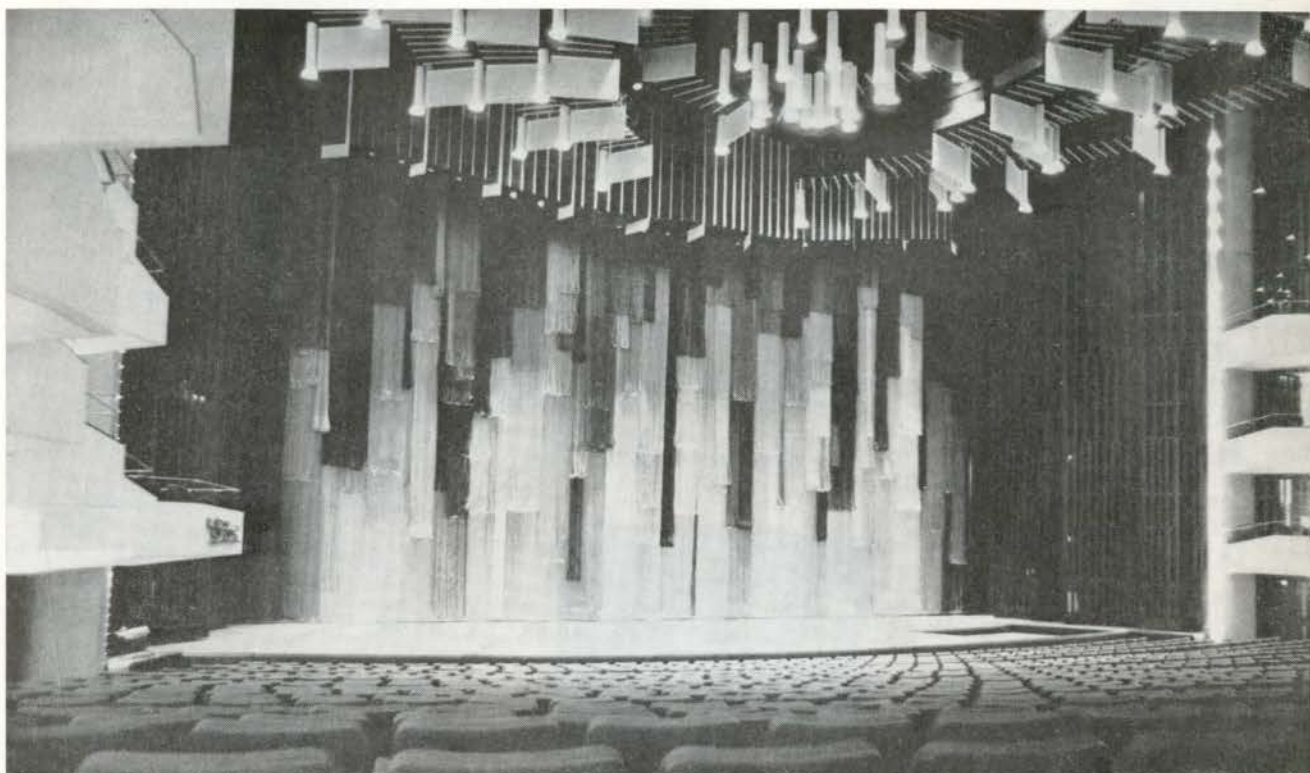
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National Arts Centre

Firm Purpose and Integration



Beauchemin's curtain – a brilliant cadenza

The first round of applause for the National Arts Centre must be for the masterly piece of integration of art and architecture.

Lebensold's architectural statement creates a total mood. As an environment for the arts, the centre is a thorough and inclusive concept which cannot reach completion until the final act – when building, visual and performing arts, and above all, people, finally draw together.

Visually it is a bold, astringent statement of the architect's beliefs. It is made up of well-modulated "sculptural boxes" materialized in terms of concrete. The stark statements become containers for well-integrated commentaries from other disciplines – the makers of visual images for man's environment.

Less tangibly, the whole – by day or night –

creates a mood almost overbearing in its firm understatement of brooding expectancy – the silent hush – the dimmed light – an overture complete before the hour when curtain rises and performances begin.

Inside – the Decor

Naked light bulbs, honest and beautiful in purpose as traditional "footlights", are set in a technologically contemporary mosaic of fibreglass which become the ceiling elements. Design and purpose are integrated with basic honesty – the architect's own creative "art" at work in forthright dialogue with fundamental building practice. Below this sombre, continuous sky one is guided by each individual globe dimmed to a tiny torchlight. Eventually one experiences the contributions of practitioners of the visual arts who, with the architect-conductor, have been united to create "entre-acts" with color

and form. The works – doors, chandeliers, hangings and murals, fountain, tapestries and theatre curtains – are "felt" rather than assaulting the senses in solo performance.

Review in Detail

Pictorial review of the situation is a hopeless dream which would call forth the combined skills of photographer, film and process beyond available means; – nor will mere words do other than suggest haste to experience in kinetic fact, the total scene, for oneself. Thorough integration defies the camera to replace the double lens of human eyes so tenderly connected with sensual experience.

The artist-craftsmen chosen are thoroughly professional, creative and inspirational agents whose own talents have been able to rise above introspective statement to respond to common purpose. With the

exception of three, they are all Canadians of talent working in this country by choice. It is, perhaps, in this *tour de force* of artistic integration that the artist-craftsmen of Canada have displayed a professional performance which will rank them high on the international scene. Jordi Bonet's doors, Beauchemin and Vermette's curtains are artifacts of distinction worthy to take an eventual place alongside the preserved artifacts of other periods in museums. True to time, honest and contemporary in image and technique, these items are truly an enrichment for the common man to enjoy. Artists and industry are well combined in unique performance.

The Theatre Curtains

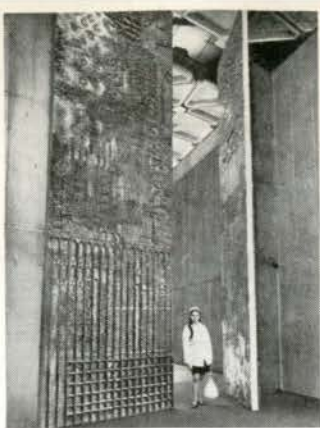
Within the architect's concept, the two theatres have become ideally, two "waiting" rooms of entirely different feeling. The sense of "place" created by the two women artists is extraordinary. The architect displays a rare cognizance of the proper use of "artist-thinking" for architectural decor.

With her curtain for the 800 seat theatre, Mariette Vermette's ability to become as one with the physical decor and remain *Vermette* rather than a skilled interior decorator is one of masterly subtlety. Hers is the role of a great character actor who submerges personal talent for an overall unity. Sombre, brooding, the mood is one of stillness and drama, deep in shadow-color. A dreadful quiet tension of expectancy makes the rising curtain an act of "birth" for the theatre within. Subtlety is a rare quality in today's tactics of impact art.

Micheline Beauchemin's luscious confection for the 2,300 seat operahouse is a fantasy of nylon, contemporary yarn of great enduring beauty, in the magic craftsman's hands of this young Canadian weaver. Bracketed with Japanese technological know-how, the cottage-loom becomes an archaic shadow defining possibilities of techniques past and present. In other hands than Lebensold's, Beauchemin, the artist, might have taken over making further "theatre" other than her own work, superfluous. As it should be in the big theatre, she sets the scene for theatrical spectacle. The two artists, Vermette and Beauchemin, spell out two moods of theatre, that of the mind and the eye. Thus Lebensold has allowed a brilliant "cadenza" to Beauchemin, the best possible use of such prima donna talent within the total performance.

Bonet's Doors

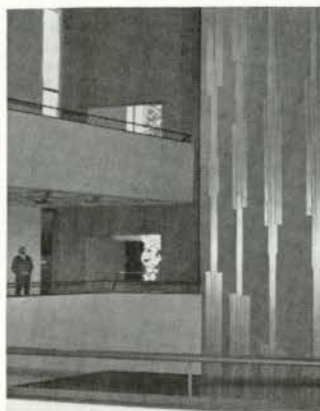
Bonet's doors are great aluminum structures which move silently, lazily, and as easily as blown thistledown. Once again Lebensold as prime conductor has written into the orchestration of the whole a special item for Bonet. One is no longer conscious of this artist's predilection to "entomb" within the environment with cabalistic coffin walls. The cool, noble grandeur of the crenelated aluminum, together with modern technology, give rise to worthy portals hiding the delights



within the salon, which houses a galaxy of color in a tapestry designed by Alfred Manessier of Paris.

The Glass Chandeliers

These perpetual punctuation points throughout the building, inside and outside and on every level, are more a tribute to the architect's concept than the craftsman's skill. Architecturally, the blind, windowless boxes have been split, fractured at the junction points to emit light in and out. The corners are sealed "natural exit" apertures with panes of clear crystal glass. Inside, insertions of transparent globules are suspended from floor to ceiling. One has no quarrel with the employment of William Martin as a sculptural mediator for the glass, but a comparable talent could have been found in



Canada had the talents of Gerald Tooke (*Queen's Park - see A/C March, page 16*) and his glass inventions been better known to either a committee or the architect.

Again, art-thinking rather than conceptual introversion has prevailed as beautiful alternatives to the usual opulence of chandeliers. Throughout the general orchestration of subdued shadow, a white-light theme is persistent and magic, manifest in subtle projections of distant vistas.

Tapestries

Throughout the Centre a quality selection of tapestries grace the small bars, unfortunately, in the case of Jolanta Owidzka's (a gift of the Polish community), not too

well illuminated. L'alibé delights with small scale banners which invite quite personal scrutiny.

Murals

William Ronald's mural (not completely installed at the time of reviewing) promises to create a maelstrom of strident color in an architectural "drum of excitements" completely integrated with the structural form. It repels and forbids the casual wanderer to venture beyond it through the narrow doorway to passages leading to the more prosaic corridors where administration is housed. The Lorcini pleases with a delicate prelude of aluminum bars relating light vistas with concrete walls. The John Meredith mural for the cafeteria was not available for viewing.

Sculpture

One can forgive a human concession to sentiment in the acquisition of the Zadkine group, too personal and miniature in scale for the environment. Sympathetic placing within the complex will be a challenge.

A Coming Event Casts its Shadow Behind it . . .

One looks forward to the installation of the Daudelin sculpture. This is a challenge - the integration on the exterior terrace of a sculptural form which, although strong in itself, has no hope in scale of competing with the monumental forms companion to it. The sculpture is to be floodlight, with its giant shadow projected against the concrete curtain of a monumental plinth, like a symphonic act developing from a smaller theme.

Finally, to those more involved in ravaging this country with industrial affluence or those distracted into promotion and enterprise for hockey and the like, who cry "extravagance", let this beautiful "act of folly" (if it so be) remain a monument to a minority of aesthetic spirits. Let it draw response and reaction against torpor and ineptitudes toward our arid public environment. Now is the time for such extravagance.

Encore after encore to Lebensold, man of purpose, man of talent, who has gathered together various other creative forces to make a final and bold statement for the arts at the end of the first Canadian century. Anita Aarons

Footnote: As these lines are written, one hopes that one reader will be the chief-pilot of public subsidies for art - that man, a public servant and an architect, is James Langford. With many pressures and sometimes misgivings, he has steered his plan through a period of nervous flux to be magnificently justified in his purpose i.e. by trial and error, with release of talent in a free-wheeling manner, to introduce imagination and experiment into public service thinking. A salute to Canadian enterprise through government action!

On two separate Sundays we visited Port Hope, on Lake Ontario, and the new Brock University campus, outside St Catharines.

We were struck by the air of impoverished gentility that characterizes Port Hope—sadly ironic note in its name—and its fine, curving, inclined, Main Street. (1, 2) The curve condenses the heavy window detailing into a foreshortened perspective, like a graceful eighteenth century engraving. Mercifully many elegant 19th century shop fronts, through the good fortune of poor fortune and disuse, have been preserved. (We noted that shop fronts which had been “modernized”, were certainly less elegant, and a good deal less effective for goods display, than the original shop windows. The modern fronts also fragmented the consistency that the street had once obviously possessed).

The town, without a sufficiently prosperous economic base cannot keep or attract inhabitants who would give the area vitality. Without such an economic base, it cannot afford the rehabilitation which could make this town one of the finest urban scenes in North America. Beyond the rehabilitation, there are the potentials of its lakefront position to be exploited, which also, of course, requires economic input.

St Catharines, while more prosperous and less charming, also has a dereliction of its own and an unexploited potential—especially the main Street, which follows the edge of a ravine. We followed the road out to the Niagara Peninsula, to view, with other Sunday drivers, the construction of the new campus. Brock stands some miles from St Catharines in open farmland, not quite on the edge of the escarpment, in sorry isolation.

Thus it reconfirmed our view that the policy of siting universities in suburban or rural areas was a compound folly. First, a desolate campus will be the home of at least one, and probably more generations of students. Second, the university will have to provide, out of its own capital budget, all the amenities necessary for a community, if it is to be more than an academic encampment, or a place only to commute to and from. Third, we have an urban society, and the university as a community resource—academic,



1

cultural and economic—should not, must not, be used improvidently.

Is it not therefore insane *not* to begin the construction of universities *within* towns, for the universities' and the communities' common benefit? Is it not extravagant for governments to expend funds on both universities *and* renewal programs, when a coincidence of satisfactions could be achieved with resourceful use of men, money and expertise? Universities can be compared to major industries in terms of economic benefit, and they and the manpower they have, can bring a high order of technical, social and cultural benefit to a community. Indeed, the planning and construction of the universities within towns could be an instrument of far-sighted physical economic and social planning: (universities, unlike industries, can plan long-range development without the constraint of yielding short run dollar profits) the city as laboratory and common sustainer.

It would be interesting to make a cost-benefit analysis of what this would mean—using the many forms of housing that the city can provide; renovating existing structures, utilizing, say, derelict theatres; building anew in strategic locations; and of course supporting all the pubs, coffee bars, bookshops, shops and even athletic facilities of the town. Again, for mutual sustenance, as against starting from scratch in the sticks. It would not be presumptuous to guess where students and faculty would rather be.



2

We then cast our minds back to Port Hope and thought how perfect a receptacle this town is for a university—a university town, part of the urban scene, making use of an under-utilized urban resource, and enriching it. We then thought of other rural follies—Trent, or Simon Fraser. How long will it be before they have the appurtenances of civilization around them? Why not Trent *in Peterborough*? (The cost-benefit study would show whether the higher land costs in the town were justified on economic grounds, especially in the long term comprehensive cost benefits for the community as a whole).

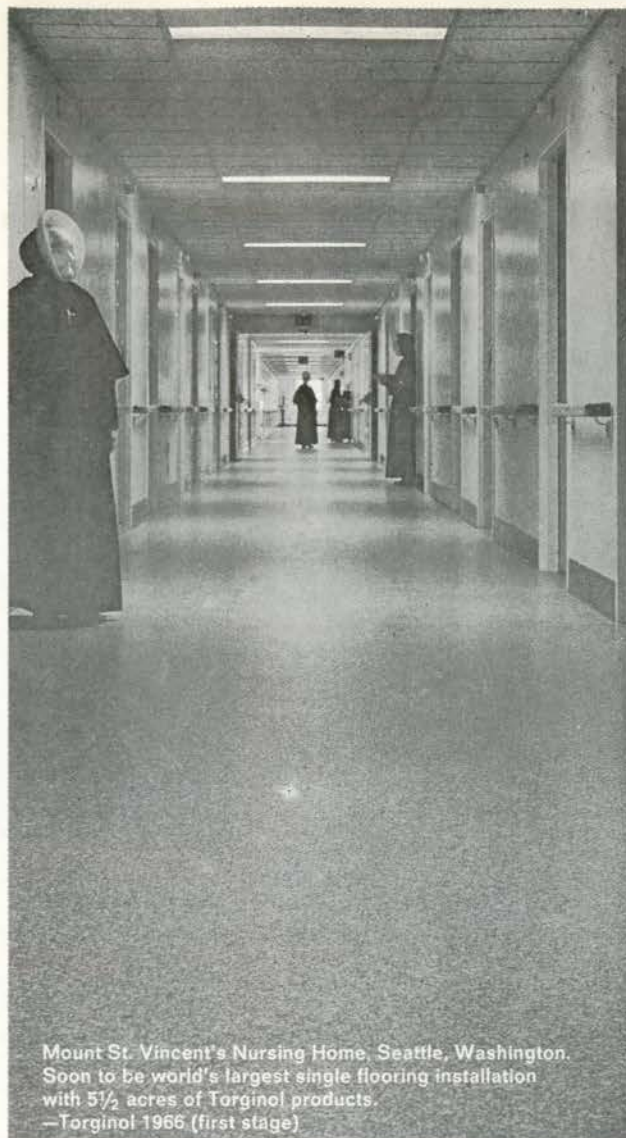
Canada is not alone in the nostalgia for the groves of academe set apart as separate, and distant enclaves. Britain's new universities have frequently been planned in similar manner, with the resultant problems a rural campus in isolation create. It is difficult to understand this policy, with the magnificent precedent set by Oxford and Cambridge. And on this continent, with similarly successful precedent—Harvard, Yale—it is equally difficult to explain such a policy.

Students should, from coast to coast, create storms about this, their cultural environment and future, and find their hopes in appropriate urban ports. Rural campuses, to use the current terminology, are not relevant.

A. J. Diamond and
Barton Myers



Convalescent area, Shaughnessy Hospital, Vancouver, B.C.
—Torginol installed 1962



Mount St. Vincent's Nursing Home, Seattle, Washington.
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with 5½ acres of Torginol products.
—Torginol 1966 (first stage)

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Page 5 Congrès conjoint de l'AIA et de l'IRAC

Palmer House, Chicago, le 22 au 26 juin. Première assemblée de l'IRAC à l'étranger. Première application des nouveaux statuts de la confédération des 9 associations provinciales. Les délégués canadiens sous la direction de Frank Nicol (Toronto) participeront aux diverses discussions sur le thème "Focus Now". Le Dr H. Selye délivrera l'adresse Purves, discours annuel de l'AIA. Critique sur la ville de Chicago menée par G. Legault, A. Erickson et C. Wiens. Critique sur la ville de Montréal menée par l'équipe de l'AIA, J. Fisher-Smith, Jacqueline Robertson et A. Rogers. Les membres suivants de l'IRAC participeront aux sessions d'études:

1. Inter-actions professionnelles: J. E. Searle, R. T. Affleck;
2. Facteurs ayant un effet sur l'ampleur et la nature d'une pratique: G. Desbarats, W. R. Iredale;
3. Le Client et la Société: J. C. Parkin;
4. Dialogue entre étudiants et professionnels — "Ce qui est et ce qui devrait être": étudiant pas encore désigné;
5. Le prix très élevé de la responsabilité: R. F. Briggs;
6. Le régime économique du service: H. P. Labelle, P. M. Keenleyside;
7. Systèmes à éléments constitutifs: R. F. Robbie;
8. Evaluation et recueillement de renseignements: G. Arnott, D. G. Laplante;
9. Gérance de construction: E. H. Zeidler;
10. Programmation: M. Charney;
11. Techniques de production en agence: C. F. T. Rounthwaite;
12. Bâtiments historiques: W. S. Goulding, J. Bland, P. Dandyk sera chef de la délégation (18) des étudiants.

Page 8 Chicago — Patron de l'Architecture? Rob Cuscaden

La fin du dernier siècle fut l'âge d'or de l'architecture à Chicago. C'est l'époque où l'acier et les ascenseurs ont fait leur début et ont produit les gratte-ciels qui ont transformé la ville. Certains monuments de l'époque existent toujours: Reliance Building et Monadnock Building de Burnham & Root, Auditorium Theatre de Adler & Sullivan, Manhattan Building de Wm. LeBaron Jenney, Glessner House de H. H. Richardson et Robie House de F. L. Wright. Ceux-ci et d'autres sont sur l'Itinéraire des excursions accompagnées du Congrès AIA/IRAC.

La ville moderne est en train de se polluer comme toute autre ville contemporaine. Elle construit des autoroutes à toute allure pour amener plus de voitures qui augmenteront davantage le besoin d'autoroutes. Les ghettos continus à s'étouffer car ceux qui y propose des solutions sont les blancs qui habitent en grande banlieue et qui travaillent dans les grandes tours du centre ville. L'exploitation urbaine de Chicago se fait d'une façon de plus en plus cinglée. Citons en exemple le Hancock Centre de Skidmore. Comment peut-on avoir situé ce géant parmi les boutiques et petites maisons d'un quartier où même le château d'eau à l'air d'un jouet? L'avenue déjà tourmentée par des embouteillages exaspérants va maintenant faire face à des centaines de voitures en plus aux heures de pointes et une foule écrasante. L'esprit recule devant l'image d'un tel chaos. Sans doute un immeuble d'une telle magnitude aurait dû être situé directement sur une artère principale telle que l'a été le Prudential Building. Les autres immeubles contemporains sont moins controversés mais plusieurs méritent notre attention. Lake Point Tower, une tour moderne et lisse en forme de trèfle a été distinguée d'honneur par l'AIA mais elle fait partie de cette clôture qui s'élève le long du lac obturant la vue à ceux qui ne peuvent pas se permettre un appartement au 35ième. L'Eglise Seventeenth Church of Christ, Scientist, de Harry Weese présente un contraste frappant parmi les gratte-ciels voisins et l'office du mercredi midi attire toute une foule qui ne vient que pour admirer l'effet théâtral Wagnerien de l'auditorium. L'édifice de la First National Bank, au centre géométrique du Loop, a attiré quelques pointes pour sa forme qui ne semble pas être issue de la fonction mais, au contraire, la banque avait besoin d'une grande superficie au rez-de-chaussée pour ses activités bancaires et pour les foyers d'ascenseurs et, une enquête sur les besoins des locataires a déterminé qu'il existait une demande pour des bureaux avec des grandes surfaces vitrées par rapport à de petites superficies de plancher, donc les étages montent en se rétrécissant.

Au Chicago Circle Campus de l'Université d'Illinois les étudiants se plaignent que toute cette vaste étendue de béton hors d'échelle leur donne un sentiment d'être des chiffres sur un tableau plutôt que des êtres humains dans une ambiance réelle.

La préservation de son héritage est un sujet très discuté à Chicago. Il y a eu quelques protestations lorsqu'ont été détruits le Garrick Théâtre de Adler & Sullivan, la charmante Edison Shop de Purcell, Feick & Elmslie, le Republic Building de Holabird & Roche et le Chicago School Cable Building du même architecte, mais on continue à démolir les bâtiments historiques.

A part cela, les édiles de la ville proposent maintenant cet ultime désastre pour tout l'environnement, un aéroport majeur pour jets tout près de la côte sur ce qui reste du lac Michigan.

Patron de l'Architecture? Peut-être. Mais Chicago mériterait mieux ce titre si elle s'intéressait plus à l'intégration de son passé historique avec son architecture contemporaine palpitant d'intérêt.

Page 35 Le Centre National des Arts, Ottawa Alastair Grant

Le Centre National des Arts joue un rôle très important dans la mise en valeur du quartier renoué dans lequel il est parfaitement intégré. Une interprétation libérale des données du projet établies par l'Alliance des Arts de la Capitale Nationale a permis à l'architecte Fred Lebensold d'ajouter au programme des boutiques, des restaurants, des terrasses, un parvis avec des kiosques publicitaires, un accès direct du foyer au parking souterrain. Le programme a été ainsi redéfini afin d'y inclure non seulement les fonctions du bâtiment proprement dit mais aussi sa participation dans l'animation de la ville. Les habitués du théâtre pourront s'attarder pour participer aux diverses activités offertes par le Centre. Les gens à l'extérieur pourront circuler sur les terrasses, passer par dessus et par dessous certaines parties du bâtiment et se trouveront tout naturellement attirés vers l'intérieur. Les voitures pourront déposer leurs passagers à l'entrée principale et ensuite descendre au garage soit par l'entrée sous le pont Mackenzie King ou à l'ouest de la rue Elgin. L'ensemble du projet est un modèle d'intégration dans le plan d'urbanisme d'une ville, offrant ses services d'une façon impeccable et invitant la participation de tout le monde.

Le Centre National des Arts comprend trois salles de spectacles, soit, l'opéra, le théâtre, le studio. L'opéra a 2,300 places et une scène avec manteau d'arlequin. Le théâtre a environ 800 places disposées en demi-cercle autour d'une scène mise en avant. Il peut s'adapter à un manteau d'arlequin et l'avant scène peut être abaissée pour augmenter le nombre de places assises. Le studio est de forme hexagonale avec six entrées et le plancher est en sections dont la hauteur peut être variée offrant ainsi plusieurs variantes d'aménagement. Les 3 scènes et les salles de répétition sont au même niveau afin de partager un seul quai de livraison et d'être près des loges des artistes. Le grand foyer est le point de repère. Il donne accès à toutes les salles principales. Le salon sert à la réception des dignitaires. Plusieurs oeuvres d'art sont incorporées dans l'architecture. Les lustres de William Martin font partie intégrale de la conception des escaliers. Les portes de Jordi Bonet, la peinture murale de William Ronald, le rideau de Micheline Beauchemin, les fontaines, les sculptures, font partie de l'ensemble. L'ambiance de divertissement est rehaussée par les trois restaurants, les boutiques, les terrasses, les expositions d'oeuvres d'art et les jeux de lumière. Les différentes fonctions des volumes sont exprimées à l'extérieur par les nuances du traitement architectural. Les essais d'acoustique ont donné d'excellents résultats. Le projet est tellement complexe que les services mécanique occupent un tiers de la surface.

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Acoustique de la Grande Salle du Centre National des Arts, Ottawa
Russell Johnson

La maîtrise des effets sonores dûs aux turbulences d'air, aux moteurs, ascenseurs, camions, avions, etc., est l'aspect le plus important dans l'étude de l'acoustique. Le niveau du bruit de fond dans une salle ne doit pas dépasser 12 dB à 4000 cps, 14 dB à 2000 cps., etc. Le nombre de places et les dimensions de la salle sont d'importance critique à l'acoustique. L'heureux choix de l'architecte d'un plan presque carré et à 3 étages réduit l'échelle de la salle et les saillies agissent comme tympan réfléchissant le son. La perception des sons dans les registres les plus bas dépend de la densité et l'épaisseur des matériaux dans la salle. La réverbération sonore ou l'articulation de la salle convenable pour un discours ne l'est pas forcément pour la musique. L'indice d'articulation (AI) peut être représenté graphiquement et l'articulation nécessaire peut être déterminée à l'aide d'études sur maquettes. (Voir fig. 1). Dans la Salle du

CNA il y a 2 dispositifs de réglage: des panneaux amovibles suspendus au plafond et des rideaux absorbants qui peuvent être tirés. Il y a aussi un système de réverbération qui consiste en des hauts parleurs dispersés dans les faux plafonds, sous les balcons, etc. Les études de l'acoustique ont été faites par Bolt Beranek and Newman Inc. sous la direction de Laymon N. Miller, contrôle des bruits et Dr J. Jacek, systèmes sonores.

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Eclairage

Le Centre National des Arts
William M. C. Lam

L'éclairage du CNA est à la fois décoratif et fonctionnel, le résultat de l'intégration totale des études en structure, mécanique et architecture et des principes de perception et de l'acoustique. L'extérieur en plein jour exprime clairement la fonction de théâtre par la forme des masses que le soleil fait ressortir. Lorsque le temps est moins ensoleillé un sens de profondeur est obtenu aux lanternes par un effet étincelant, aux escaliers par des traits lumineux, aux arrivées par les plafonds lumineux des foyers et les panneaux publicitaires à lustres. La nuit, la forme des salles de théâtre, de concert et opéra sont éclairées par projecteurs. Les arbres sont éclairés de l'intérieur de la place. L'éclairage secondaire des escaliers et autres parties du bâtiment produit une ambiance mystérieuse et gaie. Les projecteurs extérieurs sont contenus dans des formes sculpturales sur la place. L'effet théâtral dans les escaliers est créé par le rayon de lumière venant du lanterneau sur une sculpture en crystal autour de laquelle circule le public du théâtre. L'éclairage des panneaux-kiosques publicitaires remplace la marquise traditionnelle. La conception de l'éclairage intérieur de l'opéra est dérivée des formes architecturales. Le désordre de tout l'équipement en faux plafond est dissimulé par l'éclairage accentué des passerelles qui s'accorde avec l'éclairage des poteaux pour transformer toute la salle en un énorme lustre. Des effets très variés sont obtenus par gradation et commutation. Le béton brut des murs du théâtre est éclairé de la même façon que l'opéra par des lampes nues disposées derrière une poutre périmétrique et dans des caissons pyramidaux en plafond. L'éclairage périmétrique de studio est semblable. L'éclairage et la sculpture de William Martin ont déterminé la forme de l'escalier. La lumière est dirigée sur le crystal qui la réfléchit avec éclat. Ce principe de réfraction de la lumière est appliqué dans le salon aussi; l'effet avait été prédéterminé par des études sur maquettes. L'éclairage des foyers est positif avec les lampes encastrées dans des caissons et faisant partie intégrale des diffuseurs et parfois même des haut parleurs. L'espace des lampes dans les niches des poteaux augmente en ascendant et la lumière est réfractée sur les diffuseurs anodisés or et sur les rideaux de boules de verre.

Deux étudiants canadiens en quatrième année, Paul Zajfen de McGill et Brian Eldred de l'Université de Manitoba sont parmi les six gagnants des prix pour mérite exceptionnel offerts par l'Association Portland Cement. Ils recevront des bourses qui leur permettront de suivre des cours d'été à l'École des Beaux-Arts de Fontainebleau, près de Paris. M. Zajfen a proposé des logements pour Westmount, Québec avec une variété d'appartements-types. Son bâtiment est basé sur un système de trois niveaux avec rue intérieure où chaque appartement occupe un niveau entier, plus une partie du niveau inférieur ou supérieur. Des murs porteurs et des dalles de béton armé aident à isoler le son. Dans le projet de M. Eldred il s'agit du développement d'un pont commercial qui traverse le fleuve Saskatchewan à Edmonton, Alberta. La vallée créée par ce fleuve, large mais peu profond, sert à rompre la monotonie des prairies mais elle pose un problème pour la circulation dans la mesure où les ponts sont très coûteux. Pour résoudre ce problème, M. Eldred propose un pont qui comporte des éléments commerciaux, le stationnement, une station de transport rapide, et une autoroute à dix voies. La structure tubulaire en béton armé utilise la post-tension et profite de la nature monolithique du béton et de sa bonne résistance à la compression.

Nova Scotia Tech a modifié ses conditions d'entrée. Dorénavant, il sera nécessaire de compléter deux ans d'études à n'importe quelle Université ou institution équivalente reconnue par la Faculté d'Architecture.

Cette année l'Association Américaine d'Architectes (AIA) et l'IRAC se réuniront à Chicago le 22 juin jusqu'au 26. Le thème, "Mise au Point Actuelle" engage les délégués à discuter des problèmes immédiats plutôt que de vagues notions futuristes. L'IRAC enverra 18 délégués étudiants, deux de chaque école d'architecture canadienne. Au moment où cet article est publié, ces délégués auront déjà été choisis et en tant que coordonnateur de la délégation je me mettrai en contact avec eux. Peter Dandyk (réducteur étudiant pour Waterloo, désigné coordonnateur par l'IRAC).



The National Arts Centre

The National Arts Centre combines in one single building complex the greatest contribution yet to the architectural, cultural, social and recreational development of the National Capital. It is an object lesson in how a building should play its part to improve the existing city framework and as such is significant for the development of cities everywhere.

The early impetus for the Centre came from the National Capital Arts Alliance, a private organization of 55 arts groups in the Ottawa region. A report prepared in 1963 outlined the need for facilities meeting international standards to "nurture and encourage excellence in the performing arts . . . both in the National Capital area and throughout Canada." The report, which described how this need could be met, received the support of the federal government, and the project was launched in 1964. Affleck, Desbarats, Dimakopoulos, Lebensold & Sise were appointed consulting architects, with Fred Lebensold as partner in charge.

The building was originally to have been located on Nepean Point, below Parliament Hill on the Ottawa River. Here it would have been away from the congestion of city traffic. Surrounded by acres of parking it would have given rise to few of the problems that later had to be faced, but it would have been a building turned in on itself, making no demands of the city, challenging nothing. It would have been what so many cultural centres elsewhere have become, a theatre museum separated from the life of the city of which it was supposed to have been a part.*

The opportunity to do something more than this came when a 6½-acre site just south of Confederation Square controlled by the National Capital Commission was made available. Lying along the Rideau Canal, with the National Museum to the south, the building was suddenly in the middle of the most exciting redevelopment taking place in Ottawa. To the east, across the Canal, extensive redevelopment was also being contemplated, including a convention centre and a yacht basin to be made by widening the Canal.

*(Incidentally, Jacques Gréber's 1950 plan for the National Capital placed a national theatre across Elgin Street, on the site of the National Gallery, from the new Arts Centre, but his master plan left the whole of Confederation Park as open space.)

Working drawings for the National Museum by Thompson, Berwick, Pratt & Partners, were far advanced, and set some of the parameters for the design of the National Arts Centre. A grade connection was provided across the Mackenzie King Bridge, and both buildings were to share an underground parking garage. A scheme for the redesign of Confederation Square was being prepared by Hart Massey and included a below-grade shopping concourse. An unbroken pedestrian link would have been provided from the Sparks Street Mall to the Museum.

Shortly after work on the design of the Centre was begun, the government revised its policy on museums and cancelled the National Museum. With tight money, the Confederation Square redevelopment was shelved. The yacht basin and the convention centre on the east side of the Canal still appear to be a long way off. The National Arts Centre has been left to stand on its own.

In spite of this the building draws the city to itself, and has created an urban environment where formerly none existed. How was it able to do this? What were the factors that made this possible?

The program handed to the architect, which was in fact the report prepared for the National Capital Arts Alliance, was simply a list of spaces – an opera house, a theatre and a studio – their approximate areas, and a budget. The report explained how similar spaces had been treated elsewhere and suggested the same solutions be followed here wherever possible. There was also an appendix describing the pitfalls to be avoided. In a number of cases the do's and don'ts cancelled each other out!

In the process of designing the building, this oversimplified program became merely a point of reference, one of the sets of conditions to be met. It was necessary for the architects to rethink the problem from basic premises and enunciate the criteria that had been overlooked but which were vital to the proper working of the scheme. Approached from this standpoint, the emphasis given to anticipating the needs of everyone who might use the building – the public at large as well as theatre-goers – is readily understood. The program was redefined to include not only the building's function, but to account for its place within the city as well.

Seldom does a single building offer so much to the casual visitor. It is possible to walk over and under and up and

through it without actually entering enclosed space. Exploration precedes encounter. At significant points the exterior shell breaks and the interior is exposed, making possible participation in the life within, while yet remaining outside.

But city life is after all not limited to observation: it demands involvement. The building offers varying degrees of participation. There are illuminated kiosks and a row of boutiques along Elgin Street; there are restaurants; there may even be a discotheque – all these in addition to the theatres which were the point of departure in the first place.

These other facilities were not mere afterthoughts. They serve a specific purpose and were introduced at critical places in the building. Each exploits its location. Each can be understood in relation to the needs of the users, and the city of which the building is now a part. This concern for social viability was not allowed to obscure the careful planning of the building itself. The thought process which led to the re-statement of the program was equally uncompromising in this aspect of the problem as well.

For example, the stages of all three theatres are on the same level, where they may be served by workshops, store-rooms and a common delivery lane. The orchestra floors of the opera house and the theatre rise at the back almost to the same level, one floor above the stage. This becomes the main lobby level and is a point of reference for everyone using the building. In the case of the studio, which does not have a raked floor, the main lobby opens onto a balcony overlooking the room.

Again, and in the same manner, considerable thought was given to the solution of problems associated with the arrival and departure of large numbers of people at the same time. In a city like Ottawa where public transportation facilities are poor, almost everyone travels by car. It may be possible to schedule performances so that there are different starting times for each theatre, but this does not meet the need completely.

There are in fact three alternative ways of coming to the building by car. It is anticipated that a large number of people will use taxis or will come in limousines. These will leave their passengers at the ceremonial entrance off the main lobby and will re-enter the city by way of the Drive-way. In the case of private cars, they may also leave

passengers at this entrance but can enter the parking garage by doors under the Mackenzie King Bridge. From here there is direct access to the lobby for pedestrians without going outside. The last alternative is to enter the garage by a tunnel to the west of Elgin Street, thereby avoiding the crush around Confederation Square. There are places within the garage with direct access to the lobby where passengers may be left before the driver goes to find a parking space.

After the performance different problems occur, and the answers have been equally well thought out. Of course, the really smart people will come early, browse in the shops, eat in the restaurants, and then have a drink afterwards before going home. And here is the trick. The building works for the city; it also works for itself. And this is after all what gives it its magic. With this as its purpose all the other aspects of expertise, the construction techniques, the careful detailing, fall into place. This is why the National Arts Centre is an object lesson in city planning. The analysis of the program has exploited the latent possibilities of involving private citizens in the life of the building. They are enticed into entering, and once inside they are persuaded to participate in its activity. No cultural centre could do more.

Alastair Grant

Credits

Department of Public Works:

*Assistant Deputy Minister (Design), J. A. Langford, FRAIC;
Director of Design, National Capital Region, R. F. West*

Consulting Architects:

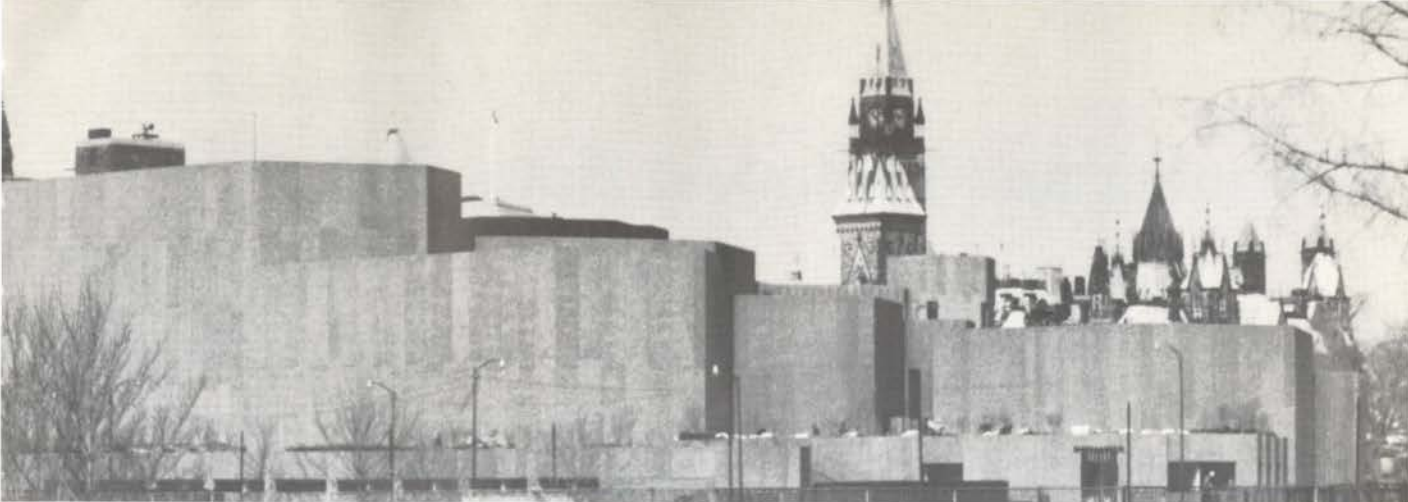
Affleck, Desbarats, Dimakopoulos, Lebensold, Sise; Partner-in-Charge, D. F. Lebensold

Consultants:

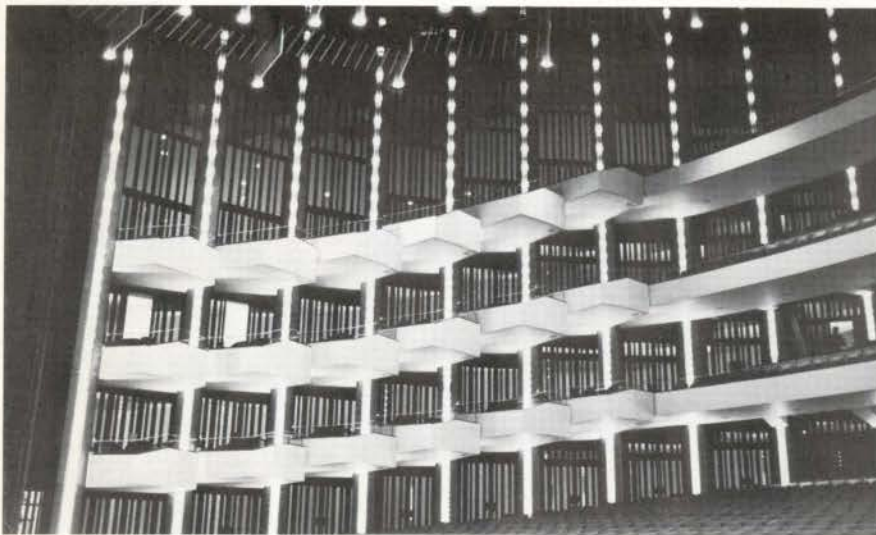
Structural, Adjeleian & Associates; Mechanical and Electrical, Granek, Chisvin, Crossey; Lighting, William M. C. Lam & Associates, Jean Rosenthal (Stage Lighting); Acoustics, Bolt, Beranek and Newman, Inc., N. J. Pappas & Associates; Traffic, Roads & Parking, DeLeuw, Cather & Company of Canada Ltd.; Landscaping, Sasaki, Strong & Associates Ltd.

General Contractors:

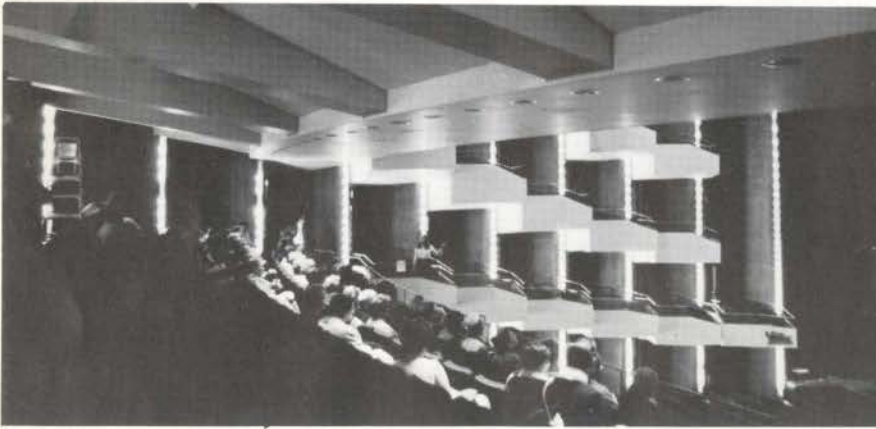
*Phase 1, C. A. Pitts General Contractors Ltd.,
Phase 2, Foundation Company of Canada Ltd.,
Phase 3, V. K. Mason Construction Co. Ltd.*



Planning and Technical Data



1



2

The National Arts Centre is the Centennial project of the Federal government for the National Capital. Designed as part of an extensive redevelopment of the downtown area, it was constructed over a five year period at a total cost of \$46.4 million, which also covered the rebuilding of the approaches to the Mackenzie King Bridge and an underground parking garage.

The site is a triangular piece of land immediately south of Confederation Square between Elgin Street and the Rideau Canal. The building has been set well into the ground and the main entrance is half way down the slope from Elgin Street on the Canal side. Both in the internal planning and

on the exterior, public areas have been developed as a series of terraces overlooking the water of the Canal.

There are three main halls for theatrical performances, an Opera House, a Theatre and a Studio. Each hall is a different size, and each provides for different audience-performer relationships.

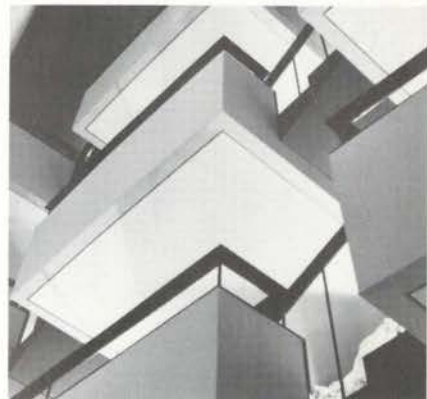
The Opera House, for example, is primarily intended for opera, ballet and orchestra and has a proscenium arch. It has a seating capacity of 2,300, arranged on four levels, and no seat is more than 115 feet from the stage.

The Theatre, on the other hand, has a thrust stage, and the audience sits in an arc of 180°. It has a seating capacity approximately one third that of the Opera, and it is therefore more intimate in scale. The stage has been so designed that if a proscenium opening is required, the forestage may be lowered, and the space used for additional seating.

The Studio, which is intended for experimental productions, has no fixed seating. Seats are entirely free and may be arranged in any fashion by the individual director. Standard sections have been designed by the architect to provide a banked floor and can reach as high as the balcony which goes around the room. The space is hexagonal in shape and there are doors in every side. Actors may use all six, but the public enter from the one off the lower lobby. The Studio is, in a sense, an architect's ideal theatre – loft space in which theatrical performances take place.

In addition to the three main halls, there are also two rehearsal halls which may, on occasion, be used for public performances. They have been placed immediately adjacent to the stage door so that traffic does not conflict with dressing room areas.

The main lobby serves all three halls and acts as a point of recognition and identification for visitors to the building – an important consideration in such a complex structure. On all levels above and below, there are openings through to the main level so it is possible to tell where you are from any one of the lobbies.



3



5

To simplify service access, the three stages and the rehearsal rooms have been placed on the same level. The main lobby is at a point established by the rise in the slope of the Opera House floor, and is approximately one floor above the stage level. The rake of the floor in the Theatre is steeper, but the room is smaller and the level reached is almost identical. A short ramp makes up the difference.

The stages of the Opera House and the Theatre are on opposite side of a common workshop, and have a single delivery lane-way. Careful consideration has been given to the problem of soundproofing the two halls from each other.

In addition to its primary function, the Centre contains spaces for a number of other uses. There are, for example, three restaurants which will be open to the general public at all times. These were added to the program as an extra service to theatre-goers. The opportunity to dine before attending a per-

formance will encourage early arrivals. There are a number of boutiques and a mini-cinema along Elgin Street. These give access to the main lobby and the parking garage, and it will therefore be possible to browse through the shops on the way to the theatre.

There is as well a special reception room, known as the Salon. Placed between the Opera House and the Theatre, it gives immediate access to the royal box. It may be used independently of theatrical performances for private receptions and small supper-dances, but it has also been suggested that it be used for chamber music concerts.

Works of art have been incorporated in the fabric of the building rather than being added as afterthoughts. In almost every case they have been built in. Micheline Beauchemin designed the curtain of the Opera. The thirty foot high cast aluminum doors of the Salon are by Jordi Bonet. A mural by William Ronald covers an entire wall of the lobby outside the Studio. Only two pieces of sculpture are free-standing: a Zadkine in memory of Donald Buchanan, Chairman of the Art Advisory Committee, in the main lobby, and a Daudelin on the terrace outside the south wall of the stage house of the Opera (*See page 29, Arts section of this issue for more on the art at the National Arts Centre.*)

The structure of the building is poured-in-place concrete. The only variation from this is the use of steel beams for the long spans over the Opera House. The exterior wall is



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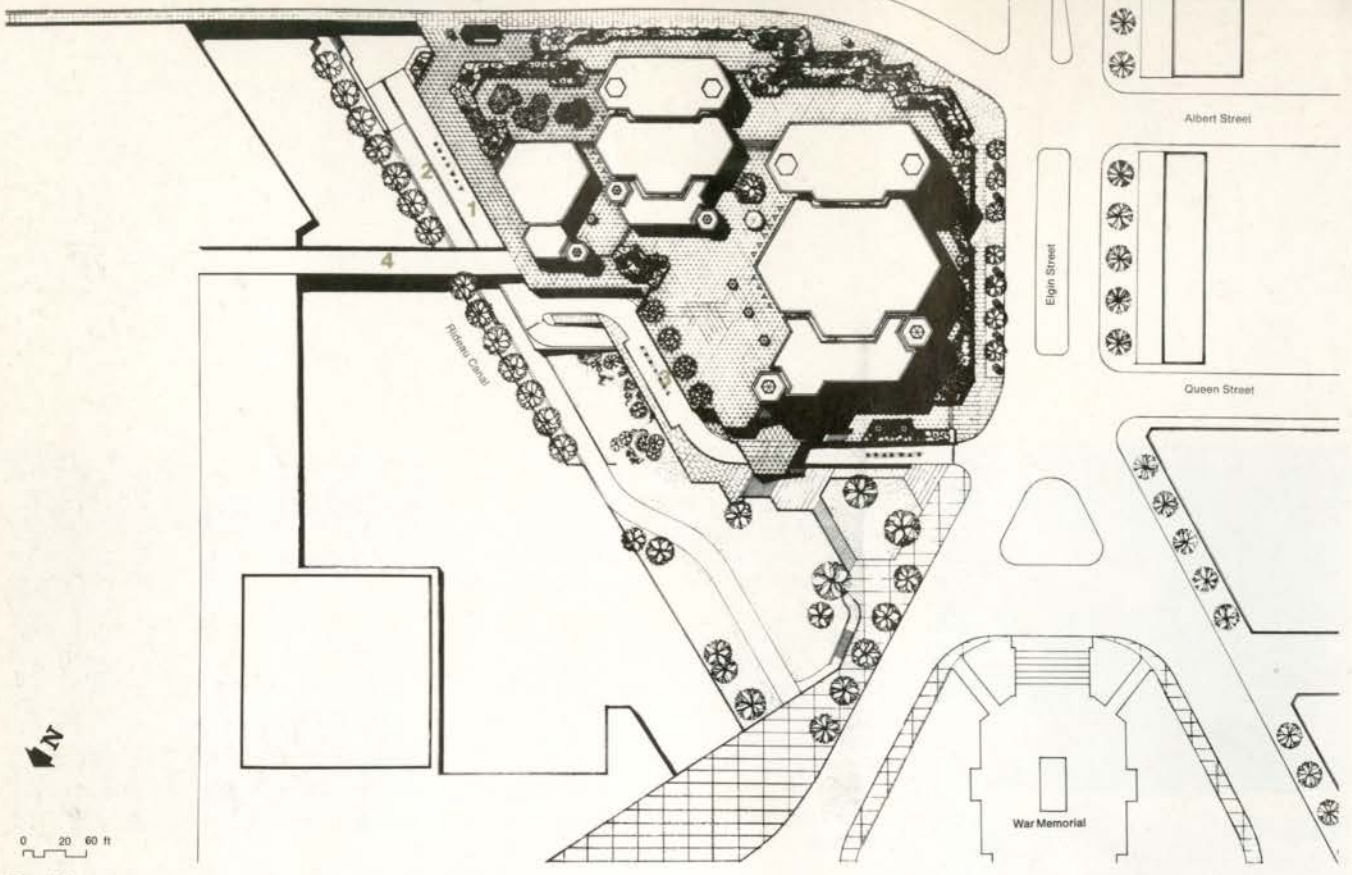
designed on the rain-wall principle, and clad with precast concrete panels. Variations in the cladding on the upper parts of the building have been used to identify interior functions: the stage houses are smooth, performing areas have small ridges and the public areas large ribs.

Throughout the building specially designed ceiling panels have been used for lobbies and over the entrances. Repeating the basic hexagonal module, fibreglas units incorporate lighting fixtures — individual incandescent clear bulbs — and the diffusers for the air handling system.

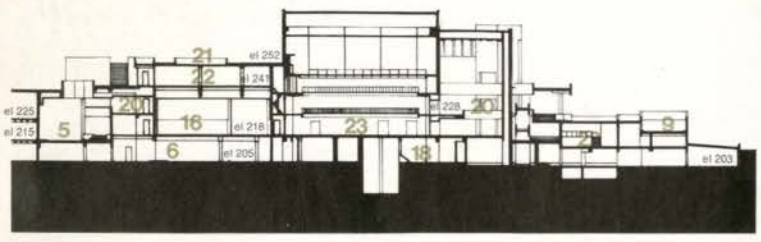
The construction of the entire complex was divided into three stages. The first two, the rebuilding of the approaches to the Mackenzie King Bridge and the underground parking garage, were completed by 1968. The exterior shed of the theatre complex was completed in 1968 and the interior in May 1969. *Alastair Grant*



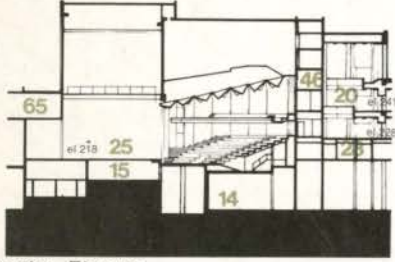
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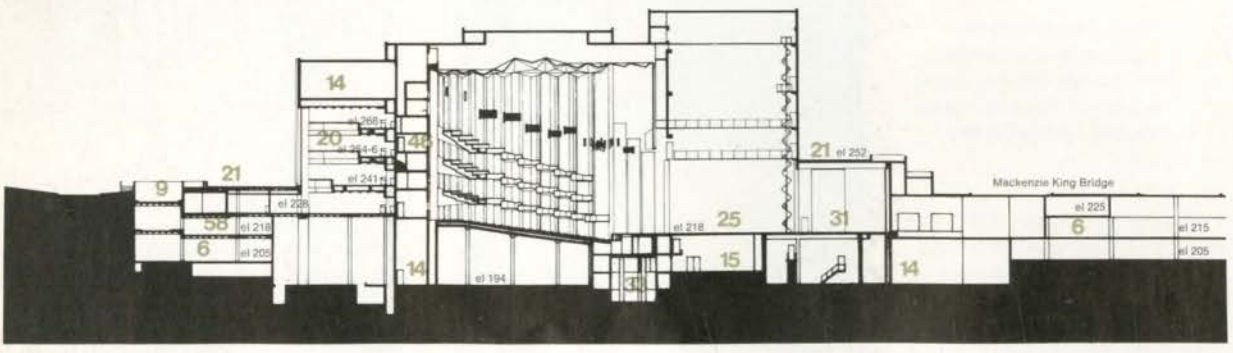
Site Plan



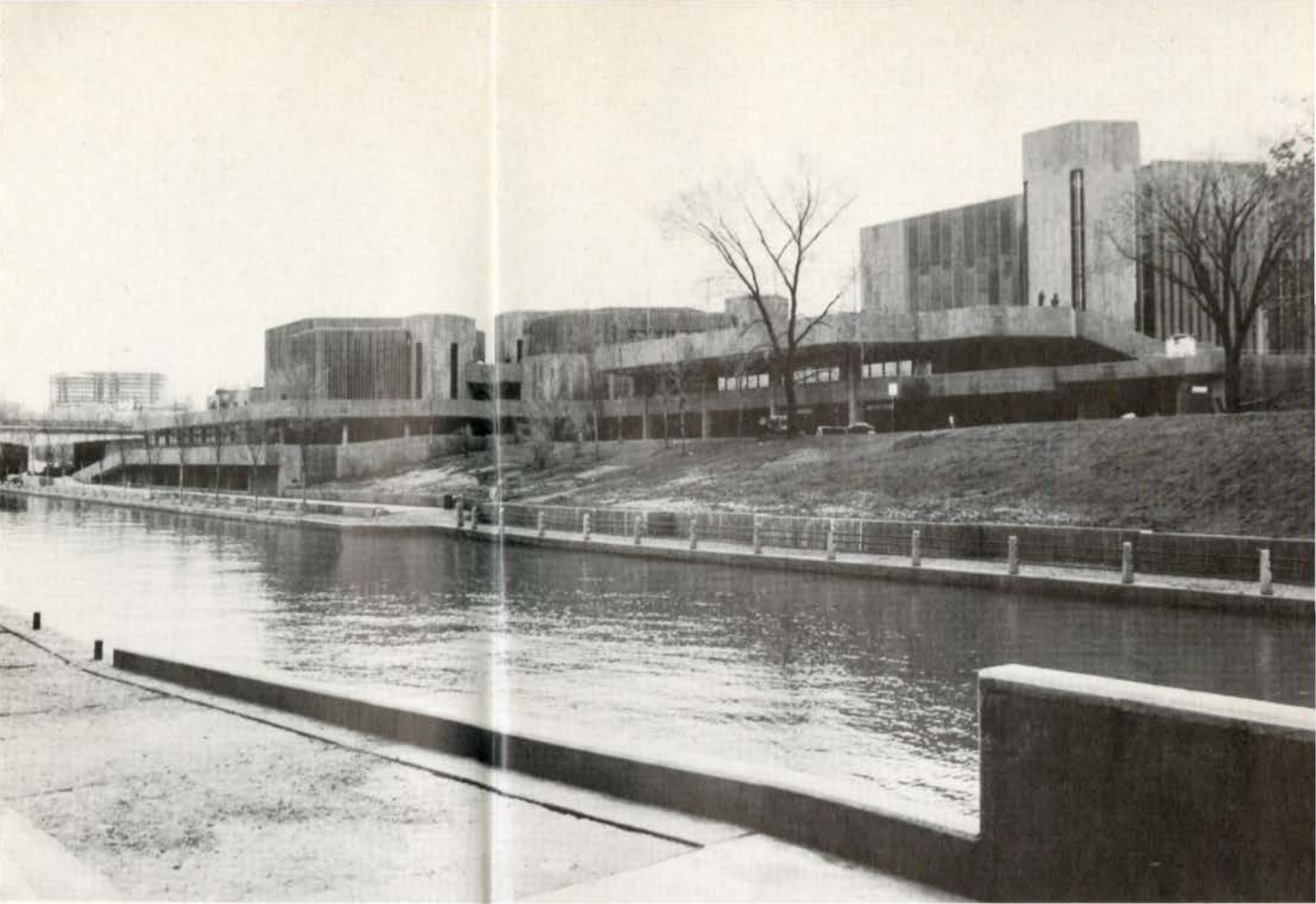
Section, Studio

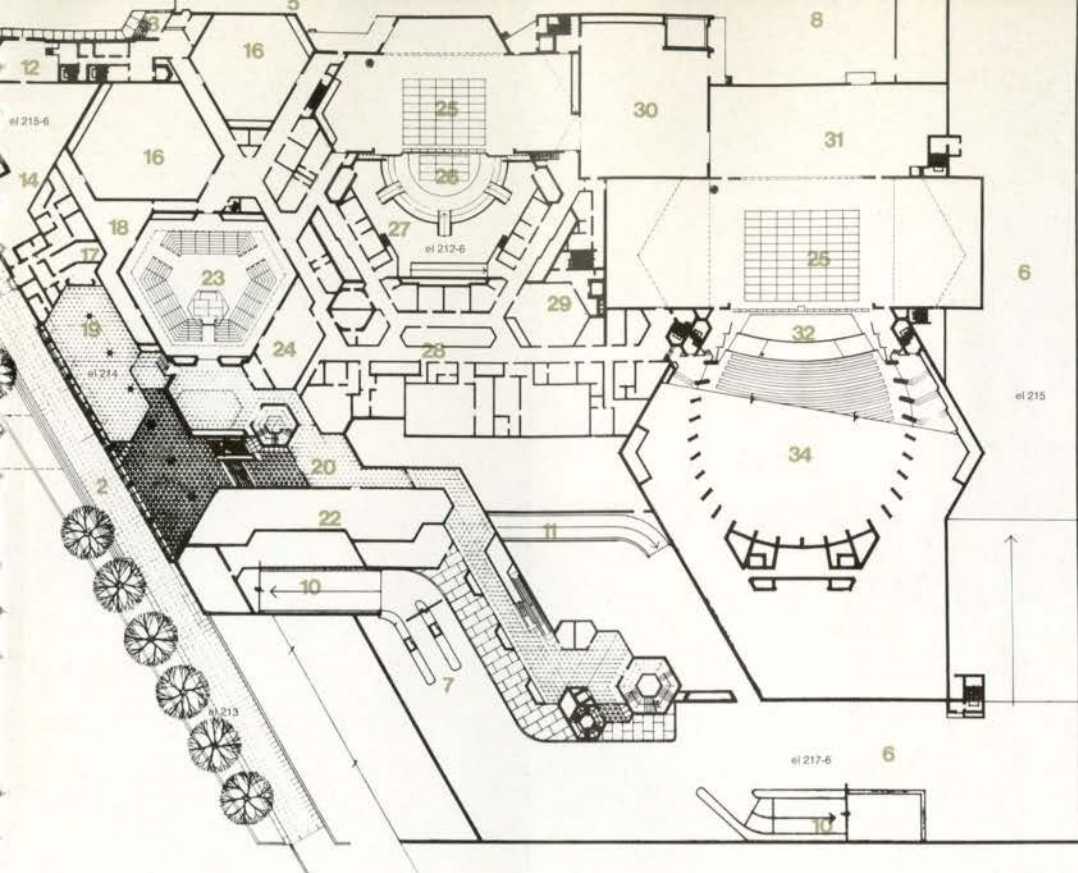


Section, Theatre

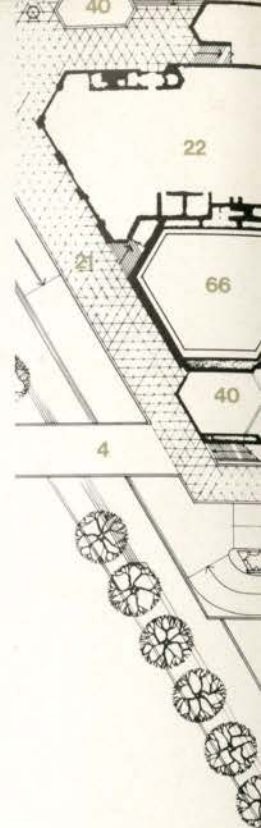


Section, Hall

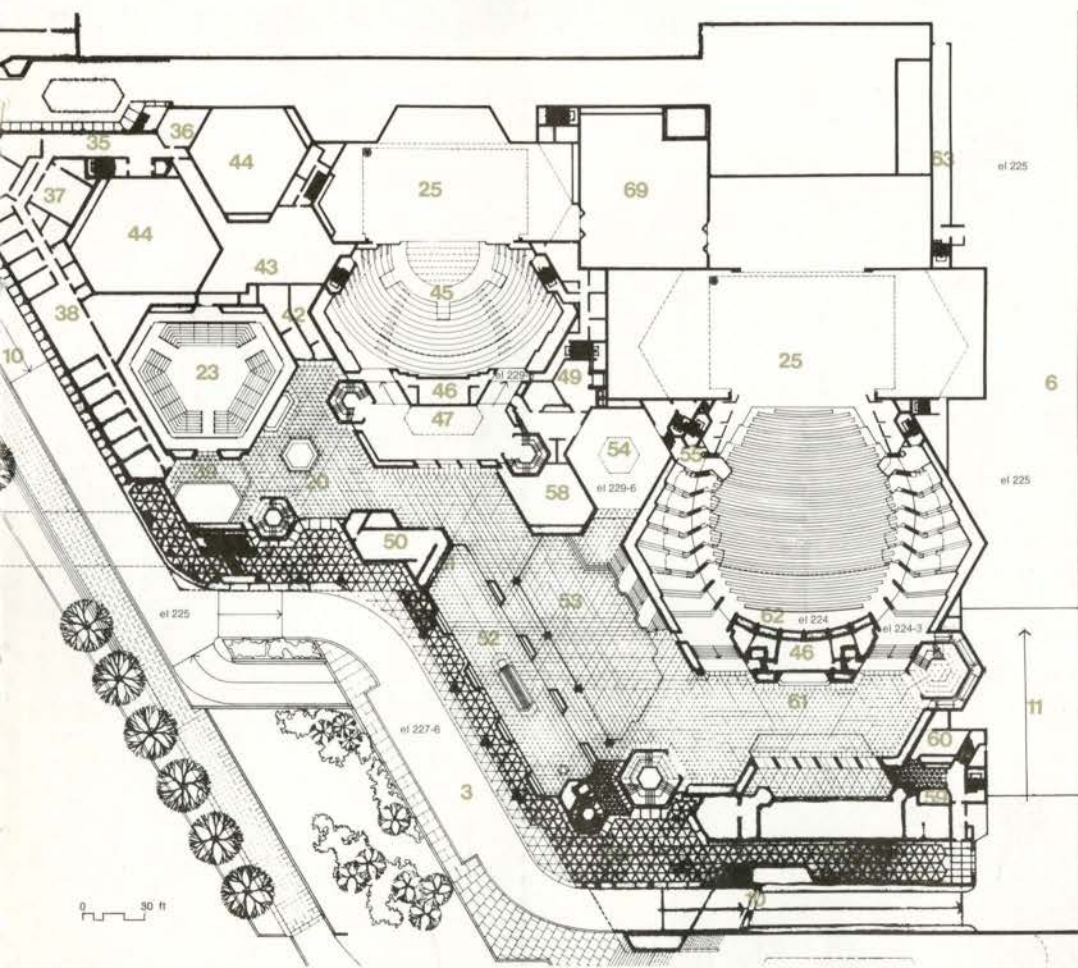




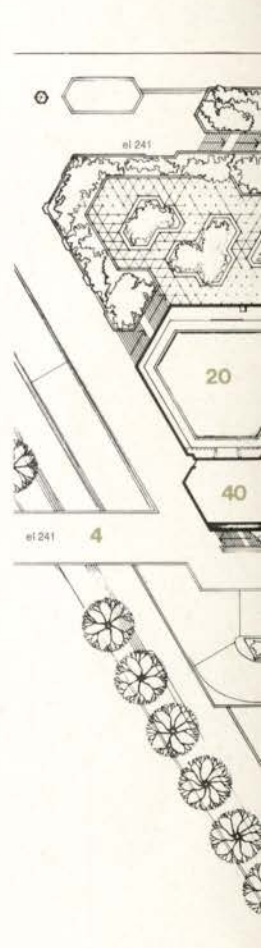
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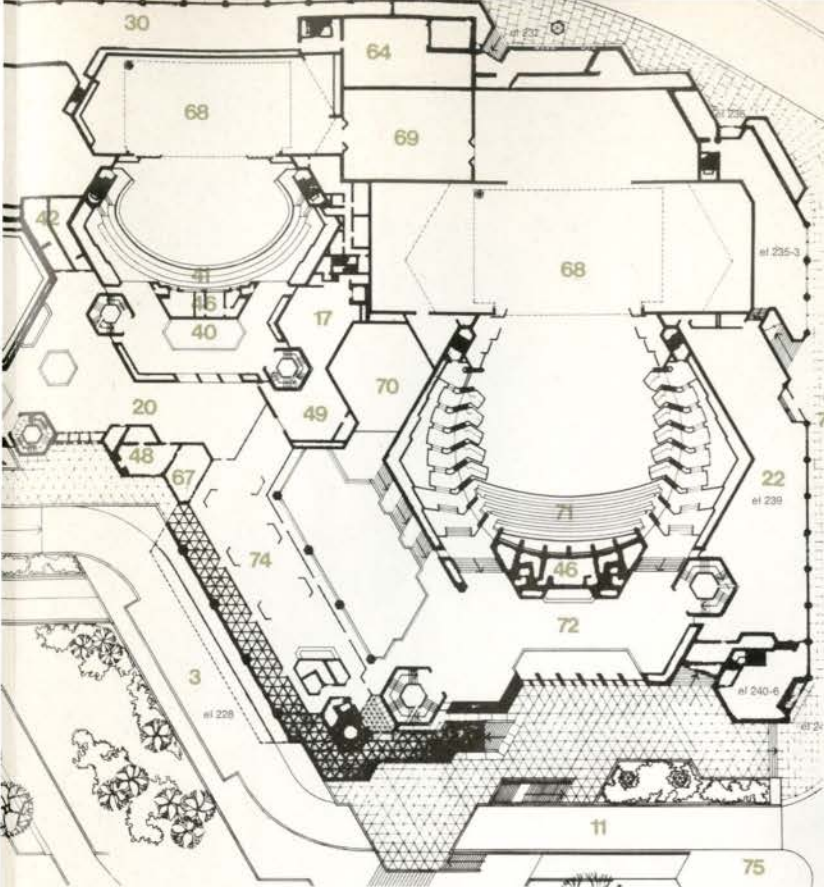
Plan, Level 241'



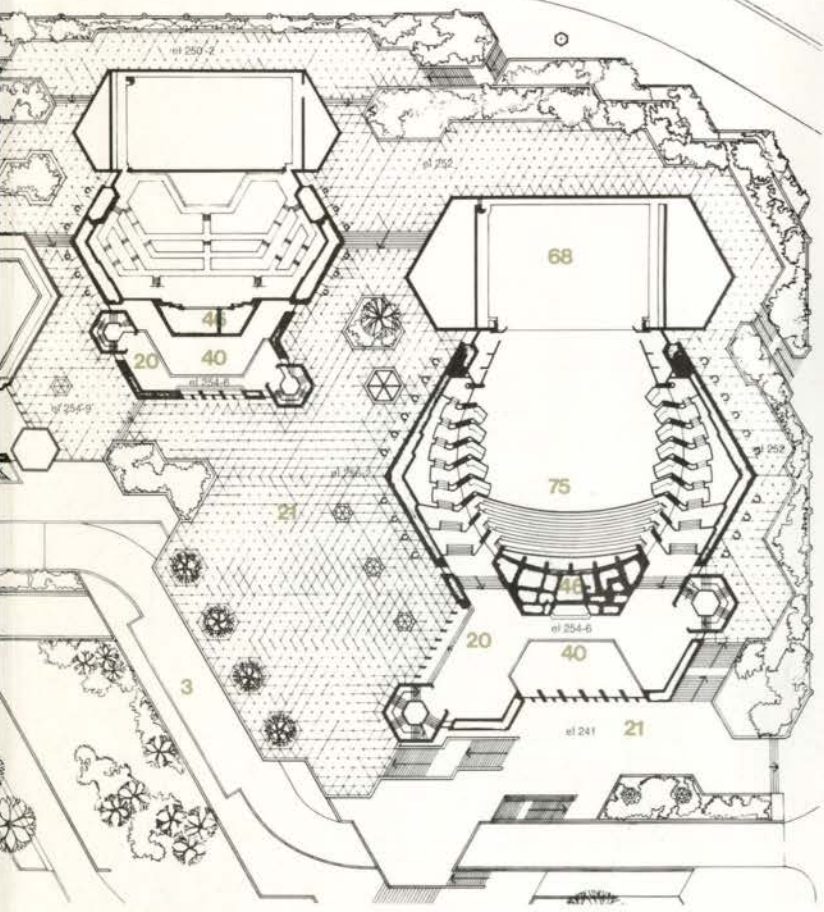
Level 224'

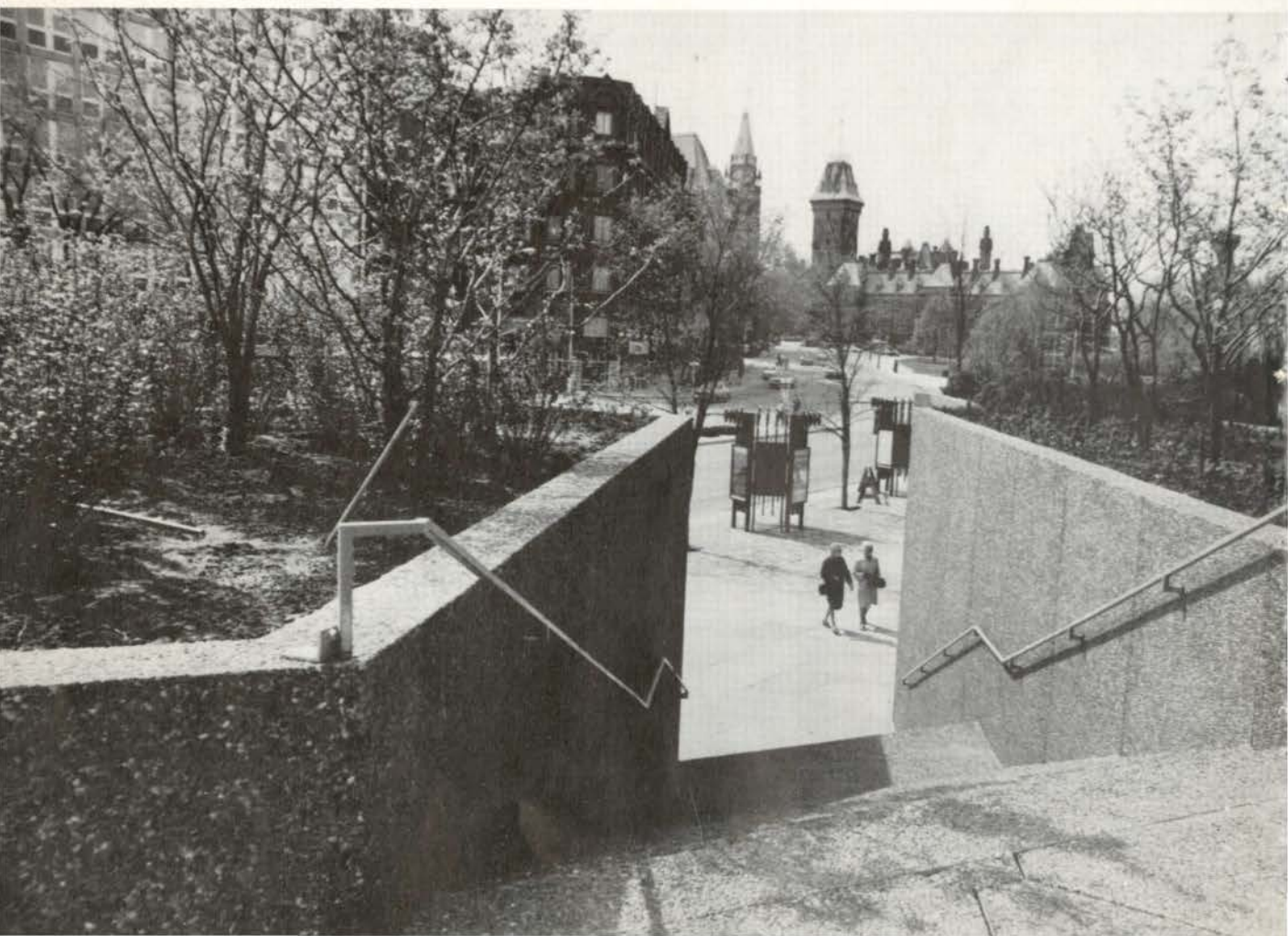


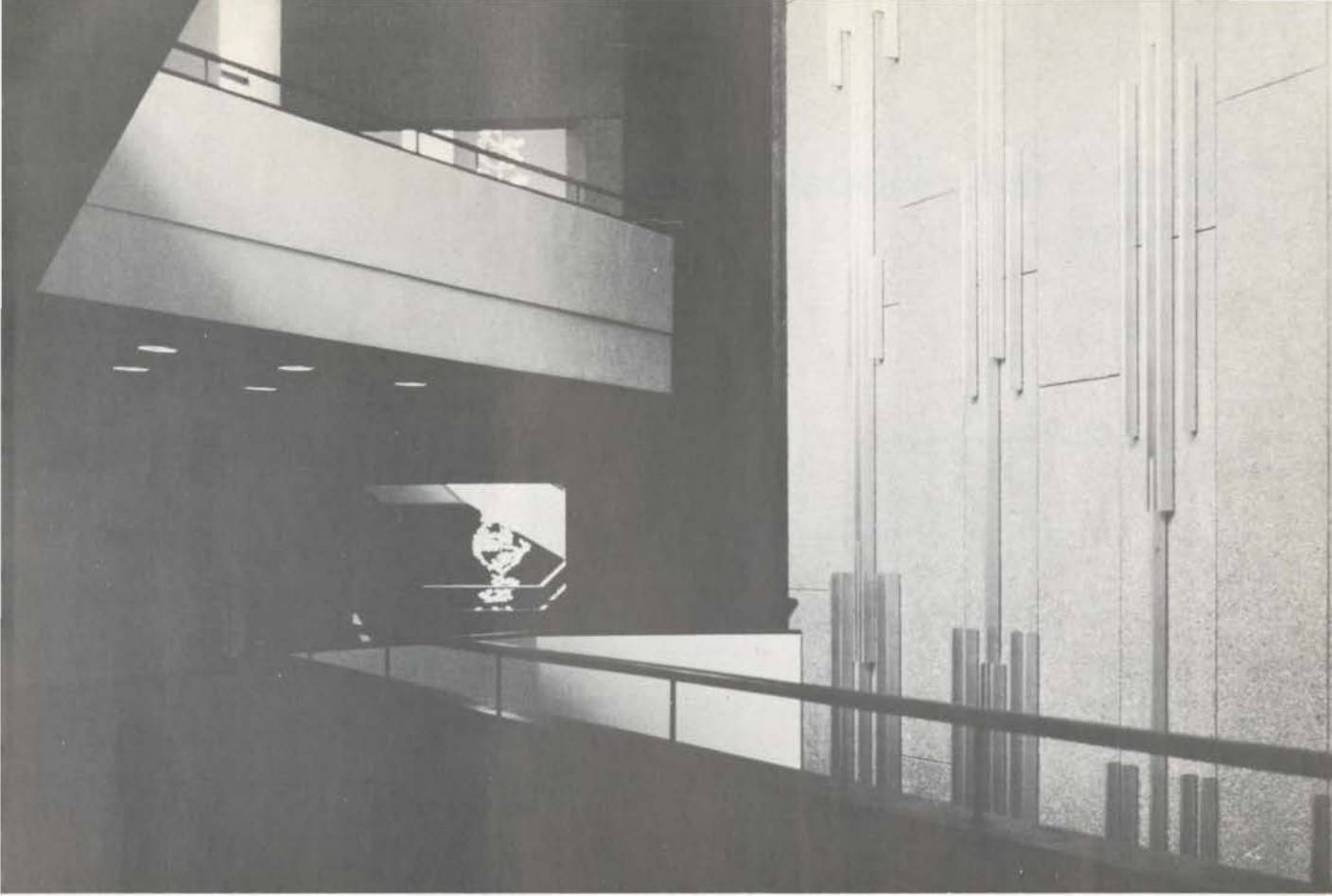
Plan, Level 256'



- Leend Légende**
- 1 roadway / Route d'accès
 - 2 promenade / Promenade
 - 3 arrival / Arrivée
 - 4 pedestrian bridge / Passerelle des piétons
 - 5 truck road / Route des camions
 - 6 parking / Stationnement
 - 7 traffic lane / Voie de circulation
 - 8 trucking area / Aire des camions
 - 9 ramp / Rampe
 - 10 ramp up / Rampe de montée
 - 11 ramp down / Rampe de descente
 - 12 mail-printing / Postes-imprimerie
 - 13 artists' entrance / Entrée des artistes
 - 14 mechanical area / Salle d'équipement mécanique
 - 15 tap room / Directeur de scène
 - 16 rehearsal room / Salle des répétitions
 - 17 kitchen / Cuisine
 - 18 storage / Réserve
 - 19 café / Café
 - 20 lobby / Foyer
 - 21 terrace / Terrasse
 - 22 tenant space / Espace pour locataire
 - 23 studio / Studio
 - 24 studio service / Service au studio
 - 25 stage / Scène
 - 26 thrust stage / Scène mise en avant
 - 27 vomitory / Vomitoire
 - 28 dressing room area / Loges des artistes
 - 29 Green Room / Foyer des artistes
 - 30 workshop / Atelier
 - 31 backstage / Arrière-scène
 - 32 orchestra elevators / Monte-charges de l'orchestre
 - 33 elevator pit / Fosses des monte-charges
 - 34 upper mechanical / Partie haute de l'équipement mécanique
 - 35 reception / Réception
 - 36 library / Bibliothèque
 - 37 conference / Salle de conférence
 - 38 administration offices / Bureaux de l'administration
 - 39 studio lobby / Foyer du studio
 - 40 open / Vide
 - 41 balcony / Balcon
 - 42 restrooms / Toilettés
 - 43 repertoire office / Bureau de répertoires
 - 44 upper rehearsal room / Vide supérieur des salles de répétition
 - 45 orchestra / Orchestre
 - 46 controls / Commandes
 - 47 theatre lobby / Foyer du théâtre
 - 48 offices / Bureaux
 - 49 covey / Service des repas
 - 50 general office / Bureau général
 - 51 tickets / Caisse
 - 52 entrance foyer / Hall d'entrée
 - 53 main foyer / Grand foyer
 - 54 salon / Salon
 - 55 royal box / Loge officielle
 - 56 loading area / Aire de chargement
 - 57 passage / Passage
 - 58 coat room / Vestiaire
 - 59 first aid / Premiers secours
 - 60 users / Ouvriers
 - 61 opera hall lobby / Foyer de l'opéra
 - 62 standing area / Places debout
 - 63 pedestrian passage / Passage des piétons
 - 64 storage / Réserve
 - 65 repertoire workshops / Atelier répertoire
 - 66 upper studio / Vide supérieur du studio
 - 67 lounge / Petit salon
 - 68 upper stage / Gril
 - 69 upper workshop / Atelier supérieur
 - 70 upper salon / Salon d'en haut
 - 71 mezzanine / Mezzanine
 - 72 piano nobile / Piano nobile
 - 73 sidewalk / Trottoir
 - 74 restaurant / Restaurant
 - 75 amphitheatre / Amphithéâtre

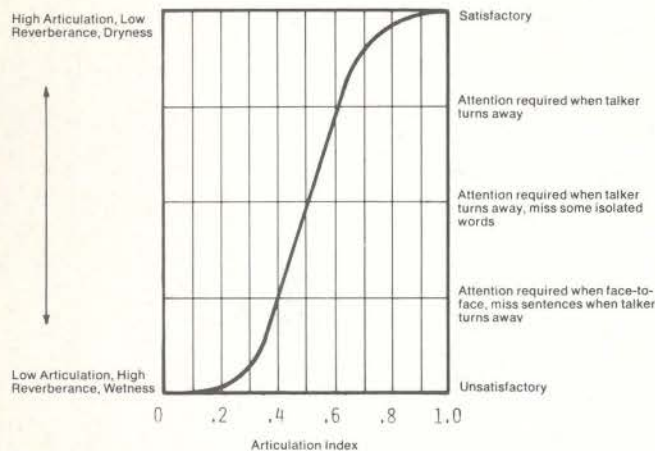






Opera Hall Acoustics

Russell Johnson, B.Arch



1
Probably the single most important aspect of good hearing in an auditorium is control of noise. Auditoriums must be free of any noise – noise from other spaces in the same building, noise of air turbulence at air supply grilles, intruding truck, aircraft or train noise, storm noise, noise from pumps, compressors, fans, boilers, elevators and other machinery within the building. The task is to eliminate all trace of noise so that nothing will mask out any of the faint music and speech sounds, particularly in the seats more remote from the stage. In practice this means that the background noise level must not exceed 12 dB in the octave band centered at 4000 cps; 14 dB at 2000 cps; 17 dB at 1000 cps; 22 dB at 500 cps; 28 dB at 250 cps and 36 dB at 125 cps.

Seating capacity is of critical acoustic importance. The larger the audience, the more difficult it is to achieve satisfactory hearing conditions for various types of theatre and music performance. Once the seating capacity is established, the next architectural decision with key acoustic significance is that of setting the horizontal dimensions of the audience chamber – the width, and the

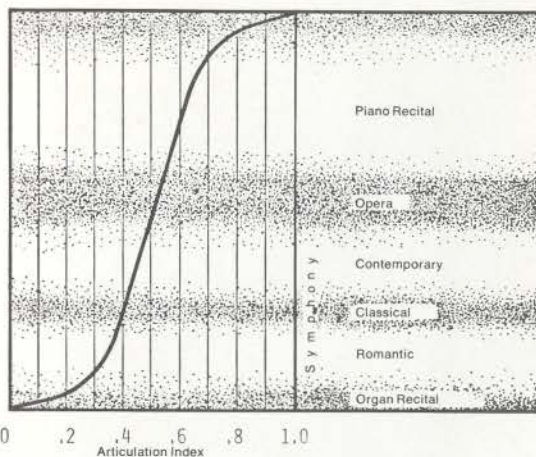
Mr Johnson, technical coordinator of theatre and concert hall acoustics for Bolt Beranek and Newman's Los Angeles, Chicago, Cambridge, New York and San Francisco offices, has been project manager for acoustical design on many major projects including the Centennial Concert Hall, Winnipeg and Salle Wilfred Pelletier, Place des Arts, Montreal.

distance from the performer to the audience in the back rows.

The architect of this Hall made a most astute choice here. Weighing acoustics considerations, visual acuity considerations, sight-lines to the acting area of the stage, and consideration of esthetics and the psychological aspects of perception of three-dimensional spaces, he chose an audience chamber about as wide as it is long. In order to keep these two dimensions as compact as possible and still house an audience of the size specified by the owner, he stacked seats in three tiers both along the side walls and across the rear wall. The compact design resulting from the use of multiple side and rear tiers is decidedly an acoustic advantage. The facias or spandrels of the side boxes and the balconies not only reduce the scale of the room visually, but for many seats provide shorter time delays for reflected sound.

Perhaps next in importance acoustically is perceived loudness of the lower registers. The architectural implication here is avoidance of thin materials. Suitable materials for auditoriums larger than 900 to 1200 seats include plaster applied to the face of masonry block, thick wood bonded to masonry, and concrete.

An essential aspect of auditorium acoustics for speech and music performance is the ability to instantly adjust the acoustic environment of the auditorium so that it is hospitable for each of the varied activities

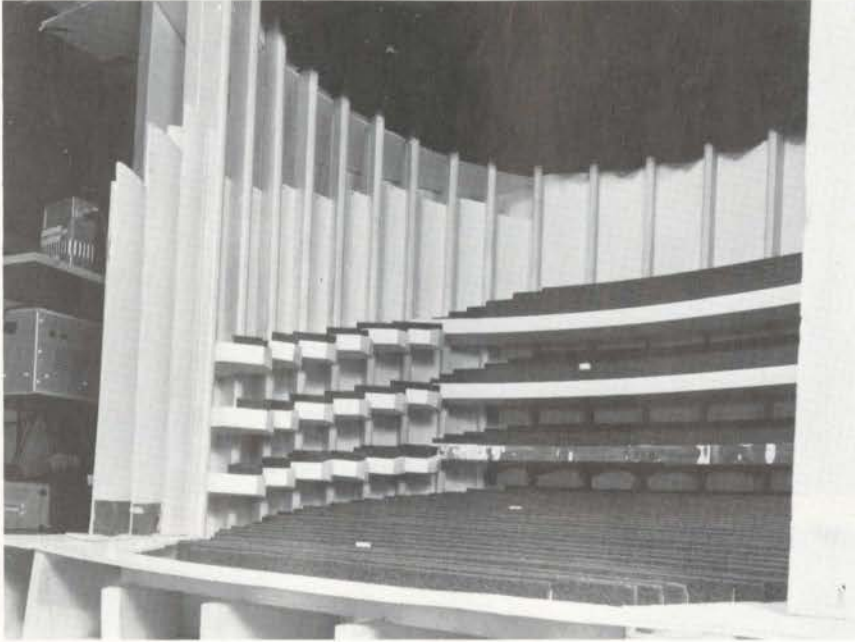


2
that are housed by community and campus auditoriums. The particular acoustical attribute that must be adjusted to suit music or speech, or various forms of music performance, is articulation or reverberance. These two words describe different degrees of one subjective characteristic of room sound. An auditorium with considerable reverberance – very little articulation – is a room which is usually referred to as "live", or sometimes, "wet." An auditorium with good articulation – not too much reverberance – is often described as "dead" or "dry."

Speech activities are most intelligible when there is practically no reverberance and the articulation is good. Professors Lochner and Berger working in Pretoria have carefully studied many aspects of speech intelligibility, and Figure 1 shows the Articulation Index as modified by Lochner and Berger. The descriptive phrases in Figure 1 which relate the Articulation Index (AI) to the ease of making sense of the actor's speech were developed by B. G. Watters of Bolt Beranek and Newman Inc.

Some types of music performance are most satisfying to the listener if the articulation/reverberance is about the same as for good speech intelligibility. Other types of music performance require more reverberance – these types of music need an AI which is inhospitable for speech. Still other forms of music performance sound best at intermediate points between high articulation and considerable reverberance. Figure 2 shows a tentative relationship we use to evaluate acoustics for music performance.

4 Impulse responses at a mid-main floor seat position
Réponses aux impulsions à une place assise au milieu de la grande salle



Practically, the AI can only be predicted by impulse testing in a scale model of an auditorium. Figure 3 is a photograph of the 1/2" = 1'-0" acoustical model of the Hall. Figure 4 shows two pulse traces made in the model, with the microphone located at a position corresponding to a seat position near the centre of the main floor of the Hall, a bit off to one side of the centerline.

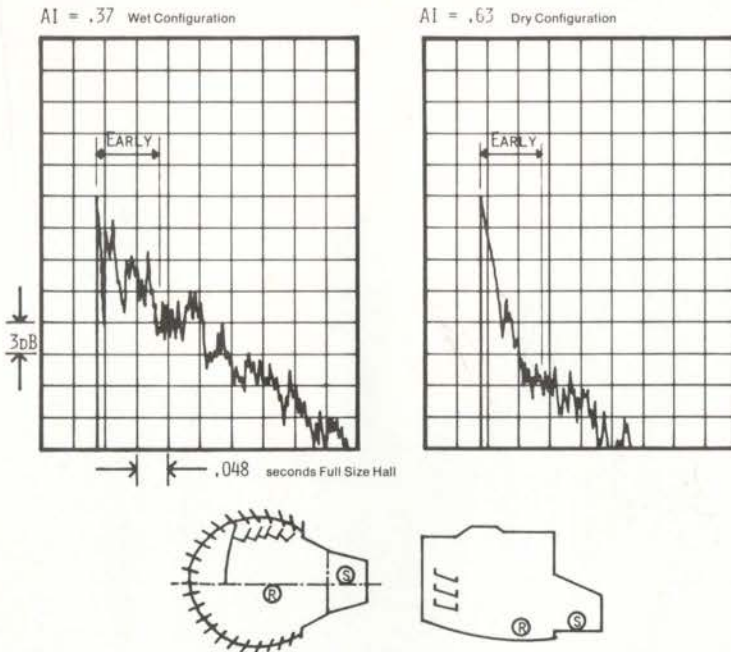
The pulse trace at the left is with the model concert shell in place and the model simulations of variable devices adjusted to produce a low AI. The calculated AI for this particular pulse trace is .37.

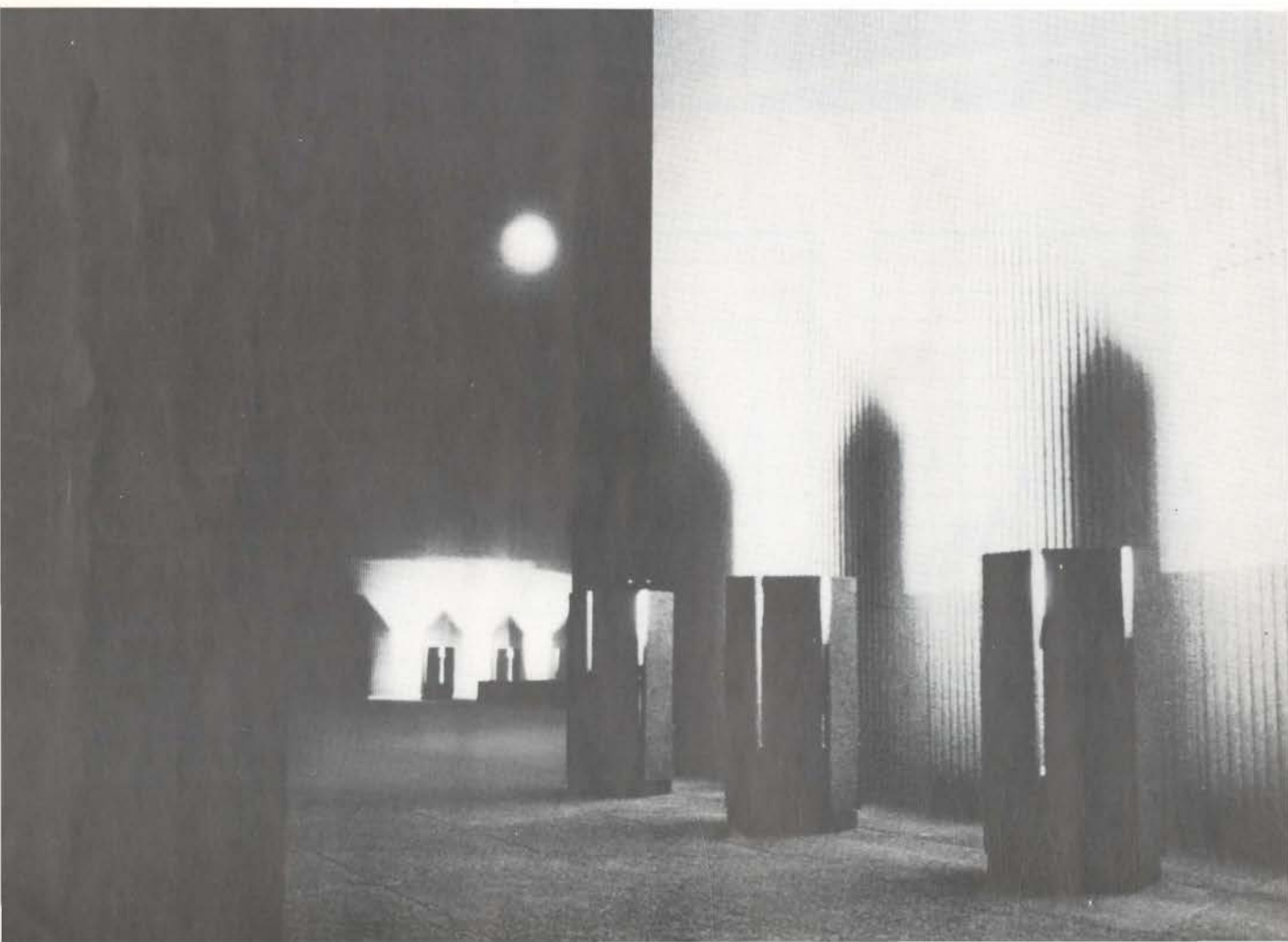
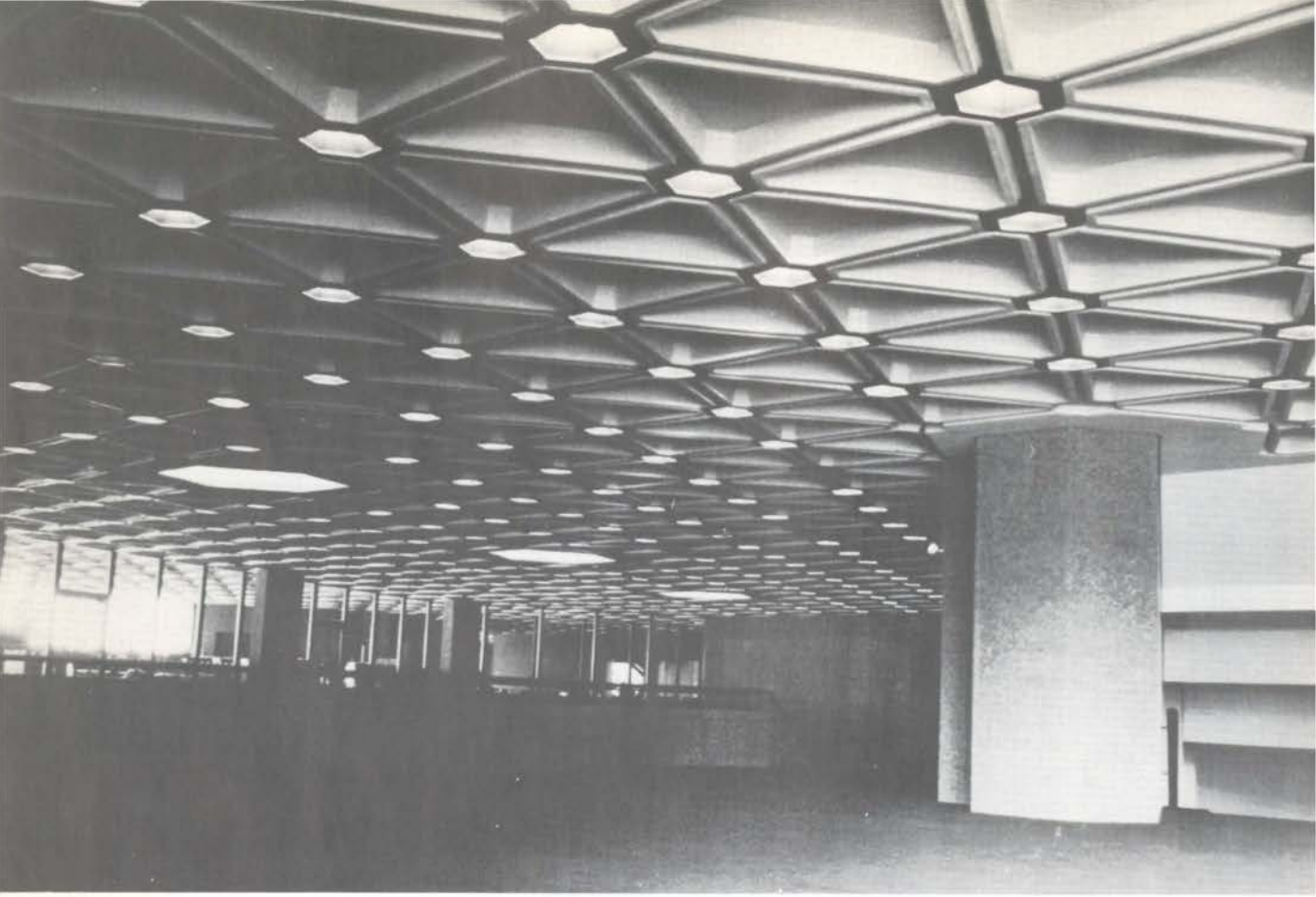
For the trace on the right, the model concert shell was replaced with a model stagehouse completely lined with a very thick glass-fiber-blanket. At the same time the simulations of the variable devices were adjusted to produce a high AI. The calculated AI for the trace shown is .63.

There are two types of adjusting devices incorporated in the Hall. Above the main floor, sound-reflecting panels can be set in either a horizontal position or in a vertical position, varying the amount of acoustic energy reflected directly to the audience areas. In addition, sound absorbing curtains can be extended or retracted into storage pockets. These curtains are located directly above the main floor, along the upper side-walls, and at the rear wall behind the three balconies.

Installed into the catwalk network above the main floor is an array of surround loudspeakers. Additional surround loudspeakers are built into the soffits of the side boxes and the balconies. This surround/reverberation system will be used for the performance of electronic music, for special effects for film exhibition, as a part of theatrical sound effects for opera and musical comedy, and for many popular music attractions.

Laymon N. Miller, Principal Consultant of Bolt Beranek and Newman Inc. is responsible for the noise control in the Hall, and Dr J. Jacek Figwer, BBN's Technical Coordinator for Sound Systems is responsible for the design and specification of the sound systems in the Hall.





Lighting

William M. C. Lam & Associates,
Consultants

The approach to lighting design of the National Arts Centre was decorative as well as functional. No preconceptions were imposed on its development. The lighting concept came from:

- Architectural forms and space of this project.
- Perception principles.
- Psychological and physiological needs of the users.
- Coordination with structure, mechanical systems, and other details.

The validity of this total design approach can be judged in a variety of applications in the Centre because of the range of problems which had to be solved, the clarity of the architectural concepts, and, most of all, the attitude of the architects and engineers

in allowing pursuit of the objectives with diligence to details, teamwork, and effective follow-through. The participating design and engineering staff worked as a truly integrated team.

Exterior - Daytime

From a distance, when approaching the Centre on a sunny day, the overall impression is that of a series of unbroken building masses on connecting platforms and terraces. Their hexagonal shapes of various sizes are quite obviously those of several theatres and supporting facilities of stage houses, stair towers, and lobbies.

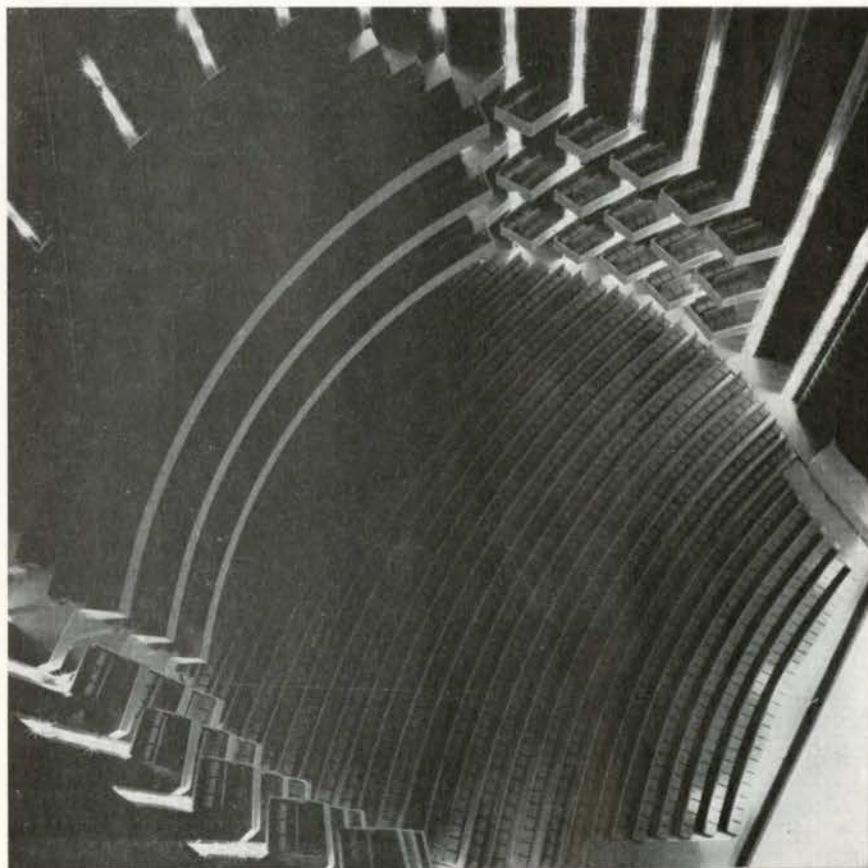
At close range, when approaching the Centre from the surrounding streets, the impression of "theatre" is reinforced by presence

1 Lighting model of hall. Through lighting models, most of the results were predicted long before working drawings were commenced
Plan directeur pour l'éclairage
2 Stair tower lighting concept
Concept d'éclairage de l'escalier

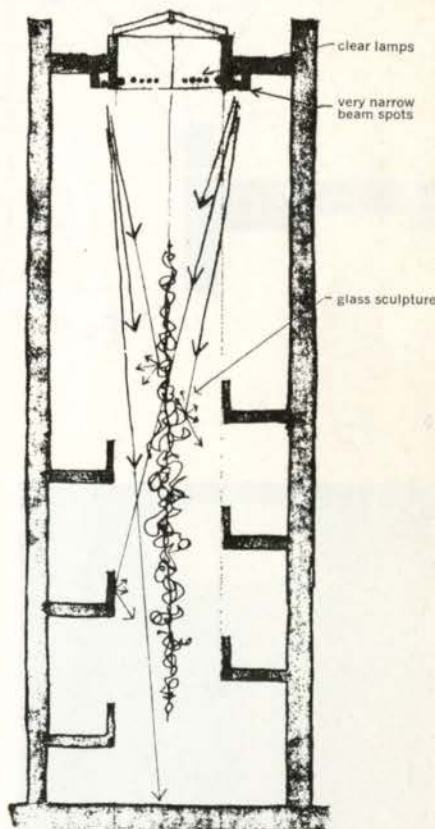
of billboard-chandeliers which line Elgin Street and mark entrances to the building. Upon mounting the plaza, one gets the impression of public spaces below through the positive expression of skylights penetrating the plaza. Smaller hexagonal forms growing out of the plaza are interesting, but puzzling, and upon inspection turn out to be housing for floodlights.

Exterior - Nighttime

From a distance, when approaching the Centre on an overcast day, without the crisp definition of form by sun and shadow, the buildings tend to become more two-dimensional silhouettes. It was our intention to help maintain depth and liveliness by glowing forms and glitter at skylight openings,

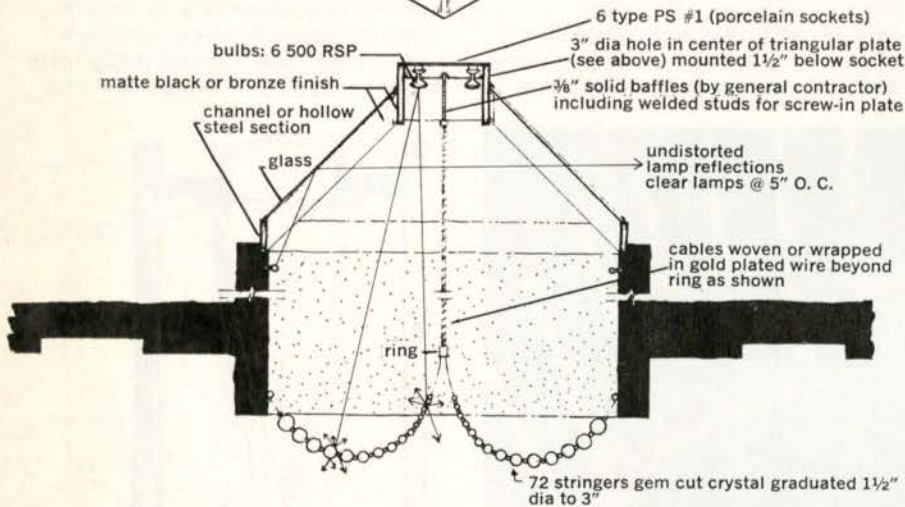
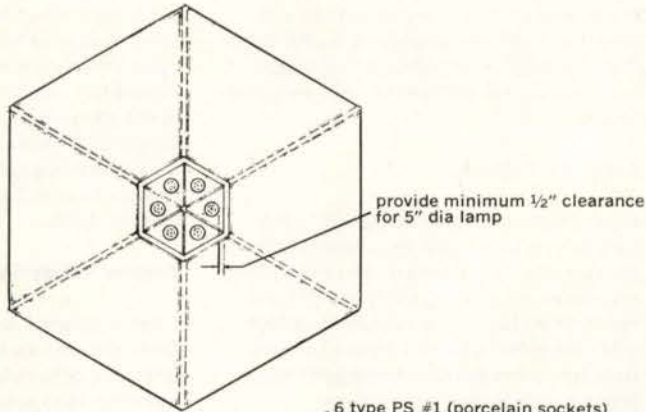


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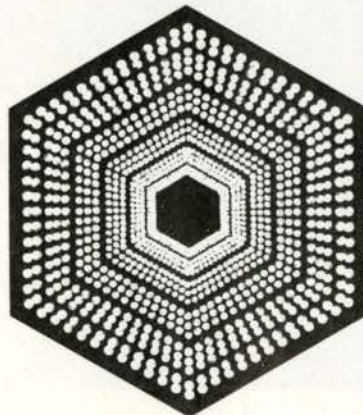
- 3 Salon skylight chandelier
- Le lustre du lanterneau du salon
- 4 Model of salon chandelier
- Maquette du lustre du salon
- 5 Crystal layouts for chandelier
- Disposition du cristal pour lustre



3



4



5

stair tower slots, and connecting ceiling planes of lobby areas, as well as with billboard-chandeliers.

From a distance, when approaching the Centre at night, what is seen can be more totally manipulated and we have chosen to compose selectively. Only the forms of the "egg" of the Theatre and the Opera House-Concert Hall are floodlighted. As accessory facilities, the stage houses are left dark, except for the cast pattern of the Daudelin sculpture at the rear wall of the Opera stage house. In the darkness the kiosks are now brilliant, as are the stair towers, with the image of lamps reflected in clear skylights (faceted and steeply sloping for this purpose). Trees are uplighted, to provide a lighted frame against the background of the city and add enclosure to the plaza; but the trees are not lit from the street side, where they would be in silhouette against floodlit portions of the Centre.

The forms of stair tower and lobby areas are meant to become more mysterious and remain secondary to the main halls. But the brilliantly lighted sculpture in the stair towers, or illuminated works of art in the lobbies, seen in silhouette through the architectural exterior screen, should beckon, while the reflections of lamps in the skylights add further gaiety.

Details

Because of the close coordination of design, it is difficult to say how much lighting forms were created by the architecture, or how much some of the architectural forms were created by the lighting design. Both occurred. The clear articulation of the shape of the halls invited their being highlighted selectively. And the housing of the lighting equipment to achieve the purpose became the "raison d'être" for useful sculptural, scale elements on the plaza.

The stair towers derived their shape and slotted corners from the lighting concept that the impression of "theatre" and grandeur could be heightened if patrons circulate around a light reflecting sculpture, illuminated as though by a shaft of sunlight from the top, and by presenting a view to the exterior of a glittery world, unlike that glimpsed in office building stair towers.

6 Ceiling rosette containing lighting, air diffuser and loud speaker
 Rosette en plafond contenant éclairage, diffuseur et haut parleur
 7 Opera Hall column lighting, early concept drawing. Details improved to eliminate screw attachment of glass
 Eclairage aux poteau de la salle d'opéra, premières études. Les détails ont été améliorés afin de supprimer la fixation du verre par vis

Another example, the need for a kiosk-sign-chandelier, arose from the absence of a traditional theatre marquee. A new form, presenting a distinct, nighttime symbol of "the theatre" and also necessary poster information had to be created. We chose to develop the design around the hexagonal Theatre form and the basic interior lighting material, the exposed, clear, incandescent lamp.

Interior – Opera House – Concert Hall

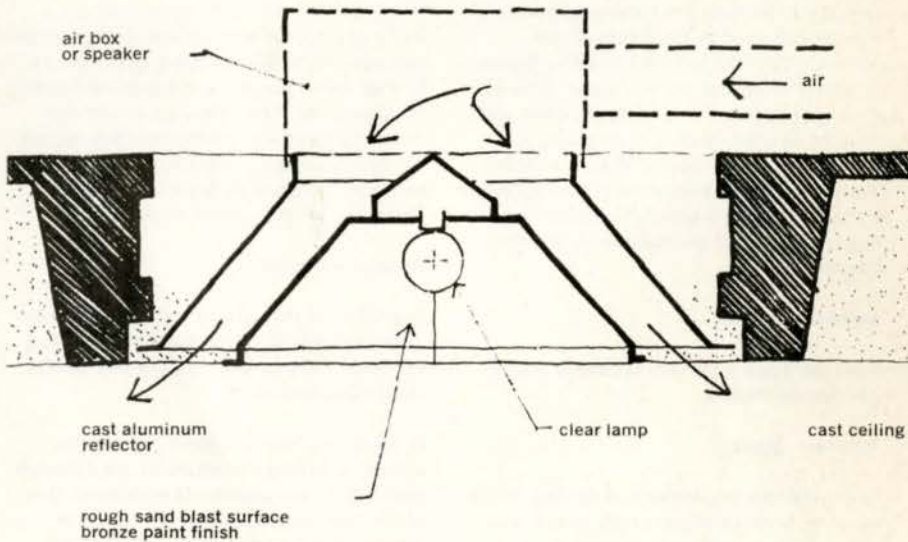
Inside the Centre, also, the lighting concepts were derived in general and in detail from, and with, the architectural form. The concept of lighting design was to emphasize the most dominant architectural characteristics. The lobby and hall of the Opera House are one continuous space, separated only by a screen of unbroken columns, with boxes suspended between them. To emphasize this feature, bare lamp chandeliers are notched into both the hall and lobby sides of each column.

The visual design of the ceiling grew out of the need for an extensive catwalk system for stage lighting and screening for a wide range of randomly placed acoustic reflectors and absorbers. After attempting to leave voids for stage lighting, we decided instead to express the catwalks positively by patterns of light-reflecting white batons, flags, and lighting cylinders, of a scale large enough to distract the eye from the disorderly array of equipment above (otherwise illuminated by the column lights) and arranged to follow the concentric catwalk curves.

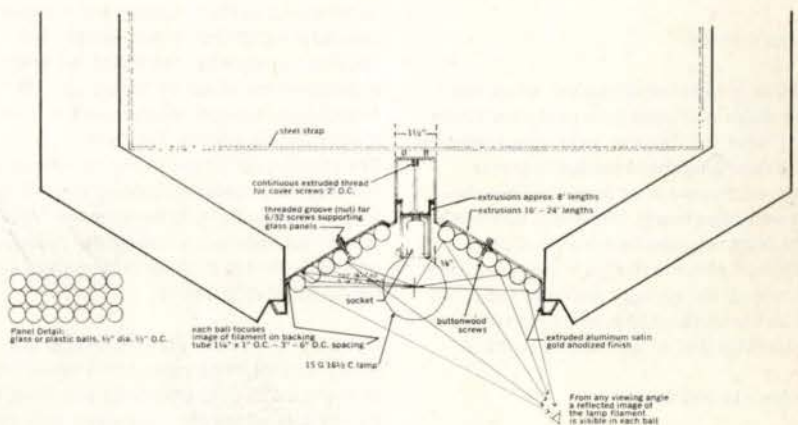
Together the lighting columns and ceiling create a distinct room-size chandelier, only relevant to the architectural form of the National Arts Centre Concert Hall, and whose effectiveness was predictable through an illuminated model. By selective dimming and switching of these elements, together with lighting the curtains, a wide variety of spatial and decorative effects can be achieved. For instance, at the beginning of intermission, turning on the lobby side first would expand the space of the hall, beyond the columns, to the outer walls.

Interior – Theatre

The hexagonal space of exposed concrete exterior walls of the Theatre suggested they



6



7

be highlighted with the same vocabulary of clear lamps used in the Opera House, mounted this time behind perimeter beams. The form of the ceiling was again dictated by stage lighting. The ceiling structure was created as a series of light shielding, open fronted, pyramidal boxes. Their junctions are articulated as part of the house lighting pattern. This room-sized chandelier is also distinctive only to the National Arts Centre Theatre.

Interior – Studio

A similar edge treatment is used in the experimental theatre.

Interior – Stairs

In the stair towers, instead of lighting design growing from the shape of the space, an appropriate space was designed to go around the lighting concept, a spine of illuminated, light reacting sculpture (William Martin). The ring of narrow beam spots around the skylight perimeter is only directed onto the sculpture, and other surfaces receive light only indirectly from that sculpture. Regardless of the brilliance, no glare is experienced, since the sparkle is what one wants to look at (maximum signal-noise ratio). (2)

Interior – Salon

The idea of light refracting sculpture used in the stairs was used here in somewhat different form. In this case, reflecting elements are simple, graduated strings of glass beads, supported in a "frame" of the skylight well edge beam. The effect was positively demonstrated by a model. (3, 4, 5) Consistent with the design principle evident throughout, the skylight well was used, not only as the obvious space in which to place a chandelier, but as an integral part of it.

Interior – Lobby Areas

The ceiling-lighting system of all lobby areas connecting the Studio, Theatre, and Opera House was designed as a positive element, recognizing the importance and extensiveness of these surfaces, as the most continuous and visible element when the spaces are filled with people. Rather than attempting a more neutral ceiling, with in-

evitable interruptions of access panels, a richly sculptured, removeable, panel system was devised, using the decorative light fixture as the air supply, and sometimes even loud speaker. In this case, an air diffuser was not placed *around* the light fixture, but the conical shape of the fixture was a natural and therefore neatly integrated air deflecting element of the air diffuser. (6)

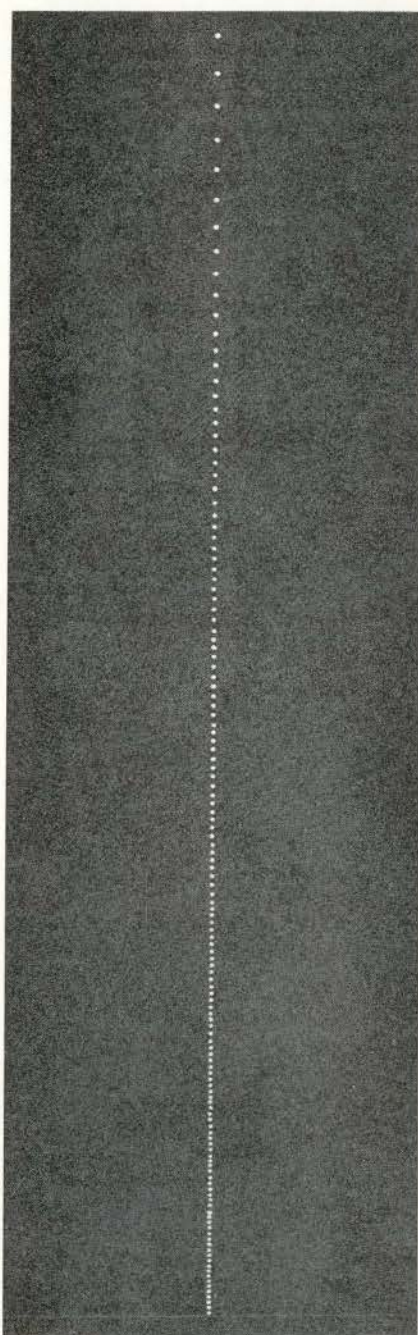
Interior – Details

Execution of the lighting concepts were coordinated with the details of other building elements, for example, in the lobby ceiling (described above).

In the Opera House column lighting, the column cladding and air ducts, air diffusers and lighting extrusions are combined. One of the inherent perceptual difficulties is maintaining the appearance of a *band* of light from *individually* spaced lamps. This is accomplished by lining the gold anodized aluminum reflector with sheets of glass balls. *Each* ball produces point reflections of lamps to any viewing position. (A spherical surface will always have a point of tangency to any viewing position.) In addition, each ball acts as a focusing lens and creates a brilliant spot on the gold backing. (7) The combination creates a rich three-dimensional surface. Lamps are not evenly spaced through the vertical length, but spacing increases at the top of the column to produce the effect of "fading out". (8) ... The decorative light notch is terminated at the bottom by integral ash trays. The rectangular shape of the column was modified to accept the lighting notch gracefully; thus, the lighting became the "raison d'être" for essentially hexagonal columns, adding further to architectural continuity of the National Arts Centre.

Our objective in *any* lighting design is a total marriage of all parts of the visual environment and accompanying activities, so that all elements seem as though they were created for each other and thus would not work well elsewhere, unless the situations were identical). We believe this has been accomplished here, through a rational evolutionary process from concept to reality.

William M. C. Lam



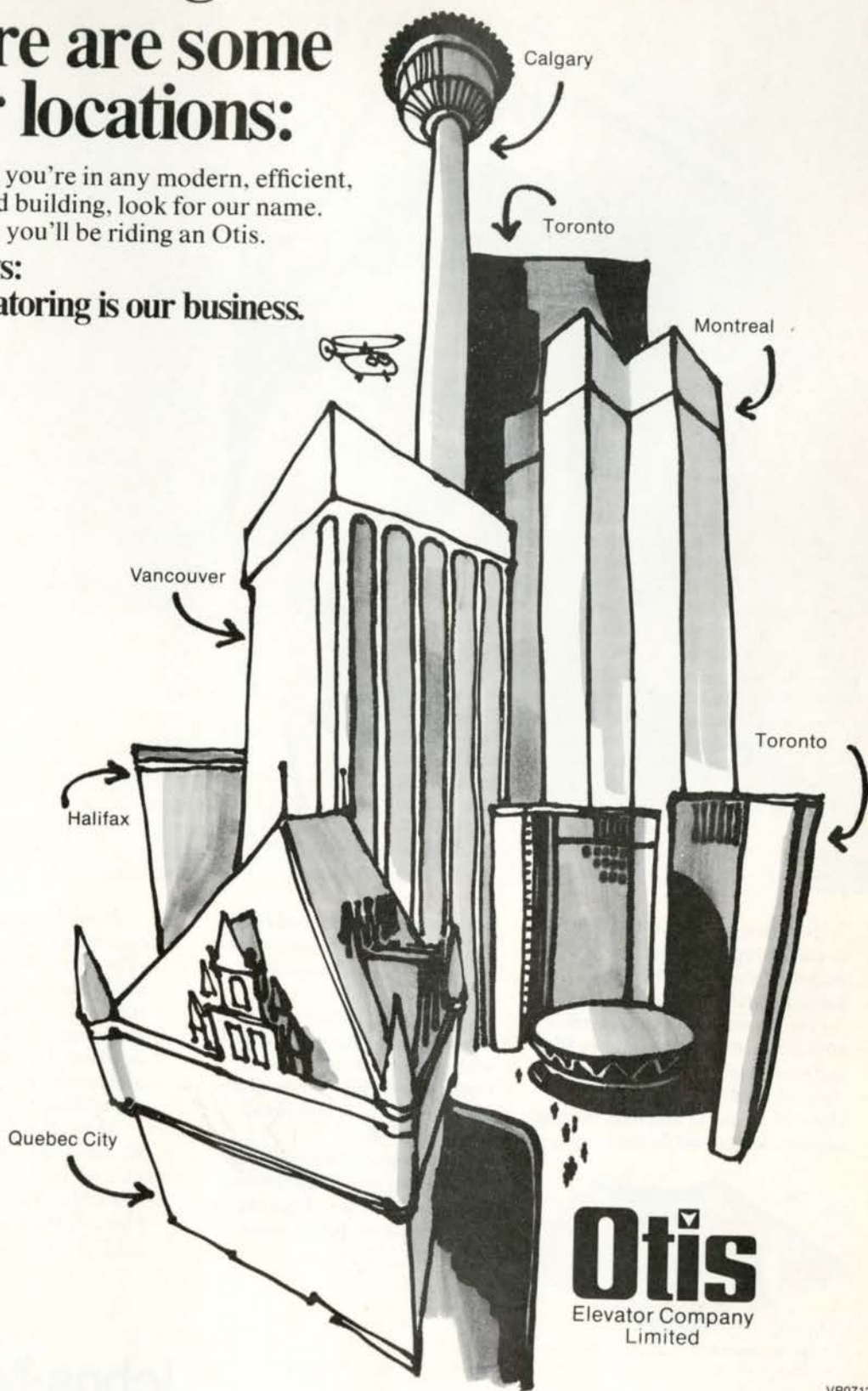
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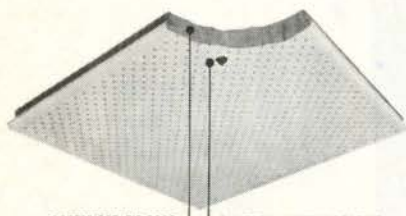
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Architectural Programming

C. Herbert Wheeler Jr., AIA

Mr Wheeler, architect and Associate Professor of Architectural Engineering at Pennsylvania State, is well known for his workshops and seminars on architectural practice. He is a frequent visitor and adviser to architects in Canada as well as the USA.

In order to be definitive we have asked Mr Wheeler for a description of "Architectural Programming" . . . "The word programming has many meanings in the design field. Programming as used in this article is defined as 'a process of planning a future procedure'. . . . Architectural programming describes the work of the architect and the related disciplines when they prepare a plan for a future procedure on a professional basis."

A previous article based on Mr Wheeler's address to the 1968 RAIC Assembly on Emerging Technologies and Techniques in Architectural Practice appeared in the Technical Section of Architecture Canada in August 1968. □ AWC

Sensitivity and competency stand out as the two most exciting characteristics of the new and emerging techniques of architectural programming. No other factors qualify the architectural programmer as much as his sensitivity to the needs of the building's occupants and his competency to prepare a program. To be able to understand the functioning of the building, its people and its equipment reveals the native talent of the professional architectural programmer.

Talking the Client's Language

This sensitivity to the client's need, this ability to talk the client's language and this creative talent to "think and feel" the client's problem, places the architectural programmer in the position of trust and, often, project leadership – both of which become the cornerstone of a programmer's work. Both of which signify the primary attributes of the creative, conceptual programmer.

Sensitivity and the understanding resulting from experience helps to develop the priceless attribute of "communicateability". Of course, "good communications" is the life-line of good architectural programming. In this era, the hospital architect, education

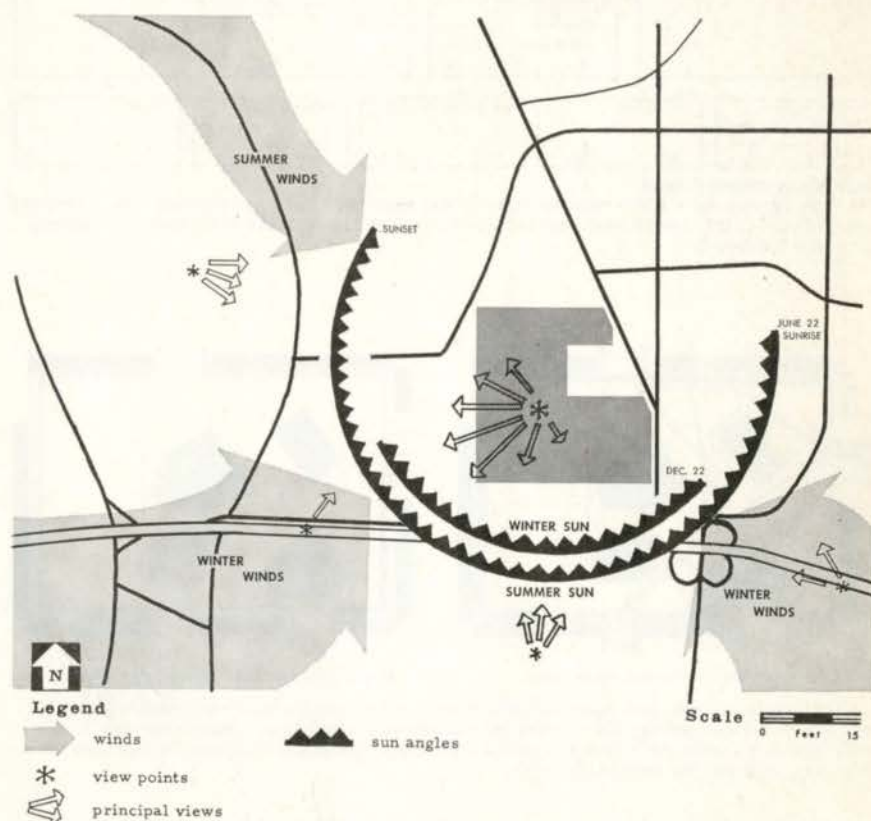
architect, shopping center architect, housing architect are words which are beginning to have a special meaning. They stand for professional qualifications and expertise in the design of certain types of complex environments. Those who create architecture in these fields of specialty are finding infinite personal satisfaction in providing the conceptual design and creative talent necessary to work with the client's team in the development of a purposeful environment.

The Client's Architect – The Programmer

Clients single out architects whether they

are partners or project managers or specification writers or equipment specialists or even construction specialists if they have experience and dedication to the client's building type. Clients search for programmers who have acquired that rare gift of sensitivity for the client's problem.

Clients merit more and more respect. They appear to be more sophisticated and more knowledgeable in specific building types than architects themselves. They appear to be more capable nowadays of selecting architects who have sensitivity and competency in creating the type of building in which they are interested.



SUN, WIND, AND VIEW ORIENTATION³⁷

Orientation Graphics

A technique used by many architectural programmers and designers. Consists of graphic diagramming on site maps to show prevailing winds, solar orientation, circulation, views, etc. This illustration was intended to explain to clients and others the importance of building orientation and site layout. See page 58, Group D

ROOM REQUIREMENTS		DEPARTMENT <u>UNIVERSAL THERAPY SCHOOL</u> CODE 10	
REHABILITATION INSTITUTE CHICAGO ILL		C. F. MURPHY ASSOC CHICAGO ILL	
FURNITURE - EQUIPMENT		MECHANICAL	
FURNITURE DESK W/CHAIR CONFERENCE TABLE (1) SIDE CHAIRS (6) BOOKSHELVES 15 L./FT.		HEATING, VENT. AIR COND _____ special	
EQUIPMENT 2-FILE DRAWERS 15" x 30"		PLUMBING _____ special	
		COMMUNICATIONS TELEPHONE DICTAPHONE	
		ELECTRICAL recepticals _____ special loads _____ other _____	
		ARCHITECTURAL	
		FLOORS CARPETING _____ special	
		WALLS PARTITIONS _____ special	
		CEILINGS _____ special	
		DOORS WINDOWS _____ special	
		ACOUSTICAL _____ special	
		RELATIONSHIP TO OTHER SPACES	
		PRIMARY MEDICAL DIRECTOR'S OFFICE ASSISTANT DIRECTOR'S OFFICE	
		SECONDARY	
		REMARKS	
NUMBER PEOPLE staff <u>1</u> male patients _____ female		DIMENSIONS 15' x 15' area <u>225</u> sq ft	
NO. ROOMS REQUIRED Total <u>1</u>		EXISTING AREA Total _____ sq ft	
OTHER			

Room Requirements Format

This format shows room space requirements and was developed by an architectural firm. It provides space for various information which can be added from time to time to the investigation documents. See page 58, Group D

2

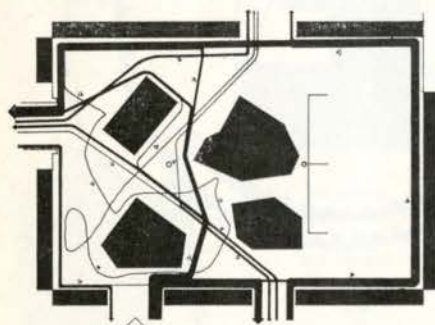


Figure 21 (Sunday, left turners, museum sample)

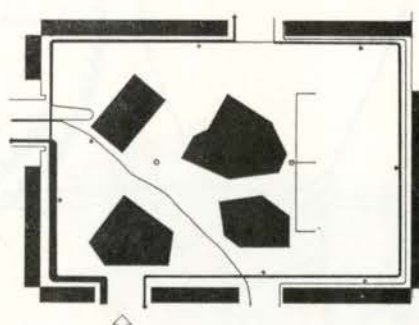


Figure 22 (Sunday, right turners, museum sample)

Another technique, developed by behavioral scientists, is tracking the patterns of people in stores, museums and similar buildings to examine the importance of displays and other influences. This exhibit shows the traffic patterns over a period of time and graphically illustrates the preferred circulation patterns. See page 58, Group D

3

The Search for Programming Techniques

The concentrated search for new techniques reveals that they are found in many regions or in many types of work or in many types of architectural practice. The emerging techniques of architectural programming appear to come from a great many different sources. An examination of the procedures used by architects gives insight into not only the characteristics of architectural programming but also the qualifications of architectural programmers.

The techniques described here may be considered old or new, simplified or sophisticated, according to the expertise of the individual (and it is found that individuals who program in architectural practice differ widely in experience and qualifications). For the purposes of identification, assembly and presentation here, they are placed into six groups.

Group A: Techniques of Using Standard Procedures

The repetitive nature of programming projects makes it desirable for the programmer to have a standard procedure. It is also desirable that he make effective use of the new techniques of network planning, procedural manuals, standard guides, standardization of symbols and so on. A few of the types of documents and procedures used by architectural firms to prepare the architectural programs are as follows: Network Plan for Programming Phase; Programming Manual and Responsibilities; Sequence of Program Documents; Concept Phase Development Procedures; Program Development Formats; Guide to Preparation of the Programme; Outline of Procedures for Investigations and Analysis; Link Analysis Symbols; Flow Chart Symbols; Environmental Symbols.

Group B: Data Banking Techniques

The capability of the programmer is built upon each experience, especially the total experience from start of investigation to evaluation of feedback information which returns to the programmer after the building is built. The use of feedback information and the application of statistics, unit costs, successful programming data, and "as

built" information places the programmer in a position of advanced standing to plan and prepare the next architectural program. The use of prior information lessens the amount of "re-inventing the wheel" which goes on in the custom design of buildings.

Computer capabilities for information storage and retrieval, microfilming capabilities for handling large volumes of graphic data and photographic capabilities for reproducing data in many forms and sizes, offer the architect unlimited possibilities for handling programming information in the pre-project period. Other types of data banking documents found in architects' offices are: Building Type Comparison Charts; Constraint Diagrams - Planning; Variable Planning Factors Data; Vocabulary of Critical Dimensions; Planning Standards Manuals.

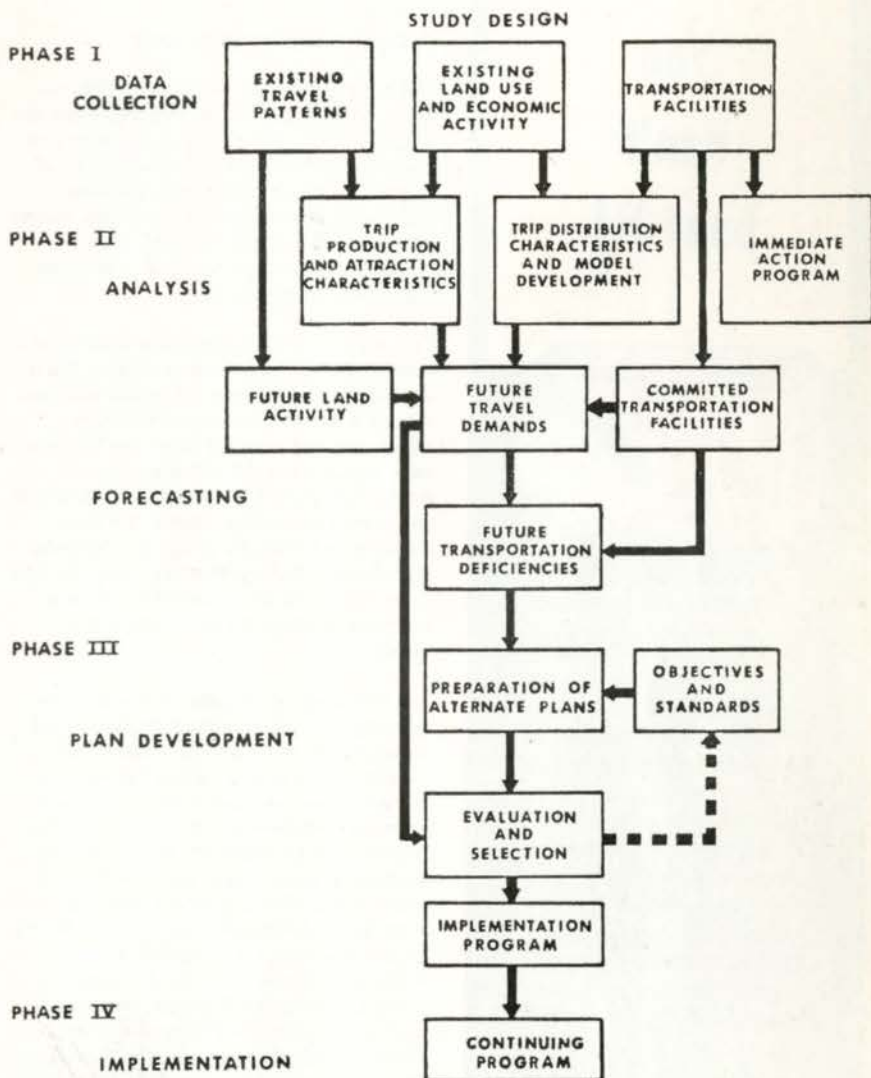
Group C: Planning Techniques

The techniques of planning reveal the programmer's competency for tackling the problem. Such planning involves the typical procedures of defining objectives, determining work involved, planning the sequence of work and preparing the presentation. Group C techniques provide for a more orderly and systematic procedure for programming. They consist of such documents as the following: A Planning Path; Design Study Charts(4); Planning System Diagrams; Analysis Phase Networks; Study Organization Charts.

Group D: Investigative Techniques

The essence of programming lies in the art of searching, investigating, and questioning. Establishing good channels of communication and vocabularies for mutual understanding by user and designer reveals the programmer's sensitivity to the client's needs. Investigative techniques range from standard forms, formats, and data gathering methods to procedures, checklists, criteria sheets, and such items as are useful on effective and objective investigations.

When investigations require novel solutions, it is necessary for the programmer to use new techniques such as tracking, space-time logging, client education, trend estimating, and so on. This aspect of program-



Design Study Charts

A typical example of these is the study program which is organized, designed and phased to investigate and prepare the program. This chart shows the phasing of a transportation study program and follows the normal development of data collection, analysis, forecasting, plan development and implementation. See opposite, Group C



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ing is solidly based on the art of questioning but it also depends, in great measure, upon the use of scientific techniques and business-like methods. The list of investigative techniques goes on and on, but probably includes items like the following: Specific Room Data Forms; Room Requirements Formats(2); Equipment and Services Charts; Standard Room Requirements Forms; Space Criteria Sheets, Equipment and Case Work Check Lists; Building History Investigations; Programming Questionnaire Formats; Program Requirements Booklets; Architect's Presentation of Questions; Space-Time Logs; Tracking Studies(3); Links Related to Methods of Communication; Ultimate Land Use Investigations; Population Trend Investigations.

Group E: Analytical Techniques

The assembly of raw investigative data requires expert analysis. In fact, the more expert the investigation, the more diverse and complicated becomes the accumulation of written and graphic data. In this respect, techniques of screening, abstracting, correlating, comparing and analyzing become necessary to manage, manipulate and use the investigative material.

The use of scientific analysis is not always a qualification of the good investigator, but it is a required qualification of a good analyzer. A good analyzer requires sensitivity to occupants and building functions because he is required to establish categories of function, degrees of importance, priorities of use or delicate value systems. The techniques of charting, graphing, diagramming, visualization, linking, relating, analyzing and so on are necessary to organize data and bring the significant factors "out of the woods".

The following techniques are found in use by many architectural firms: Departmental Linkages; Room Relationship Matrix for Closeness and Reason; Inter-Communication and Personal Movement Charts; Management Relationship Analyses; Functional Relationship Analyses; Plant Function Diagrams by Phases; Space Relationship Diagram; Comprehensive Space Analyses; Activity Relationship Analyses; Function Plant Layout Analyses; Operations Research Analyses; Schematic Master Plan Layout; Travel Charting and Analyses; Movement Analyses; Traffic Distribution Analyses; Minimum Path Analyses; Traffic Survey and Analyses; Traffic Inter-Connection Analyses.

Group F: Presentation Techniques

Presentation techniques, per se, are the by-product of the program analysis talent and the conceptual designer's visual ability. The architecturally-trained programmer makes orderly presentations using new techniques of printing, reproduction and graphics. He accentuates the important elements of the program and shows the breadth, width and depth of the investigation without confusing the decision makers.

Lastly, he portrays the thoroughness and completeness of the investigation. The techniques of documentation and communication are especially important in presenting effectively the architectural program.

Many of the above documents are fixed up for use in presentations. Other graphic documents such as the following are used to set the stage or better explain the program: Geographic Identification and Coding; Orientation Graphics(1); Projected Occupancy and Building Capacities; Graphic Representation of Traffic Volumes; Project Time Scheduling.

Summary

The architect is beginning to realize that architecture is at the heart of programming and that programming is the foundation for all architecture. In many instances the architect who administers or observes construction has relieved himself of this part of the basic responsibility for building development. Likewise, the architect who is not becoming proficient in the preparation of master specifications, standard drawings and improved methods of documentation will soon find his responsibility for construction documentation lessening.

But the art and science of architectural programming and design development will always rest squarely on the shoulders of the conceptual designer - the architect. □

Library Review

Directory of Standards in Building NRC 10192, 209pp., 1968, \$5.00

Publication of abstracts of standards published in North America and a valuable supporting document to the National Building Code.

Wind Pressure Measurements on a Full Scale High Rise Office Building

Research Paper No. 379
34pp., October, 1968, 50 cents
Wind pressure recordings taken at two levels on a 400 ft high building in Montreal. Provides information on relationship between turbulence and wind pressure fluctuations.

The above are obtainable from Publications Section, Division of Building Research, National Research Council, Ottawa.

List of Equipment & Materials

Vol. 1 General 258pp., Vol. 2 Building Construction 255pp., Underwriters' Laboratories of Canada, 7 Crouse Road, Scarborough, Ontario, no charge.
Contains lists of approved equipment and materials, including design ratings, for various types of construction.

"Focus Now" – A Joint AIA-RAIC Convention

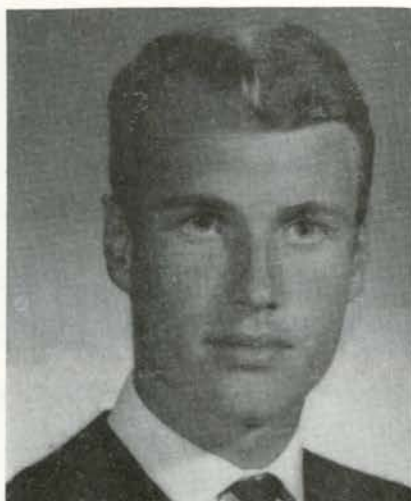
This year the AIA and the RAIC are undertaking an interesting, if somewhat experimental, endeavour, a joint convention slated for Chicago from June 22nd to June 26th. This will be the first international architecture convention for these two organizations and promises to be a vast and stimulating event. Over 6,000 people are expected, and the scale of the project alone makes it significant.

It will contain many of the usual convention events – workshops, lectures, business meetings, exhibits, tours and so on. However, it promises new things in several respects. The theme "Focus Now" turns the convention toward immediate problems in the profession and related areas. Grandiose futuristic aspirations are sidelined for a realistic look at present-day problems and possible solutions. One significant area of discussion will occur in the workshop panel "Student-Professional Dialogue". This workshop especially gives the student a real voice in the proceedings, as two students, the Canadian and American student representatives, will be included on the panel.

Student participation starts on the first day of the convention and plays an important part throughout. On Sunday afternoon, June 2nd, there will be an open conference where architects and students meet the Chicago press. Sunday night, at the Sheraton-Blackstone hotel, the student mixer will give Canadian and American students an opportunity to meet and converse. The big student social takes place Tuesday night at a reception and dinner dance.

On Tuesday morning at 9:30 AM, the "student speakout" will host a group of speakers, selected largely by the American student organization, who will speak and then answer questions. Most of the workshops, including the one already mentioned, will include a student on the panel.

The RAIC has raised a fund to send 18 students, two from each architectural school in Canada, to the Chicago convention. Needless to say, the gesture is appreciated. The students should be named by the time this article is in print and as coordinating student representative, I shall be in touch with the



Peter Dandyk Architecture Canada's student editor for Waterloo and co-ordinator for the convention's student delegation

other 17 as soon as I receive their names. The American students have an organized contribution for the convention, something we should have too. They also have a very active student organization, something we hope to start when we meet in Chicago.

Peter Dandyk

Canadian Students Win Portland Cement Association Scholarships

Two fourth-year Canadian students, Paul Zajfen of McGill and Brian Eldred of the University of Manitoba, were among six winners of "awards of exceptional merit" in the recent Portland Cement Association Architectural Awards. The scholarships are for summer study at the Fontainebleau School of Fine Arts near Paris. The other award winners were students at schools in the US.

Mr Zajfen's entry (1, 2) was a housing development in the City of Westmount, Quebec. The site, near downtown Montreal, was identified as one which would attract single and newlywed professional people. The program was computerized to get all possible variations of apartment types within the construction cost, and the selection was based on feasible density and inhabitant type. The final choice was 49 bachelor units, 79 one-bedroom units, 20 three-bedroom units and 12 maisonnettes.

The building was planned on a basic three level system, the center level of each providing an internal street. Privacy of units from each other and the streets was considered essential, especially in the case of exterior space belonging to the units. Double exposure of all but the bachelor apartments was deemed desirable.

Units were based on a 22' bay as a module, and each unit occupies one level plus a part of the level above or below. Combinations of the modules give the desired mix of apartment types.

Due to its linear nature, the scheme facilitates construction, and work may be begun at different points simultaneously. Basically the structure consists of concrete shear walls 22' o.c. with seven inch thick concrete slabs spanning between. The use of concrete floor slabs lowers the height of the building considerably. Acoustical insulation is achieved by the combination of concrete floors and shear walls. It was felt that appropriate finishes to the structural members would be sand-blasted or bush-hammered concrete.

Mr Eldred's entry (3, 4, 5, 6) was a commercial bridge development over the North Saskatchewan River in Edmonton, Alberta. The problem was set for the fourth year of the Faculty of Architecture, University of Manitoba.

"The broad, shallow valley of the North Saskatchewan River is both an asset and a liability to the city of Edmonton, which it divides. The treed banks, preserved as parkland by legislation, are a welcome visual relief from the great prairies. Homes and apartments, as well as commercial establishments and the University of Alberta, vie for the view. The city fathers are constantly under pressure to release the bank land for development.

"On the other hand, the broad valley – up to half a mile in width – is a headache to the traffic engineer who hopes to cross it. The bridges presently in existence create traffic bottlenecks, and yet, the much needed high level bridges, at least of the usual variety, are prohibitively expensive."

The project proposed is a solution to both

1, 2 Housing development for Westmount, winning scheme in Portland Cement Awards by Paul Zajfen
 Exploitation d'habitations dans le quartier de Westmount; projet de Paul Zajfen dans le concours offert par Portland Cement

3-6 Commercial building development over North Saskatchewan River, Edmonton, winning scheme in Portland Cement Awards by Brian Eldred
 Exploitation de bâtiment commercial au-dessus du Fleuve Saskatchewan nord à Edmonton; projet de Brian Eldred dans le concours offert par Portland Cement

these problems, combining a high level bridge with commercial revenue-bearing elements. Contained within its structure is a two-level merchandise mart centralizing the display of manufacturers' goods for wholesale buyers, offices, supporting retail-commercial facilities, parking and a rapid transit station. On the top surface is a ten-lane freeway, answering Edmonton's traffic needs projected into the 1980's.

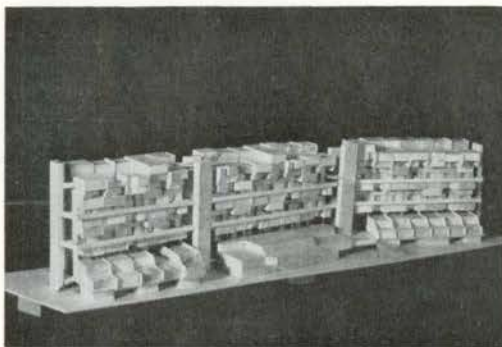
The tubular concrete structure is consistent with the latest developments in concrete research and stress analysis, and is technologically and economically feasible at the present time.

The great compressive strength of concrete, and its monolithic nature, are exploited by the concept and use of post-tensioning. These are fundamental to the design of the bridge, where the tubular load sharing structure is itself monolithic, and the loading, especially the impact loading, of its functions is accommodated by the post-tensioning.

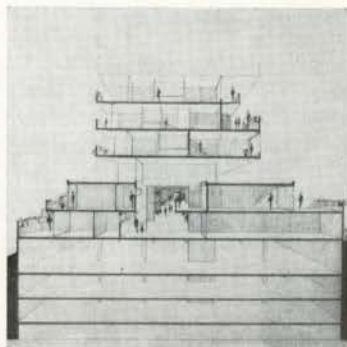
Nova Scotia Tech Revises Admission Requirements

Dr Peter Manning, Director of the School, has announced that as from now the main requirement for admission to the School of Architecture at the Nova Scotia Technical College will be "the satisfactory completion of at least two years at any university or equivalent institution recognized by the Faculty of the School of Architecture, the courses studied being in any subject. Some mathematical facility is required and candidates should preferably have completed at least one course in mathematics at a university level; alternatively they may be required to take an entrance examination in this subject." The former requirements of two years pre-engineering or certain prescribed university courses no longer apply.

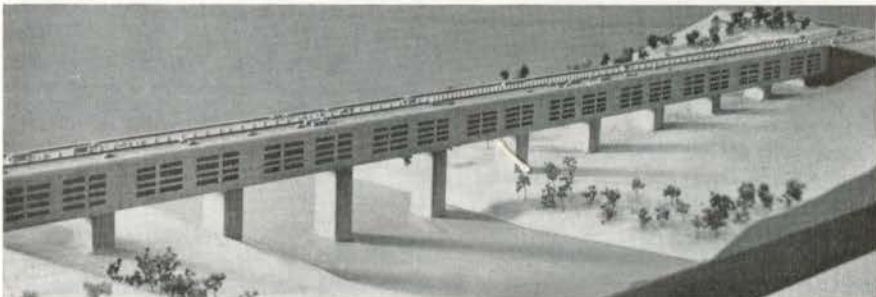
Besides a completed application form, a candidate for admission to the third year in architecture must submit to the Registrar an official transcript issued by his former university giving in detail the courses completed with the standing or grade in each, and a letter of recommendation supporting the candidate's application from the head of his department.



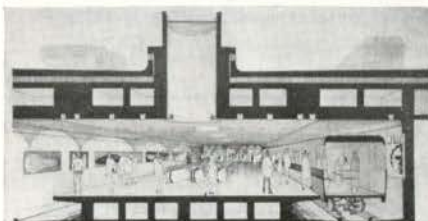
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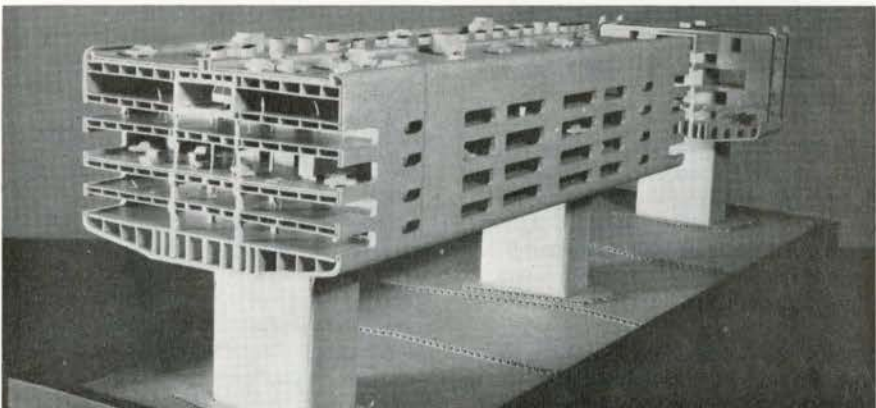
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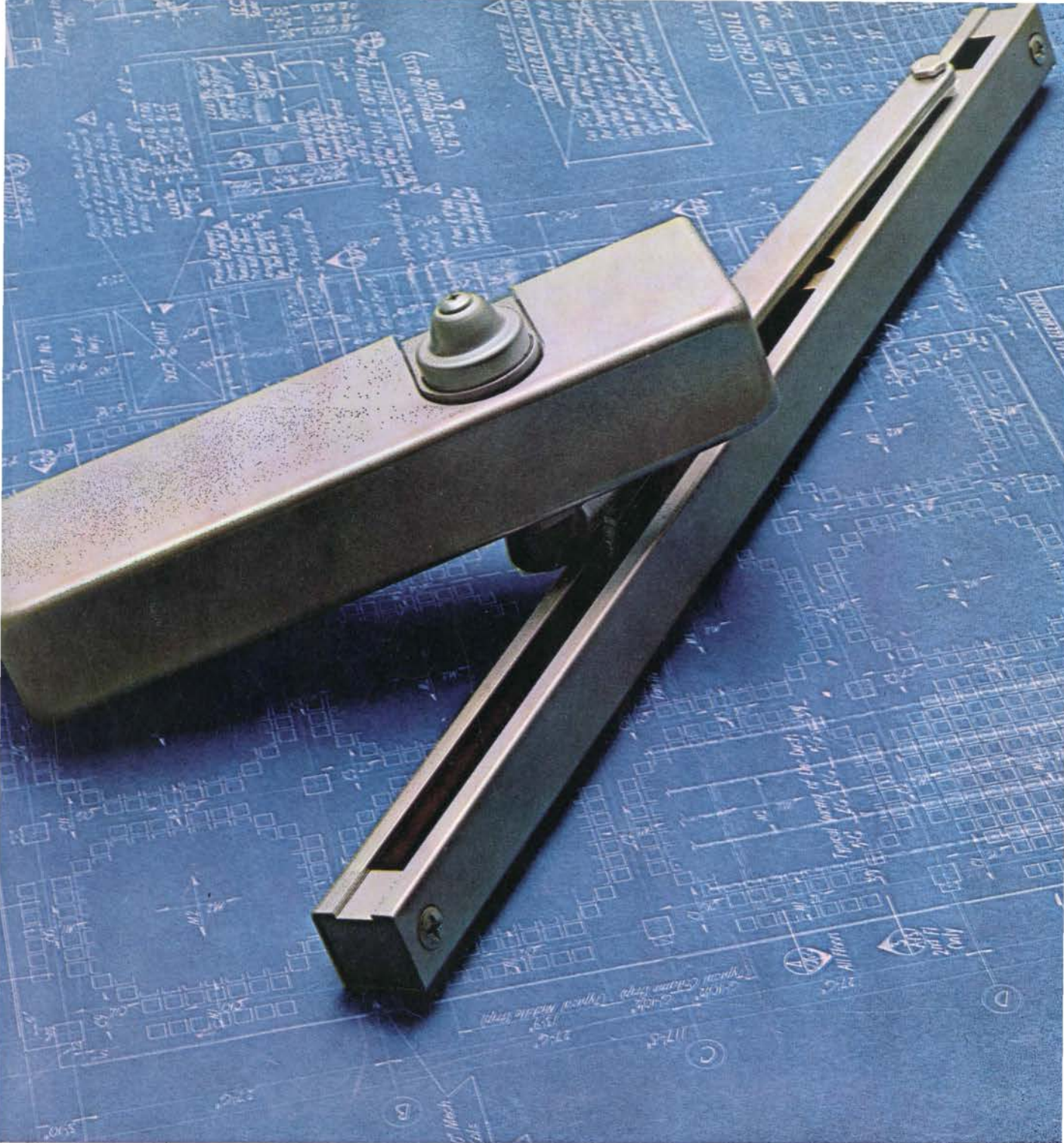
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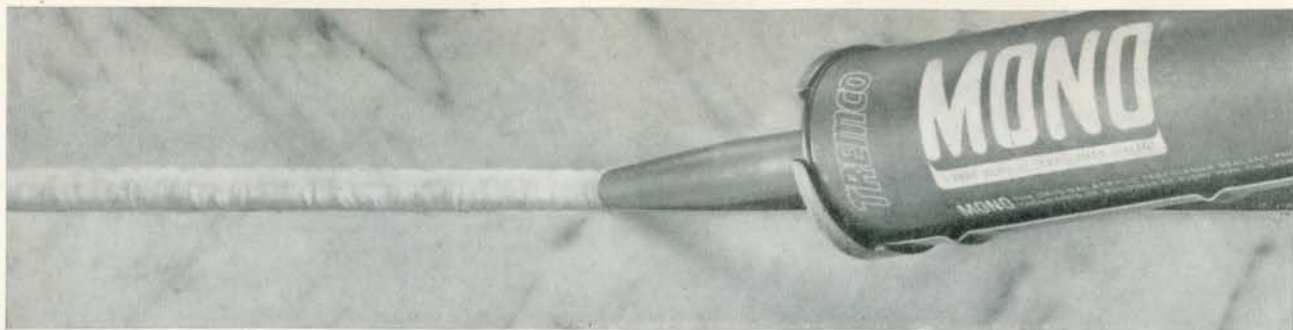


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Architect Calls for Comments*The Editors:*

I came across the following Architectural comments some time ago. It would be of interest to have the profession's reactions with regard to the validity of these comments.

"Architecture and design is not important per se – it is only important in relation to human use and activity".

"The more positive the design character of interior space the less significant becomes the human activity."

"The pursuit of status by clients and architects is the major deterrent to good architecture."

"Our communities accurately reflect our deepest beliefs – these might be expressed

as a competitive drive for success, a fear of failure, a pursuit of status – these beliefs are promoted and reinforced by education, television, radio, press, and magazines."

"Any significant change in our communities is dependent upon a change in our basic beliefs."

Phillip Carter Johnson, MRAIC, London, Ont.

Rain Screen Principle*The Editor:*

An article contributed by Raymond T. Affleck entitled "Recent Canadian Experience in Wall Design" in the February issue of *Architecture Canada*, and in particular that section which dealt with the Arts & Culture Centre in St John's, Newfoundland,

is misleading in one minor respect, which is where the writer claims this technique to have been a new departure for this part of Canada. As the partner in charge of architectural design for two new buildings for Memorial University at that time, I distinctly remember showing Mr Affleck (with whom we were associated on the Arts & Culture Centre) our efforts incorporating this "rain-screen" principle. Our buildings were then approximately two-thirds built, having been started in the fall of 1964, a full year before the start of the Arts Centre.

We agree with the writer that this system has proven to be the best to date in dealing with our weather conditions.

Angus Campbell, MRAIC, St John's

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2 Exposed aggregate concrete panels for the Centennial Building, Edmonton.



3 Headquarters of The Manitoba Teachers Society, Winnipeg, winner of the Manitoba Association of Architects 1968 Award of Excellence.

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4 Brunswick House, Saint John, N.B., features precast concrete construction.



5 Precast concrete panels for the President Kennedy Office Building, Montreal.



6 Cast-in-place and precast concrete blend pleasingly at the Mathematics and Computer Centre of the University of Waterloo.

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2. Archts.: Sinclair, Skakun, Naito
 Cons. Struct. Engrs.: Read, Jones, Christoffersen Ltd.
 Genl. Contr.: Hashman Construction (Edmonton) Ltd.
 Precast and prestressed concrete members: Con-Force
 Products Ltd.

Ready-mixed concrete: Alberta Concrete Products Co. Ltd.

3. Archts.: Libling, Michener & Associates
 Cons. Struct. Engr.: R. Lazar
 Genl. Contr.: Kraft Construction Co. Ltd.
 Ready-mixed concrete: Winnipeg Supply & Fuel Co. Ltd.

4. Archts.: Elmar Tampold, J. Malcolm Wells
 Genl. Contr.: Ferro-Chemi-Crete Engineering Ltd.
 Precast concrete units: Strescon Ltd.
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5. Archt.: Reuben Fisher
 Cons. Struct. Engr.: Irving S. Backler
 Genl. Contr.: Magil Construction Ltd.
 Precast concrete panels: Francon Limited

6. Archts.: Webb, Zerafa, Menkes and Matthews
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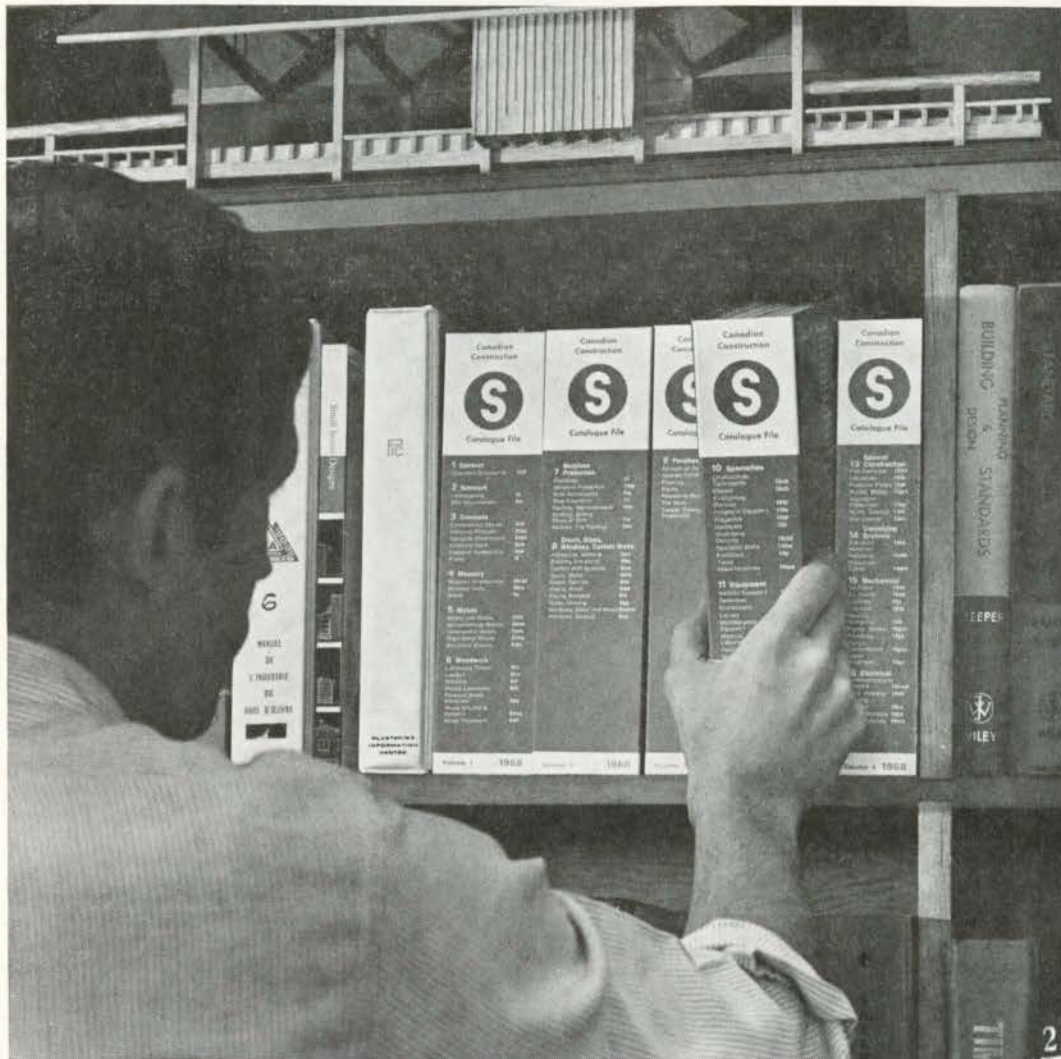
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Advertisements for positions wanted or vacant, appointments, changes of address, registration notices, notices of practices including establishment or changes in partnership, etc., are published as notices free to the membership.

Registrations

Ontario Association of Architects, March 28, 1969: Philip H. Beinhaker, B.Arch; Garth L. Bent, B.Arch; Tore Bjornstad, B.Arch; Cecil F. Davies, Bruce L. Fiar, B.Arch; Etienne J. Gaboury, B. Arch; Denis L. Lussier, B.Arch, Ian W. Nicoll; J. N. Shukla, B.Arch; Frank J. Sigurdson, M.Arch; John Steel, FRIBA; Oscar G. Vagi; and Andrew Zdanowicz, B.Arch.

Change of Address

Paul Arthur & Associates Limited, Graphic Design Consultants, have moved from 129 Adelaide W, Toronto, to suite 28, 49 Wellington E, Toronto 215, telephone 362-4243.

Practice Note

Effective April 1, 1969, Warren M. Smale, FRAIC, and Leonard W. Dickson, MRAIC, have opened a new practice under the name of Smale/Dickson Architects, 84 Colborne Street N., Simcoe, Ont. and 35 Springbank Ave., Woodstock, Ont.

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Indian architect, diploma, Bombay 1965, five years experience as architectural assistant, two years private practice, seeks position with Canadian firm. Reply Ajit Singh, XV

10260/3, Motia Khan, Loha Mandi, New Delhi - 55

27-year old Venezuelan architect, single, with one year experience, seeks position as assistant architect in Canada to gain experience. Has worked with Ministry of Health in Venezuela, presently working in Puerto Rico. Reply Alfredo Camejo, Placid Court 66, Condado, Puerto Rico 00907.

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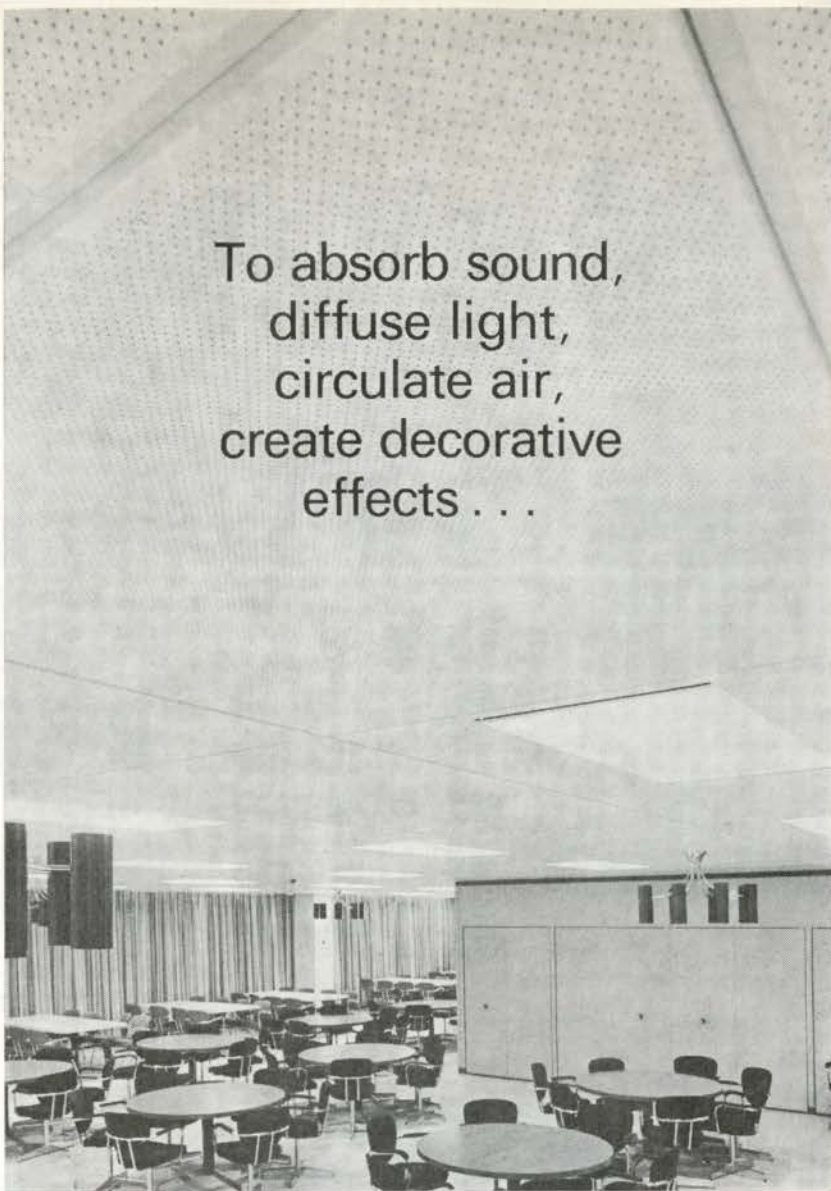
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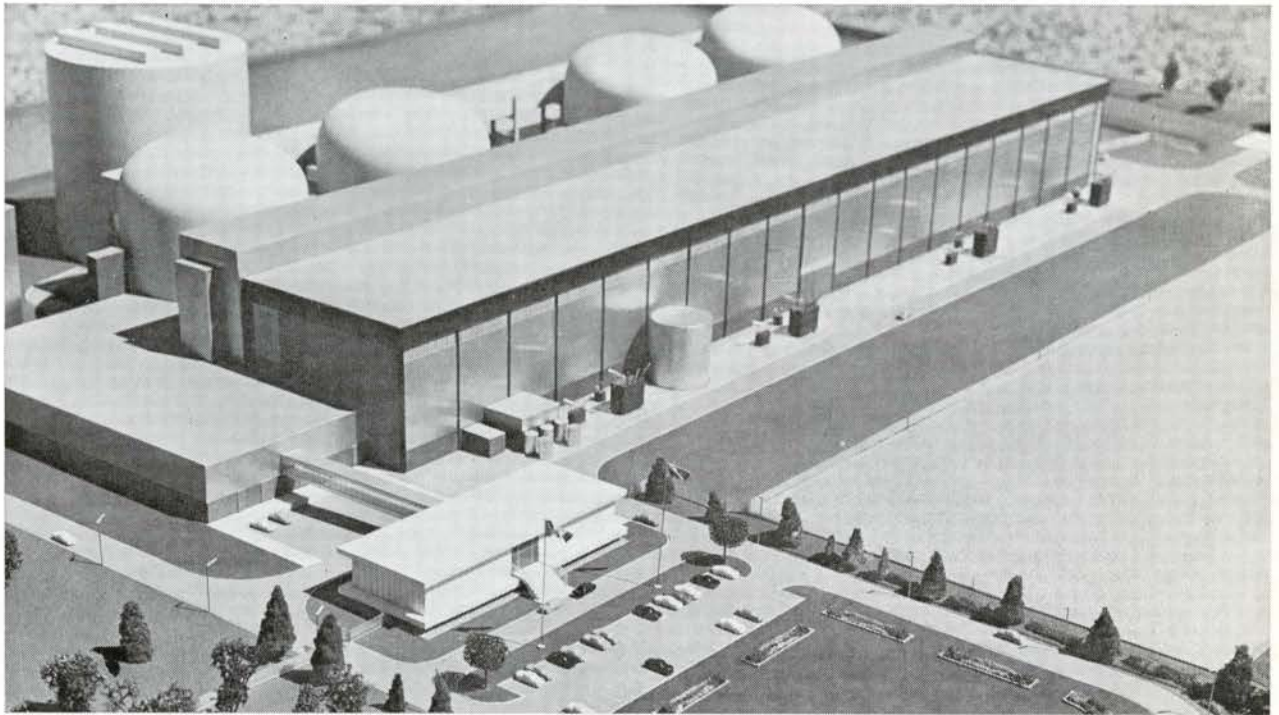


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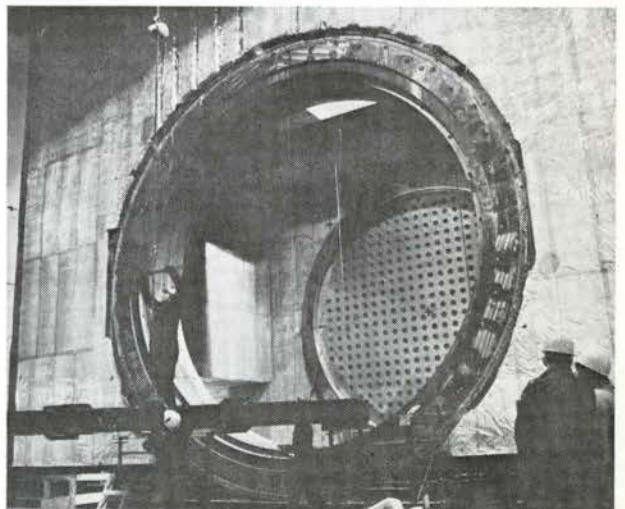
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Wellon Becket & Assoc., Coordinating Architects
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