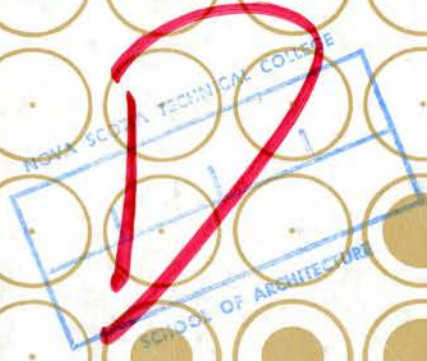


# Architecture Canada

Journal RAIC / La Revue de l'IRAC : March / Mars 1967







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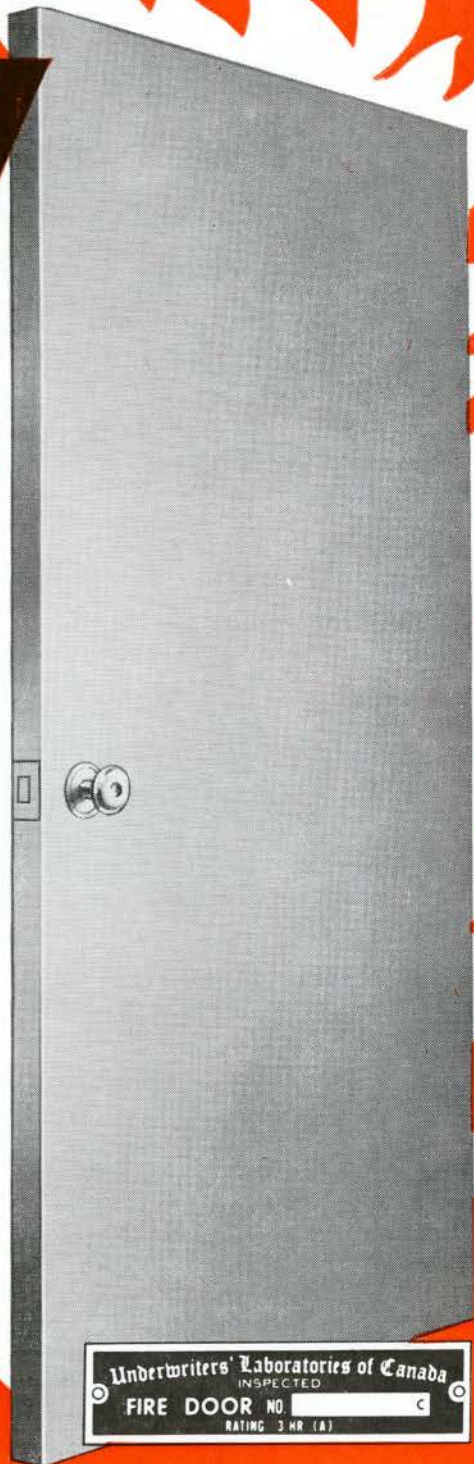
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**Governor-General Georges Vanier**

We join the nation in mourning the passing on March 5 of our Governor-General, Georges Vanier, an Honorary Fellow of the Royal Institute. The tributes paid to his memory reflect the respect and affection in which he was held by his fellow Canadians.

**MAA Annual Meeting**

A development plan for Winnipeg was again this year's major issue at the Manitoba Association of Architect's annual meeting held January 28. Retiring President Dennis Carter announced in his address that a study and brief was presented to Metro Winnipeg January 23 by the MAA Civic Development and Planning Committee. This standing committee was formed last year as a result of the 1965 "Architects Appeal for Action". Chairman A. H. Waisman emphasized in his report that the "Appeal" had also opened the door for discussions with other groups concerned with the promotion of good planning.

Mel Michener was elected 1967 President. New officers are J. H. Christie, vice-president; Dennis Carter, past-president; and councillors Carl Nelson, Michael Rattray, Al Tomcej, Alan Hanna, Donald Baldwin, Etienne Gaboury and J. E. Searle, (F), RAIC representative.

The meeting paid tribute to Dean John Russell (F) who died on December 28, 1966.

**NSAA Annual Meeting**

Nova Scotia architects moved to increase their annual membership dues at the 35th Annual Meeting held January 28 in Halifax.

Following the business session and the luncheon address by the retiring president, J.P. Dumaresq, Dr. H. Gores, President of the Educational Facilities Laboratory, New York, was special guest at a seminar and discussion group on "Educational Changes and Architectural Consequences".

New president is M. H. F. Harrington. Officers are E. M. Byrne, vice-president; G. W. Rogers, honorary secretary; R. J. Flinn, honorary treasurer; A. F. Duffus,



*Nova Scotia Association of Architects 1967 Council, front, left to right: G. W. Rogers, Honorary Secretary; H. M. F. Harrington, President; E. M. Byrne, Vice-President; R. J. Flinn, Honorary Treasurer. Back: A. F. Duffus, Past President; J. P. Dumaresq, C. H. Cullum, J. N. Way, Councillors.*



*Saskatchewan Association of Architects 1967 Council, front, left to right: F. W. Price, RAIC Executive Director; A. Hermann, Past President; D. Paine, President; P. Scott, Secretary-Treasurer. Back: Prof. Howard Douglas (University Representative); Ir. E. H. Grolle, 1st Vice-President; C. Wiens, Councillor; G. Arnott, 2nd Vice-President.*

past president; Councillors, J. P. Dumaresq, C. H. Cullum, J. N. Way.

**SAA Annual Assembly**

The establishment of a school of architecture for Saskatchewan was the subject of a panel discussion the second day of the Saskatchewan Annual Meeting February 2 and 3 in Saskatoon. Discussed were mechanics of establishing a teaching unit in the University of Saskatchewan, the

choice of attaching it to a particular faculty (engineering, fine arts or social sciences), financing and the curriculum. Representations have already been made to the principal of the Regina campus and it is hoped the matter will be considered this spring by the university senate and board of governors.

Planning of the RAIC annual Assembly in Regina in 1968 was discussed and G. R. Arnott, Regina, was appointed Host Committee Chairman.



New officers are M. D. Paine, president; A. Herman, past president; P. M. Scott, honorary secretary-treasurer; E. H. Grolle, first vice-president; G. R. Arnott, second vice-president, and C. Wiens, councillor at large.

### 1967 Massey Medal Finalists

100 finalists in the Centennial Awards Competition for the Massey Medals for Architecture were judged February 9-10 from a record number of 429 entries. The Jury consisted of Prof. Henry Elder, MRAIC, Vancouver, Chairman; Etienne J. Gaboury, MRAIC, Winnipeg; Gerhard Kallman, AIA, Boston; Ian R. MacLennan, FRAIC, Ottawa, and James A. Murray, FRAIC, Toronto. Dr Thomas Howarth, FRAIC, was chairman of the RAIC Massey Medals committee.

*Keith L. Graham & Associates, Halifax*  
North End Branch Library, Halifax

*Jean Michaud, Montréal*

Ecole Bois Joli, Saint-Hyacinthe, PQ

*Greenspoon, Freedlander, Dunn, Montreal;*  
*(Luigi Moretti, Rome, Italy)*

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Montreal

*Affleck Desbarats Dimakopoulos Lebensold*  
*Sise; Montreal*

Stephen Leacock Building, McGill University,  
Montreal; Laval Civic Centre, Laval, PQ  
Confederation Centre, Charlottetown, PEI;  
McGill University Centre, Montreal

*Papineau, Gérin-Lajoie, Le Blanc, Montreal*  
Girls' Residence, University of Montreal,  
Montreal; Regina Caeli School, Pointe  
Claire, PQ; Residence, Ile Verte, PQ;  
Peel Subway Station, Montreal

*David, Barott, Boulva, Montreal*

Blood Bank, Canadian Red Cross Society,  
Montreal

*Moshe Safdie & David, Barrott, Boulva;*  
*Montreal*

Habitat '67 Phase 1, Montreal

*Dobush Stewart Bourke Longpre Marchand*  
*Goudreau, Montreal*

Dorval Arena, Dorval, PQ

*Victor Prus, Montreal*

Subway Station "Bonaventure", Montreal

*Victor Prus and Maurice Desnoyer, Montreal*  
Expo Stadium (Automotive Stadium),  
Montreal

*St-Gelais, Tremblay & Tremblay, Québec*  
Résidence de M. Charles Tremblay, Alma,  
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Cap Rouge, PQ

*Prack & Prack, Hamilton*

School of Physical Education, McMaster  
University, Hamilton

*Wallis & Bywater, North Bay*

The North Bay Public Library

*Murray & Murray, Ottawa*

St Patrick's College Library and School of  
Social Welfare, Ottawa; Notre Dame High  
School, Ottawa

*Barry Leonard Padolsky, Ottawa*

Frank B. Mays House, South Hull, PQ

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*Greenspoon, Freedlander & Dunn, Ottawa*  
Brooke Claxton Administration Building,  
Ottawa

*Dunlop, Wardell, Matsui, Aitken, Islington*

Etobicoke Public Library, Richview,  
Etobicoke, Ont.

*C. Blakeway Millar, Islington*

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Norval, Ont.

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Building, Boiler Plan and Car Department  
Building, Ottawa; Abitibi Paper Company Ltd,  
Research Centre, Sheridan Park, Township  
of Toronto; Thorvaldson Building, University  
of Saskatchewan, Saskatoon, Sask.

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Harper Hall Women's Residence, Mount  
Allison University, Sackville, NB; Library for  
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Vernon, BC; Vernon Civic Centre, City Hall,  
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#### NCC Appoints R. M. Leary to Staff

A top planner from the Washington national capital region, Robert M. Leary, has been appointed Assistant General Manager of the Planning and Design Branch of the National Capital Commission at Ottawa. The new position is designed to give greater professional capacity to the NCC for its fundamental role of long range planning and development of Canada's National Capital Region.

#### Appointments in School Planning and Building Research

Stanislaw T. Orłowski, MRAIC, ARIBA, and J. Kenny Young, MRAIC, ARIBA, have been appointed Assistant Research Architects with the School Planning and Building Research Division of the Ontario Department of Education. Mr Orłowski is a graduate of Leicester School of Architecture in Leicester, England. He also holds a Master of Science in Architecture from London University. In their new positions with the Ontario Department of Education Mr Orłowski's architectural research responsibilities will be concerned primarily with post-secondary institutions and Mr Young's with elementary and secondary schools.

#### Revised Curriculum for Landscape Architecture and Regional Planning — U. of Pennsylvania

The Department of Landscape Architecture and Regional Planning, Graduate School of Fine Arts, University of Pennsylvania, announces that a revised curriculum has been designed to accommodate students with a variety of academic and professional backgrounds in alternative courses of study toward a Master's Degree in Landscape Architecture.

#### 9th UIA Congress, Prague, July 3-7

"Architecture and Environment" is the theme of the 9th UIA Congress to be held July 3-7 in Prague, Czechoslovakia. Aspects of the problem will be discussed in five working groups: The organization of the settlement pattern, the historical heritage and the present, the living environment, industry and the working environment, and man and the landscape.

The RAIC delegation headed by the Institute's representative, Joseph Pettick of Regina, will include, among others, the heads of Schools of Architecture in Canada.

Papers will be presented by Dr Thomas Howarth (F) and Prof. Henry Elder.

Tours ranging from one to seven days will be organized for the week following the Congress.

Programs are available from RAIC Headquarters, Ottawa and additional information is obtainable from Joseph Pettick, 2236 College Avenue, Regina.

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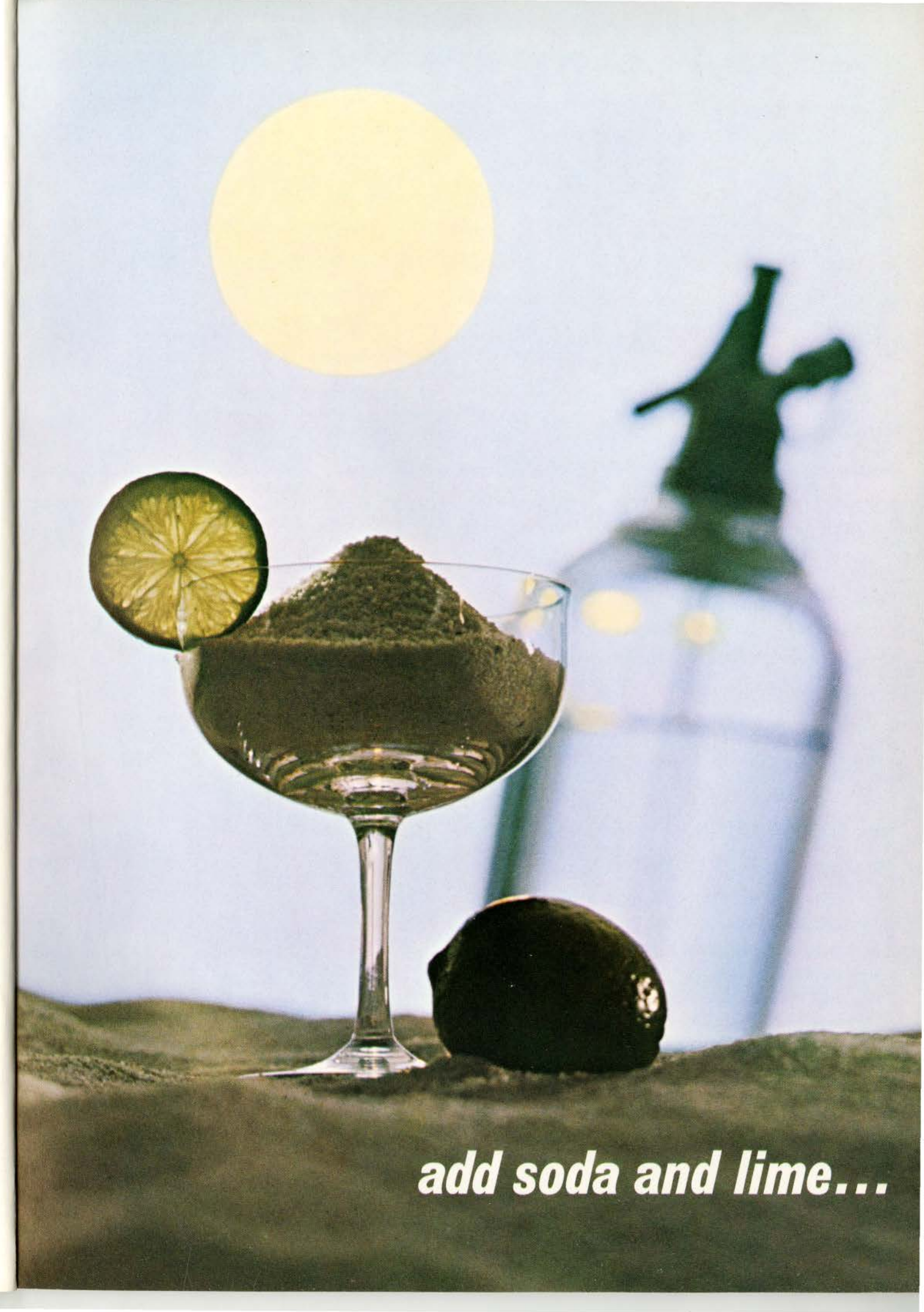
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Architects: Webb, Zerafa, Menkes. Owner-builder: Yolles and Rotenberg Limited.



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Available in 16 decorator colours

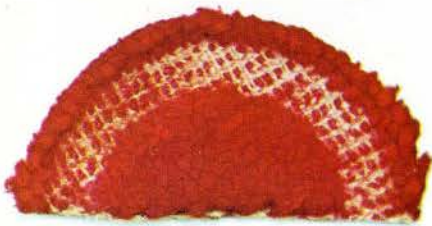
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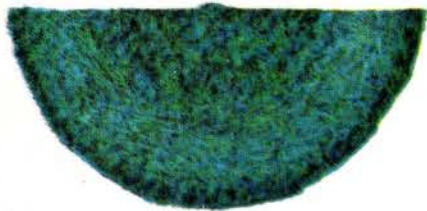
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# Tests prove the superiority of Ozite Outdoor-Indoor Carpet made with Vectra fiber over floor covering costing twice as much!



3,000 revolutions of abrasion test have acrylic carpet down to the backing!



But, the abrasion wheel (Standard Taber Abraser), which can quickly spin off years of hard wear, barely makes a dent in new Ozite Town 'N' Terrace Carpet made of Vectra olefin fiber. Ozite's unique manufacturing method permits the use of staple fiber of higher tensile strength than normally used in regular carpeting.

## Fadeometer Test



Wool  
100 hours

Acrylic  
160 hours



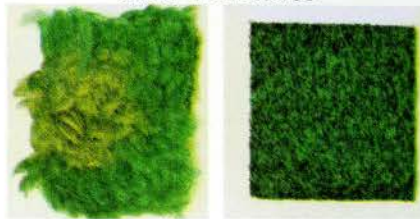
Nylon  
100 hours

Polypropylene  
without stabilizers  
216 hours

Polypropylene  
with stabilizers  
Over 2,000 hours

Most manufacturers of piece-dyed carpets try for 40 to 60 hours fade resistance. Even stock-dyed carpets strain to reach 200 hours. The special stabilizing chemicals used in the solution-dyed polypropylene fiber enable it to resist ultra-violet rays—and permit Ozite to guarantee its carpet to withstand 500-hour Fadeometer test without discoloration!

## Stain Resistance



Wool

Polypropylene

Vectra olefin fiber is resistant to most harmful chemicals that tend to bleach and stain competitive products, including most acids, alkalis, salts, solvents, and oxidizing agents. Ozite Outdoor-Indoor Carpet resists spotting and bleaching from ammonia, chlorine, coffee, tea, soft drinks, shoe polish, merthiolate, cat-sap—practically everything! Insects and mildew do not attack polypropylene. Fungus growth is not supported by the fiber itself. Won't shrink, rot or mildew. And it's virtually non-static. Non-allergenic, too.

Competitive carpet fibers absorb moisture to varying degrees, up to 27%.

A filament of Vectra reacts to water much like a solid glass rod. The water rolls right off. Vectra olefin fiber has zero (0%) moisture regain.



Other fiber

Vectra



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**From Institute Headquarters**

RAIC Council met in the OAA Boardroom, Toronto, on January 10, with President Charles Fowler (F) in the Chair. Honorary Treasurer William G. Leithead (F) presented budget for 1967, based on total revenue of \$98,780. The budget was approved provisionally.

Council considered recommendations of the Committee on Preservation of Historic Buildings concerning the Old City Hall of Toronto. Since OAA had taken action on this matter, and had not referred it to RAIC, it was agreed that no further steps could be taken. The President reported on developments in implementing the recommendations of the Survey of the Profession, concerning Code of Professional Conduct, Uniform Registration, Architects' Acts, Education, Handbook of Practice. It was agreed that the President should express the appreciation of the Institute to OAA for undertaking preparation and publication of the Accounting Manual, and for making it available to all members. It was agreed that assessment of our membership undertakings in UIA and the Commonwealth Association of Architects be reviewed, to determine their value to our members. Voting delegates to the UIA Congress, July 1967, were appointed as follows: C. A. E. Fowler, John L. Davies, Thomas Howarth, Joseph Pettick, Hazen Sise. On completion of balloting by the Electoral Board, Council adopted By-laws Article XXVIII, as revised. Proposed amendment of Article XXVI was referred to the Electoral Board for approval.

Proposal of the Canadian Construction Association to increase the price to members of joint use contract documents was not approved. It was felt that this is an important service to members which should be maintained at present cost.

Mr Leithead reported on plans for the coming RAIC Assembly, and on discussions that he and Vice-President James E. Searle (F) had in Chicago for the joint Convention in June 1969 with AIA.

Members have been requested to co-operate

with the Federal Government Survey of Professional, Scientific and Technical Manpower by completing the questionnaire promptly.

The Executive Director reported on progress in revision of the standard form of agreement between Federal Public Works and Consultants. Council will give further study to those sections of the agreement dealing with fees and payment procedures.

The Dominion Archivist is to be advised that the Institute will provide full co-operation toward establishing a National Architectural Archives.

Recommendations of the Competitions Committee for approval of a national competition for the design of the Canadian Pavilion at the 1970 World Exhibition in Osaka, Japan, received agreement.

Other subjects on the agenda included staff contracts, contacts with Department of Industry, Honorary Members, National Joint Architect-Engineer Committee, Massey Medals, RAIC Gold Medal, Schools of Architecture, Allied Arts Medal, Historic Sites and Monuments Board of Canada.

Our *Communiqué* item in January concerning charter members of the Institute prompts the observation that two other fine gentlemen have achieved their 60th year of RAIC membership: C. W. U. Chivers (F), Winnipeg, and P. Leonard James (F), Victoria. Mr & Mrs Chivers recently celebrated their diamond wedding anniversary, and received congratulations from a host of architect friends across Canada.

One sad note. Col. Colborne P. Meredith, who had hoped to represent the charter members at our coming Assembly, passed away at his home in Ottawa on January 29.

Dr Gerald Carrothers, architect and town planner, will shortly relinquish his appointment as Director of the Institute for Environmental Studies, University of Pennsylvania, in order to join the CMHC Advisory Group in Ottawa. A native of Saskatoon, Dr Carrothers gained degrees in architecture at the

*continued on overleaf*

**Du siège de l'Institut**

Le Conseil de l'Institut s'est réuni le 10 janvier dans la salle du Conseil de l'AAO, à Toronto, sous la présidence de M. Charles Fowler (F). Le trésorier honoraire, M. William G. Leithead (F), a soumis un budget pour 1967, fondé sur des recettes globales de \$98,780. Ce budget a été provisoirement accepté.

Le Conseil a étudié les recommandations du Comité sur la conservation des bâtiments historiques au sujet de l'ancien hôtel de ville de Toronto. Comme l'AAO a pris cette affaire en main et n'a pas demandé l'intervention de l'Institut, il a été convenu qu'il n'y avait pas lieu de prendre d'autres mesures.

Le président a fait rapport des progrès accomplis dans la mise en oeuvre des recommandations formulées dans l'Enquête sur la profession au sujet du code de conduite professionnelle, l'uniformité en matière d'inscription, les lois sur les architectes, l'enseignement de l'architecture et le manuel de pratique. Le président a été invité par le Conseil à exprimer à l'AAO les remerciements de l'Institut pour avoir préparé et publié le Manuel de comptabilité et l'avoir mis à la portée de tous les membres.

Après que la Commission électorale eut terminé son scrutin, le Conseil a adopté le texte révisé de l'article XXVIII des Règlements. Un projet de modification de l'article XXVI a été à l'approbation de la Commission électorale.

Il a été convenu qu'il y aurait lieu de réexaminer notre participation à l'UIA et à l'Association des architectes du Commonwealth afin de déterminer quels avantages nos membres en retirent. Les membres suivants ont été choisis comme délégués avec voix délibérative au congrès de l'UIA en juillet 1967: MM. C. A. E. Fowler, John L. Davies, Thomas Howarth, Joseph Pettick et Hazen Sise.

Après étude, le Conseil a décidé de ne pas approuver une proposition de l'Association canadienne de la construction demandant un relèvement du prix des formules de contrats



University of Manitoba, in planning at Harvard, and in economics and regional planning at MIT. He is a member of OAA.

Considerable interest was evinced in the recent Toronto exhibition of architectural drawings and furnishings designed by Charles Rennie Mackintosh, the Glasgow architect identified with *Art Nouveau* about 1900. The display was featured in a popular magazine, as was the scholarly book on Mackintosh written by Dr Thomas Howarth, Director of the School of Architecture, University of Toronto.

The Pan Pacific Architectural Citation of the AIA Hawaii Chapter has been accorded this year to Warren and Mahoney, the Christchurch, N.Z., firm which won the recent competition for the Christchurch Town Hall and Civic Centre. Arthur Erickson of Vancouver is a former winner of the award.

The Community Planning Association of Canada will hold a national planning conference in Ottawa, October 8-11 next. Architects are invited to participate: write to CPAC, 425 Gloucester Street, Ottawa 4, Ontario.

Christian Holzapfel KG, a German firm of furniture manufacturers, is promoting an international competition for the design of furniture for home and office use suitable for the year 2000 AD. The purpose of the competition, which is sponsored by the International Council of Societies of Industrial Design, is to find new ideas for the shape, materials design and manufacture of furniture. The competition is open to all architects, architectural students, and members of related disciplines. Total prize money will amount to \$30,000 and will include a first prize of \$10,000. The conditions and further information are available from the Secretary of the Jury, Mr Helmut Walter, District Notary, Code 'Interdesign 2000', 7273 Ebhausen, Germany, or from the organisers at the same address. Entries addressed to the Secretary of the Jury to arrive not later than October 15, 1967.

L'Homme à la "Mod": Montreal architects recently went on a swinging trip called *Total Environment*, featuring Lights, Color, Sound, Shimmers, Pizza, Chianti, Graphics - at the Stable Gallery.

Fred W. Price  
Executive Director

employées à la fois par les architectes et les entrepreneurs. Le Conseil a jugé qu'il s'agit là d'un service important pour les membres, dont le coût ne devrait pas être augmenté.

M. Leithead a fait rapport au sujet des préparatifs en vue du prochain congrès de l'Institut ainsi que des entretiens que lui et le vice-président James E. Searle (F) ont eus à Chicago au sujet du congrès mixte de l'IRAC et de l'AIA en juin 1969. Les membres ont été priés de collaborer avec le gouvernement fédéral dans son relevé de la main-d'oeuvre professionnelle, scientifique et technique en répondant promptement au questionnaire.

Le directeur général a indiqué où en était rendu le travail de révision du modèle de contrat entre le ministère fédéral des Travaux publics et les experts conseils. Le Conseil étudiera de nouveau les articles du contrat visant les honoraires et les modalités de paiement.

On fera savoir à l'archiviste du Canada que l'Institut est disposé à collaborer dans toute la mesure du possible à l'établissement d'archives nationales sur l'architecture. Sur la recommandation du Comité sur les concours, le Conseil a donné son approbation à un concours national pour la création du modèle du pavillon canadien à l'Exposition mondiale d'Osaka (Japon) en 1970. Les autres sujets à l'ordre du jour comprennent les contrats avec le personnel, les relations avec le ministère de l'Industrie, les membres honoraires, le Comité national mixte d'architectes et d'ingénieurs, les Médailles Massey, la médaille d'or de l'Institut, les écoles d'architecture, la médaille des arts connexes, et la Commission des lieux et des monuments historiques du Canada.

Dans notre *Communiqué* de janvier, nous avons mentionné certains membres fondateurs. Nous tenons à ajouter les noms de deux autres architectes très sympathiques qui sont membres de l'Institut depuis soixante ans: MM. C. W. U. Chivers (F) de Winnipeg et P. Leonard James (F) de Victoria. M. et Mme Chivers ont récemment célébré leur soixantième anniversaire de mariage et ont reçu les félicitations d'une foule d'architectes amis de toutes les régions du Canada. Cependant, une note sombre vient de se glisser au tableau. Le colonel Colborne P. Meredith, qui avait espéré représenter les membres fondateurs à la prochaine assemblée, est décédé à sa demeure à Ottawa le 29 janvier.

M. Gerald Carrothers, architecte et urbaniste, abandonnera bientôt son poste de directeur de l'Institut des études sur le milieu, à l'Université de la Pennsylvanie, pour se joindre au groupe consultatif de la SCHL, à Ottawa. M. Carrothers, natif de Saskatoon, a obtenu des grades en architecture à l'Université du Manitoba, en urbanisme à

Harvard et en science économique et en planification régionale au MIT. Il est membre de l'AAO.

La récente exposition à Toronto des plans architecturaux et des dessins d'ameublement de Charles Rennie Mackintosh, architecte de Glasgow qui s'est identifié vers 1900 avec *l'Art Nouveau*, a suscité beaucoup d'intérêt. L'exposition, de même que le livre savant écrit sur M. Mackintosh par M. Thomas Howarth, directeur de l'École d'architecture de Toronto, ont obtenu la vedette dans une revue populaire. La Citation pan-Pacifique en architecture de la succursale d'Hawaii de l'AIA est allée cette année à Warren et Mahoney, maison d'architectes de Christchurch (N.-Z.) gagnante du récent concours visant l'hôtel de ville et le centre municipal de Christchurch. M. Arthur Erickson, de Vancouver, a déjà obtenu cette citation.

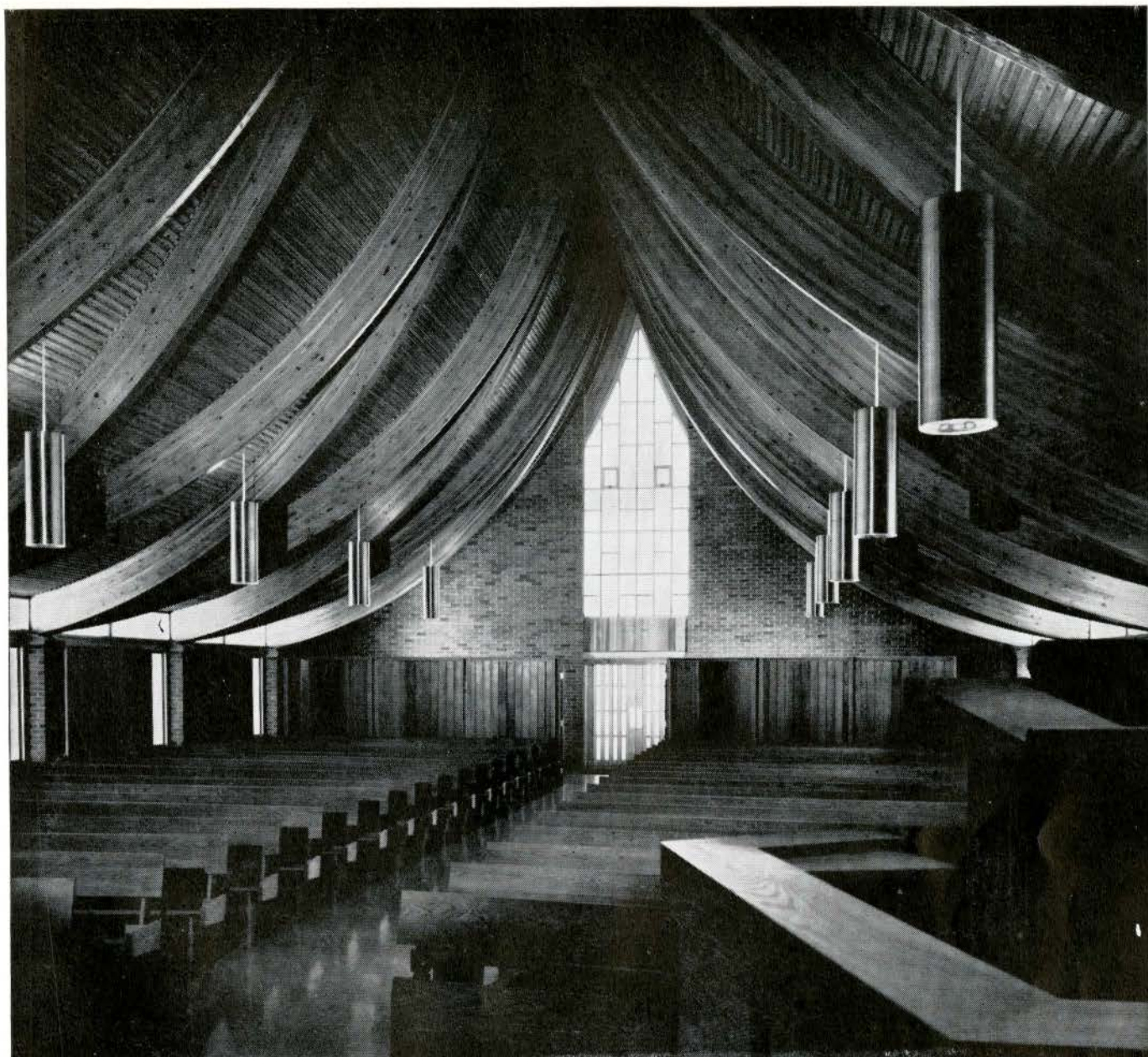
L'Association canadienne d'urbanisme tiendra un colloque national sur l'urbanisme à Ottawa du 8 au 11 octobre prochain. Les architectes sont invités à y participer. Veuillez communiquer avec l'ACU, 425 rue Gloucester, Ottawa 4. (Ontario).

Christian Holzapfel KG, entreprise allemande de meubles, organise un concours international de modèles de meubles de maison et de bureau pour l'an 2000. L'objet du concours, qui est patronné par le Conseil international des Sociétés d'esthétique industrielle, est de trouver de nouvelles idées quant à la forme, aux matériaux et à la fabrication de meubles. Le concours est ouvert à tous les architectes, étudiants en architecture et membres de disciplines connexes. Un total de \$30,000 sera distribué, dont un premier prix de \$10,000. Pour obtenir les conditions et autres détails, il suffit de s'adresser au secrétaire du jury, M. Helmut Walter, notaire de district, Code "Interdesign 2000", 7273 Ebhausen, Allemagne, ou aux organisateurs à la même adresse. Les pièces soumises devront être adressées au secrétaire du jury assez tôt pour qu'elles parviennent à destination au plus tard le 15 octobre 1967.

L'Homme à la "mod": Les architectes de Montréal ont récemment organisé un voyage dansant sous le titre *Une ambiance du tonnerre* avec lumières, sons, les Shimmers, pizza, chianti et arts graphiques, à la Galerie de l'étable.

Fred W. Price  
Le directeur général





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Architect: Salter and Allison, Barrie, Ontario

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**This City Now**

The Art Gallery of Ontario in its Centennial Project has perceptively taken the hint from the "Total Environment" boys. For the exhibition "This City Now" the designers (Arnold Rockman, Exhibition Co-director, A. J. Diamond, MRAIC Exhibition Co-director and Designer, Richard Saul Wurman, AIA, Exhibition Consultant) have attempted to turn the Gallery itself into a total environment work of art. When any group of people can turn a production of looking at the phenomena of life into a visual form worth contemplating it can rightly be termed a work of art.

The exhibition is divided into two parts, The Situation Now and Aspirations for the Future

**The Situation Now**

With as smart a piece of "McLuhanism" as you could wish to see (see *Arts Canada* Feb. 67) the exhibition has framed itself into the "mirror of Medusa" and the public as Perseus can gaze upon the many headed monster. Through talking "totem poles" you may hear the victims voice their protest at being frozen into immobility through a too intimate glance into the glittering eye of the Medusian metropolis.

**The Mirror of the Future Offers an Alternative - or does it?**

The ideas of the exhibition show astute perception by those in charge showing preference in this "centenary" business, to let us see ourselves *Now* rather than through the past. It suggests we shape our future none the less heroically but with a great deal more aesthetic perception in the new century.

The idea is without doubt a good one. In estimating the pros and cons of the assembly of the exhibit, we must never lose sight of this. "Gallery snobs" will undoubtedly capitalize on shortcomings. Their own ideas might have been to play safe by pointing up the "glorious" past with redeemed images of an artistic iconography of a lost and confused 100 years. They are wrong.

The prestige value to Toronto in being at last a city mature enough for self criticism by treating the idea of a city as a work of art in its own growth is commendable. The pity of it is that as a "total form" the exhibition has not come off. The designers, in taking over an artist's role of creating "total image" in a "total environment" gesture have lacked the skill manifest by more able performers such as Les Levine (who by example in preceding events) gave the lead in how to subjugate that uncompromising Victorian gallery chamber into an act of art.

The failure of "This City Now" seems to be the usual failure of architects to understand the integration of various cells into a whole and how to use the "services" of artists for such a purpose. Indeed this exhibition shows all the dilemmas of the real thing . . . an inability to co-ordinate into a total form. Certainly the collected "igloos" of photographs and commercial impedimenta have failed to distract the public from wandering to the other more visible and compelling images of the professional artists in the adjacent courts.

This is a reason why, in part, ideas for the future fail to be persuasive enough. Hopelessly the atmosphere of the public meandering was that of mildly interested somnambulism reminiscent of the CNE patrons of which the show vaguely reminds one. All this is a pity.

The use of the creative artist here is meagre. Three "talking totems", some weeping banners and sgraffiti" walls blown up by local students from the transparencies sent up by New York artist, Joyce Weiland, are in the true Pop Art imagery. They would rightly be as much at home in Eaton's Bargain Ballyhoos or the CNE itself. The sgraffiti walls might well be the natural scribbles of an outraged adolescent or other urban wit if only our subway and public toilettries were not forever sealed from defilement by ceramic asepticism. Whether a work of art is indeed a powerful instrument for moralizing or not (for art itself poses no moral) is a moot point. Did Guernica help the Spanish war throes, or Goya hasten social reform? I doubt it. However, the power of Pop Art to highlight our new landscape to the general public is not in doubt. For this reason I rather would wish the good ideas of this exhibition had been

expressed with more help from the conceptual image maker and persuader. To quote a local architect who visited the show "The committee and architects are guilty of segmented thinking: smog, traffic, slums are to them separate things, the artist sees them as a total image environment." Art in the Art Gallery then, is not a bad idea either. This City Now runs until March 26th.

**Crafts for Architecture**

"Crafts for Architecture", sponsored by the School of Architecture, University of Toronto and the Ontario Crafts Foundation conjunctively with the organization of the Allied Arts Department of *Architecture Canada* is an attempt by those concerned, the sponsors and the craftsmen, to show the new role taken by the contemporary craftsman in the world of Canadian Architecture today. It brings together photographs of work in situ (the contribution of the architects), a collection of over 100 colored transparencies of architectural craft work of Canadian craftsmen and a background of work contributed by 38 selected professional craftsmen working with architects. This collection of hangings, tapestries, stained glass, batiks, metal and experimental ceramics (total value over \$3000) points up the awareness in re-evaluating the position of handcrafts by the best contemporary minds working in this field.

Creative designers have found professional places in today's society as designer-architects, with the builder-engineer as his artisan. In industry he has become the creator of prototypes and forms for mass production. However, there still persists that obstinate breed of man who might well through creative idea be the designer of the end production for others, but has an aching preference to produce not only art but artifacts of his own idea. He has the persuasion to a production of uniqueness. The contemporary handcraftsman gives us the choice of individuality over conformation to mass form or prototype.

Has that type of artifact, tapestry, stained glass, wall decoration, sanctuary light, etc. a place in today's architectural decor? Has it any advantages over the mass produced item? It has, not because of superiority of



1

"Talking Totem Poles", entrance display at This City Now  
Etalage à l'entrée de l'exposition This City Now

design or production, for often industrial design products are very superior articles, but because the point of difference lies in the quality of uniqueness of the custom-made article and its ability to provide the "surprise" element lacking in a world which for economic reason too often submits to mass form.

The challenge is being met, as can be seen in this exhibition, by the contemporary professional craftsman to shake off sentimental ties of "lost traditions" and be a true innovator of contemporary imagery with new materials as well as old. With the fruits of his hands he compensates metropolitan man for the loss of nature's

aesthetics with the true flowers of the cities forest of architectural monoliths—man's artistic productions.

Hand in hand, architect and artist, here show to a delighted public the value of custom-made "architectural clothing" of hooked rugs, stained glass and other inventions by those dedicated to enlivening our arid city environment. Let there be no confusion. Art has its disturbing side and also its reassuring element. Creative handcraft provides its own beguilements to assaulted aesthetics.

Because this type of exhibition would be a



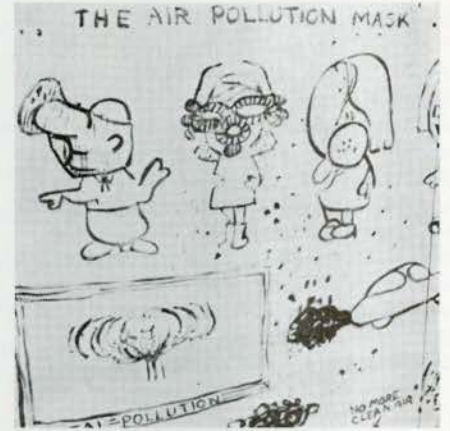
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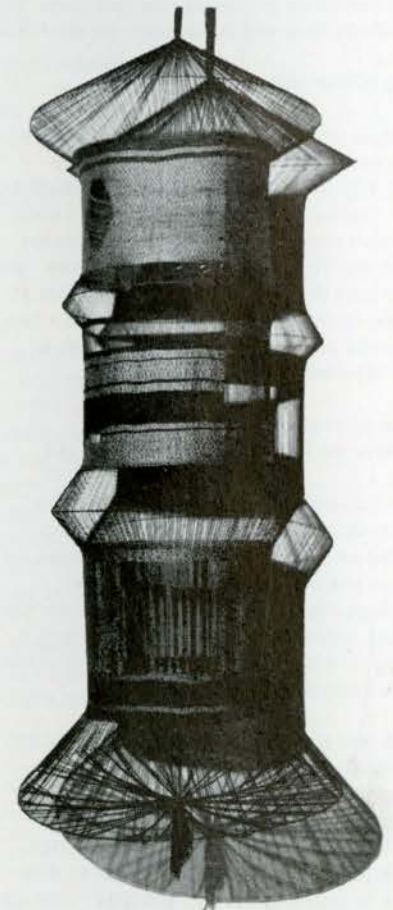
Wall sgraffiti by Joyce Wieland, This City Now  
Sgraffites par Joyce Wieland, exposition This City Now

3

"Kamin" 7½ x 3' diameter, woven construction by Charlotte Lindgren, exhibitor in Crafts for Architecture Exhibition  
Construction en laine tissée par Charlotte Lindgren, exposante à l'exposition Crafts for Architecture



2



3



welcome addition to the art scene all over Canada where promotion is often limited to the east, the graphic section of the exhibition is available to any chapter of the RAIC or other provincial associations on request to the Allied Arts Department. Another innovation which might be copied is that of the Toronto Chapter who arranged a special evening on March 15th when the artists and architects met at the exhibition hall. Dates of exhibition March 9 to 29.

### Striking Attitudes . . . Arts Canada

*Arts Canada*, as promised, has at last emerged from its old chrysalis *Canadian Art*. The new "butterfly" is somewhat uncertain in its maiden flight, and falls short of the "spectacular" show promised in pre-publication blurbs. However, in good faith, time will tell if the still unfurled pinions are capable of the premature promises. In striking his breezy, incoherent and somewhat declassé attitudes, its new young editor displays the best and worst in youthful enterprise. By now Barry Lord must be well aware of the complaints and criticism of a generally disappointed public. However, welcome or unwelcome, it is certainly a change. Positive and negative qualities are there to be assessed intelligently for future issues.

### artscan

On the positive side "Arts Scan" (not "Arts Can", as popular corruption gleefully mouths it) is a decidedly good publishing idea and is a speedy, less costly way of presenting timely but transitory topical reviews and news, etc. What *artscan* needs is better organizing of writers and commissioning of their future commitments rather than the catch as can attitude of hasty coverage. The idea of the "precious" format of permanent material being separated into bookshelf material could be excellent if the contents and writing were worthy, or as contentious, as projected promises led us to believe. As for the graphic layout, it is more of an unfortunate "happening" than a format one can validly criticize. At best it can be accepted as a hasty first effort rather than considered policy for the future.

In conclusion, the general packaging of the three items is dangerously in line with the "Pop" scene of super-market give-away philosophy. The change has exposed some good ideas which need a certain maturity and a sense of quality to eventually achieve an art magazine that makes a separate contribution to publication and validates its existence beyond, perhaps, learning French or underwriting a good translation of *Vie des Arts* of Quebec.

### Good Save! An Amended Criticism

The above criticism reviewed the first edition of the new *Arts Canada*. The second edition calls for a recast of opinion.

Three months ago *Architecture Canada* was given an award for the greatest improvement

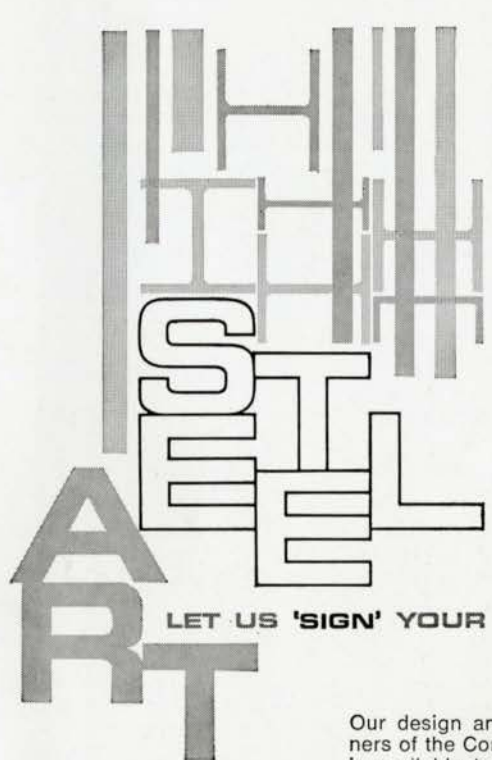
of a publication (institutional, professional publications category) for North America. I hereby nominate *Arts Canada* for the greatest improvement "edition to edition" amongst new Canadian publications.

The new edition lives up to a great deal of its pre-publication promises. The good ideas are better handled and the vital scene of "theatrical involvement" in art, well spelled out. Netting the lion of the moment to introduce the theme was smart trawling from the sea of McLuhan smelts spawned in shoals amongst societies and Universities. An apt use of his thought improvisations is more valuable than sitting at the feet of our modern Socrates and evidences the kind of

perception he best displays.

In all the latest edition is bright, breezy and "with" it. Its cheerful editor displaying the youthful qualities I speak of, "the best, as well as the worst" makes no excuses but says simply, "We are learning how to do it". It is refreshing to see in such admission the advantage of speedy recovery without the face saving tactics usually employed under criticism by more mature but none the less inadequate ventures in the community. Good wishes and much more optimism in hoping that *Arts Canada* becomes the true voice of the new and vital world of contemporary arts.

Anita Aarons



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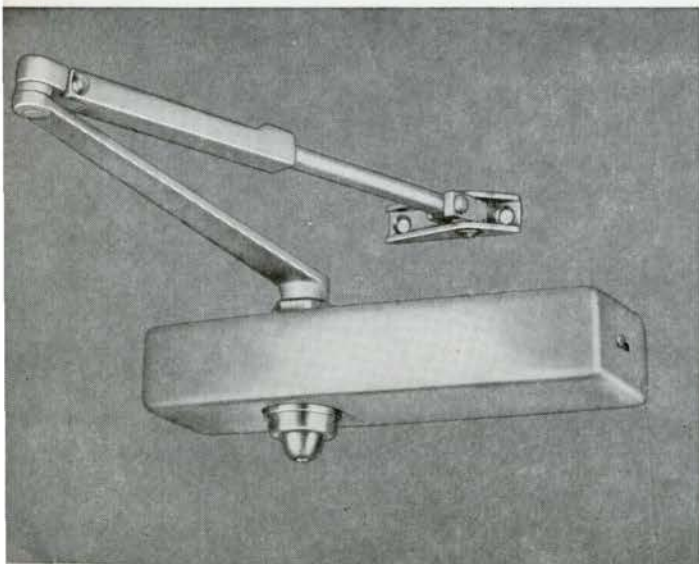
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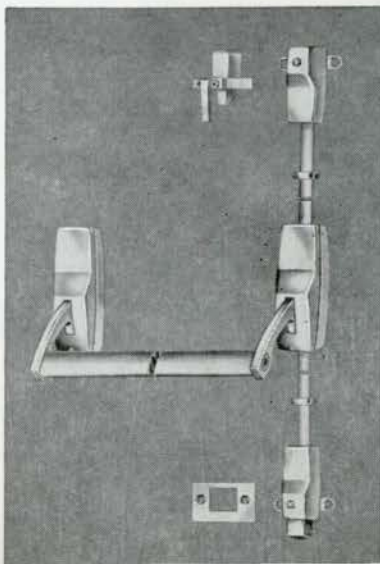


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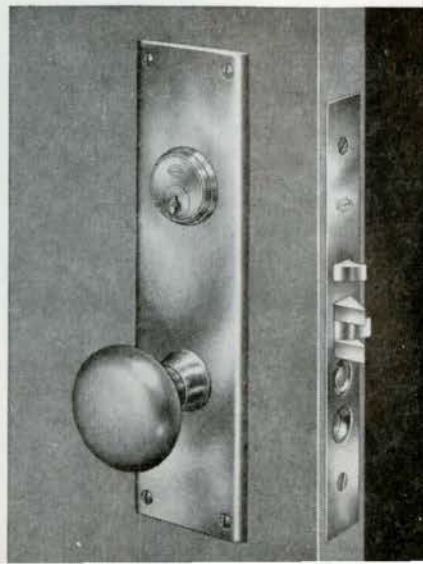
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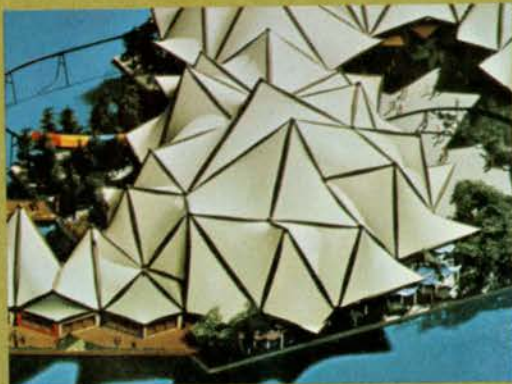
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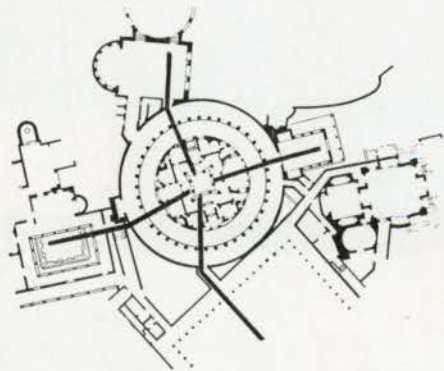


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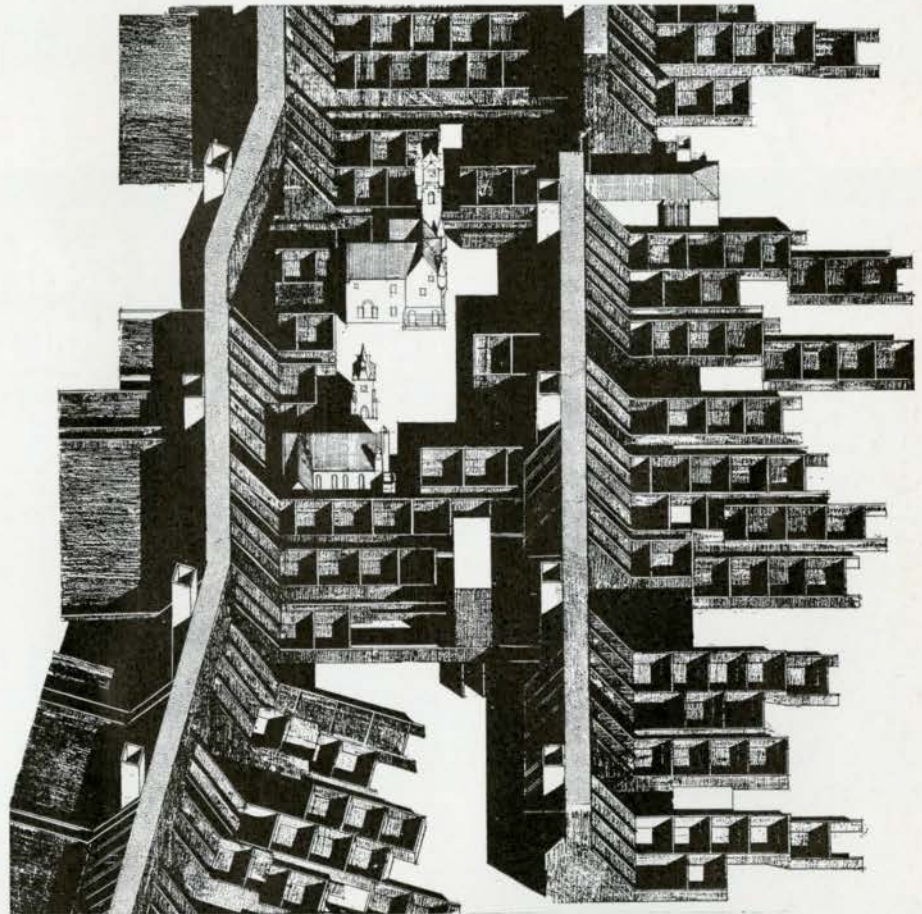


The *Architectural Record* (1) has published a portion of what promises to be a beautiful book: "Design of Cities" by Philadelphia's Executive Director of Planning, Edmund Bacon. Bacon's purpose is to dispel the idea, so widely and uncritically held, that cities are a kind of grand accident, beyond the control of the human will, and that they respond only to some immutable law "given a clear vision of a design idea, the multiplicity of wills that constitute our contemporary democratic process can coalesce into positive, unified action on a scale large enough to change substantially the character of a city". The book deliberately limits its focus to exclude the political social and economic forces which have been factors in shaping cities. While it might be valid to isolate aspects in a study of existing and past forms of city, it is dangerous to *proceed* with the form idea as priority in urban design. While visual identity might thereby be achieved, this could, in all probability, arrest the development of relevant social, political and economic criteria.

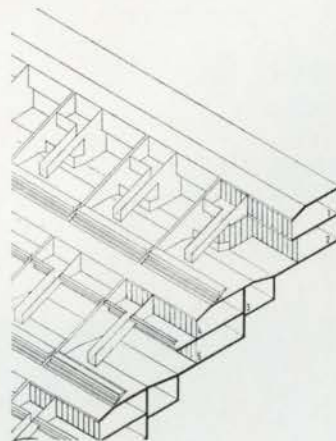


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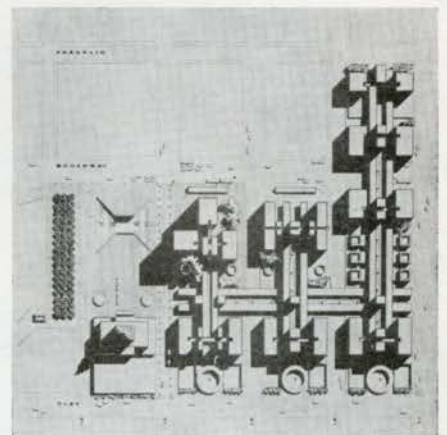
The January issue of *Architectural Design* (3) and *Progressive Architecture* (4) are "awards" issues, and the *Architectural Review* (2) is a Preview issue. They can be seen as depressing evidence of creeping mannerism. On the other hand, it is easier to achieve high levels of mediocrity in Mies-type building, than when dealing with a more random approach. While complexity at worst might be used as a gimmick, at best it is a truer reflection of the programs and the realities of today. A.J.D.



2



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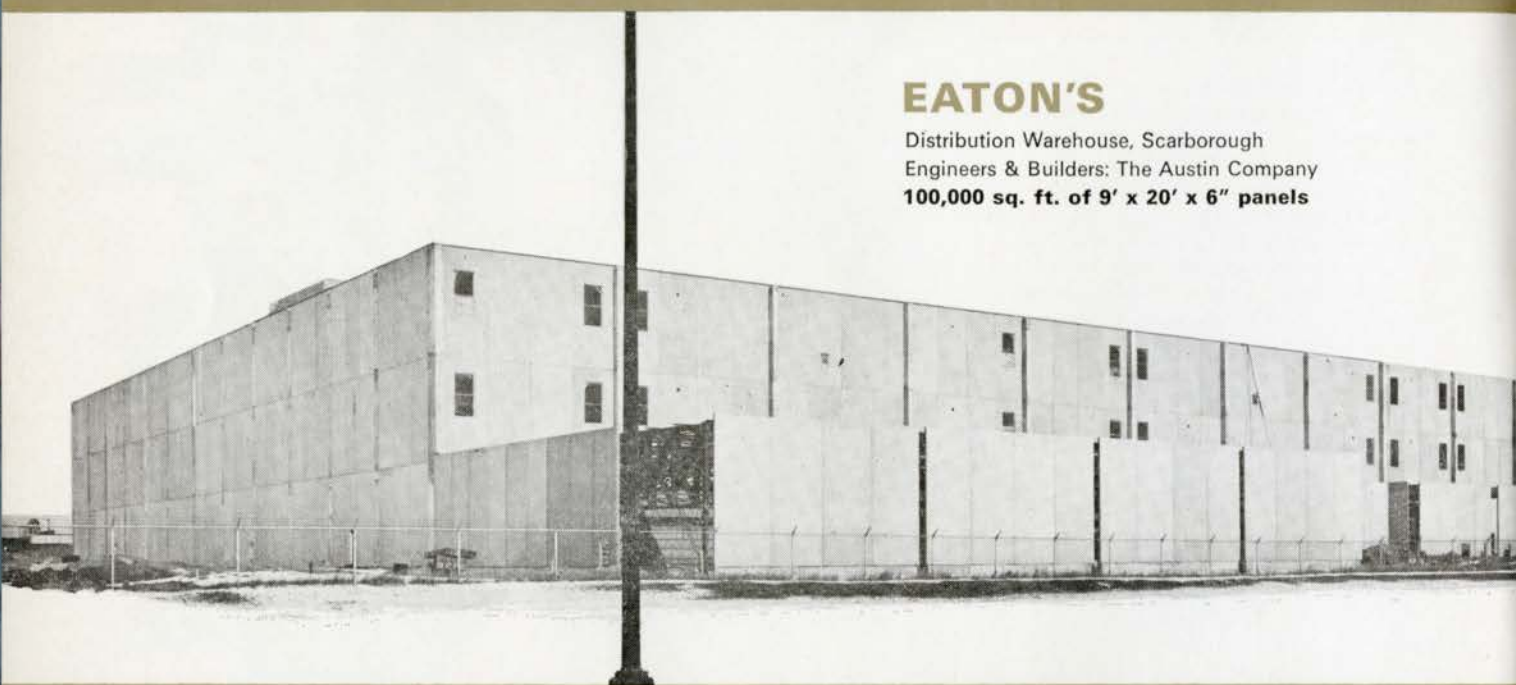
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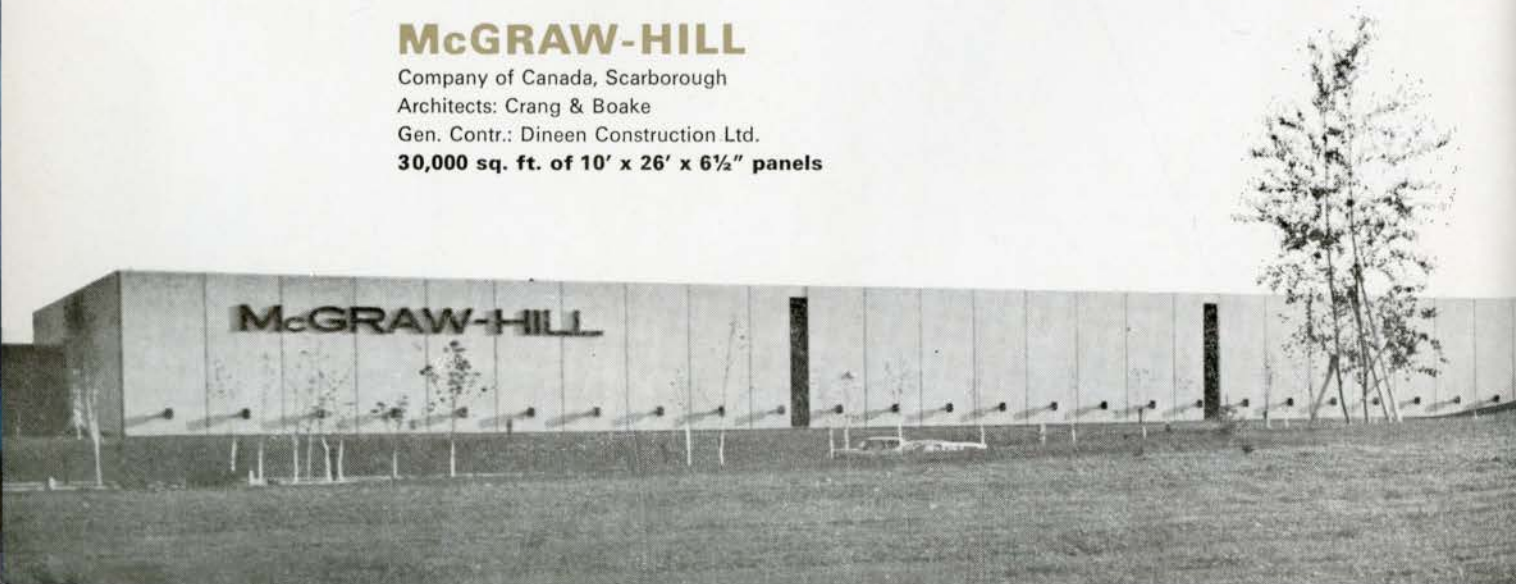
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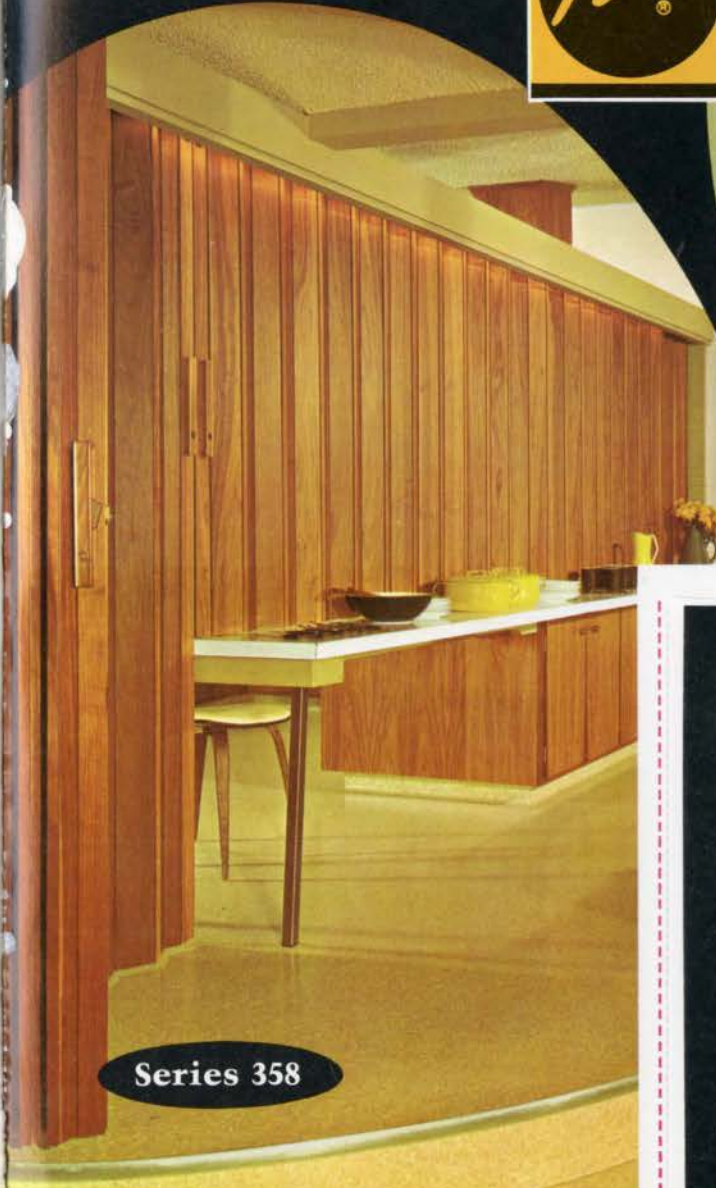
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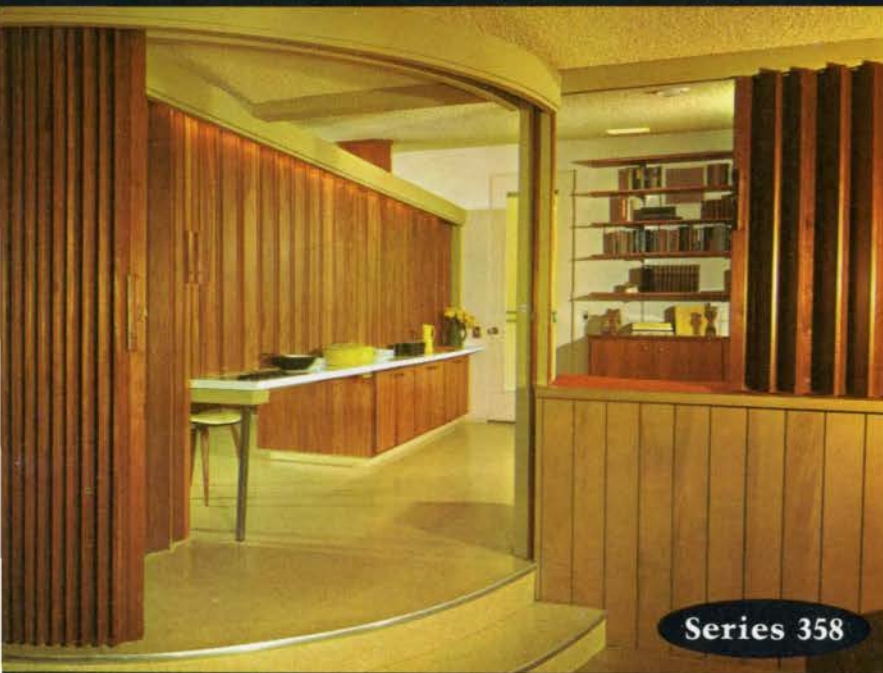
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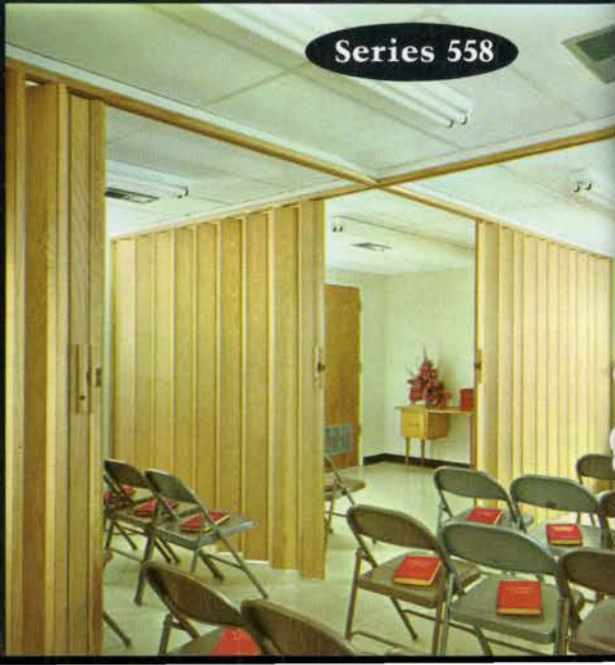
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## Page 37

Systèmes d'Information Visuelle  
Richard Saul Wurman, AIA, et  
Scott W. Killinger

M. Wurman est un partenaire dans la firme de Murphy Levy Wurman, Architectes, de Philadelphie. Il est membre de la Faculté de l'Université de Princeton et auteur de plusieurs livres dont "The Notebooks and Drawings of Louis I. Kahn" et "The City, Form and Intent". M. Killinger est membre de la Faculté de l'Université de Pennsylvania.

Une partie de notre abilité de travailler avec des problèmes plus complexes et des programmes plus compliqués dépend de notre abilité de comprendre les données à notre disposition. Ces données pourraient prendre plusieurs formes. Ici, ce que vous lisez est en grande partie la forme littéraire, rendue plus compréhensible pourtant par l'assistance visuelle de la longueur des lignes, des caractères d'imprimerie et du choix des caractères noirs sur fond blanc.

Il y a aussi les formes statistiques ou numériques des données aussi bien que des formes spécifiquement associées aux machines qui les produisent; rubans magnétiques, cartes perforées, expositions par tubes à rayons cathodiques et bien d'autres.

En fait, on peut tout exprimer visuellement, phoniquement et par écrit aux moyens des milliers de dialectes linguistiques et cybernétiques.

Le projeteur s'est habitué au mode visuel de "conversation", non seulement avec ses clients mais avec lui-même et ses associés, la preuve étant le fait que ses instructions pour l'exécution de ses idées sont communiquées largement par des dessins, supplémentées seulement par des mots et des chiffres.

Un projeteur doit baser le début d'un projet sur certaines données. Son abilité d'assimiler les données et de les employer aux fins voulues détermine le degré de profondeur de l'utilisation de ces données.

La quantité de données dont un projeteur

doit s'occuper s'accroît de plus en plus; il devient de plus en plus difficile de s'en tirer d'affaire.

Par exemple, les problèmes traitant des aspects de temps (accroissement et changements) et de problèmes importants où des données comparables sont nécessaires sont deux situations menant directement à une assimilation des données par des procédés systématiques et par automation.

Nous croyons que le projeteur vraiment doué créera des produits vraiment beaux. Il est vraisemblable que ces mêmes projeteurs, n'ayant pas les moyens nécessaires à manipuler et à comprendre le matériau programmatique énormément compliqué pourraient bien produire de belles solutions ayant des fautes de base fonctionnelles ou sociologiques, ou les deux.

Pour le projeteur, la méthode de manipulation des données la plus compréhensible serait la forme visuelle. D'ailleurs, ceci pourrait traiter des caractéristiques plus particuliers des systèmes visuels.

En exemples, ce résumé décrit quelques-unes des règles fondamentales possibles qui méritent clarification et amplification. Nous mettons en relief l'étendu du problème plutôt que de suggérer des solutions spécifiques. Nos exemples ont été développés pendant trois ans de travaux pratiques et d'enseignement. Le simple voeu de mettre sous une forme facilement comprise des données plutôt compliquées afin de les employer avec confiance et efficacité a été la motivation de la plupart de nos études. Ce résumé constitue l'ébauche des résultats obtenus grâce à une subvention de la "Graham Foundation for Advanced Studies in Fine Arts".

Notre désir de développer des moyens d'arranger les données difficiles d'une manière compréhensible résulte d'une série de questions que nous nous sommes posées dès le début.

1 Quelles sortes de données, normalement employées par le projeteur, s'exprimeraient le mieux en forme visuelle, que ce soit une peinture ou un film produit par ordinateur?

2 Quelles sont les règles fondamentales de l'exposition visuelle pour que la forme graphique puisse être produite facilement et automatiquement, être manipulée, assemblée, filtrée, etc.?

3 Quels travaux entrepris en ce moment par d'autres, soit en tant qu'individus, soit en groupe, peuvent mener le plus facilement et efficacement aux buts cités?

4 Comment est-ce que les capacités graphiques mentionnées ci-dessus influencent les genres de données qu'on veut assembler? Quelle est l'influence sur la forme dans laquelle les données sont rassemblées et sur la technique de rassemblement?

5 Comment, et à quel point, tout ceci permet au projeteur d'allouer son temps de création plus effectivement et comment peut-il produire l'excellence?

Il existe bien des méthodes de représentation visuelle allant des illustrations de Norman Rockwell jusqu'aux analyses graphiques de tensions aérodynamiques d'une aile d'avion sur film d'ordinateur.

Naturellement, la détermination d'un mode d'expression visuel approprié à des données particulières est une des premières décisions du projeteur. Réciproquement, les caractéristiques visuelles d'une certaine donnée déterminent son meilleur mode d'expression.

Une autre décision fondamentale dans l'exposition graphique est le choix du "grain" ou des dimensions de l'unité à exposer. Il faudrait noter que les dessins plus abstraits et plus généralisés peuvent être mieux évoqués par des unités plus grandes que par une exposition ayant le grain fin. Les dimensions d'une unité dépendent non seulement de la manière de rassembler les données, mais aussi de l'usage voulu de l'exposition. Deux données s'influencent réciproquement lorsqu'elles sont surimprimées, couvertes par des transparences ou simplement posées l'une à côté de l'autre afin de produire une troisième donnée. Cette interaction s'accroît géométriquement avec le type de données exposées au même moment. Cette action spirale n'est pas souvent considérée et voulant beaucoup



montrer, on finit avec une telle complexité d'interaction que rien est clairement démontré.

Il faut baser le jugement d'une exposition graphique des données sur la compréhension des renseignements donnés, non pas sur sa beauté. Par exemple, les cartes d'utilisation des terres et de données en urbanisme sont souvent jugées non-objectivement, tel qu'on jugerait un tableau. Le choix de couleurs, de textures et de modèles est ce qui est jugé, plutôt que la valeur des renseignements.

Afin de déterminer le meilleur mode d'expression graphique pour un certain genre de données, nous présentons la liste partielle suivante, indiquant quelques-uns des modes graphiques les plus raisonnés.

**Pictogrammes:** la représentation littérale d'instructions ou de procédés. La méthode normale de représentation pictographique comprendrait les enseignes routières, \* les symboles internationaux, tels que ceux conçus pour les Jeux Olympiques de Tokyo.

**Pictogrammes Systématiques:** le langage fondamental pictographique consiste d'un symbole, modifié par la suite par l'addition ou la soustraction de détails dans le symbole. Tomas Maldonado, travaillant pour la Compagnie Olivetti, a développé un inventaire de symboles, ou un alphabet, pour les machines électroniques ordinatrices de données.

Son alphabet "contient les éléments dont la combinaison permet la présentation des référents divers". Le référent, dans ce cas, est l'entité désignée par le symbole. "L'Alphabet comprend deux classes de symbole. Visuellement, les symboles fondamentaux sont comparables aux substantifs d'une langue et les déterminatifs sont comparables aux adjectifs et aux verbes."

**Les Graphies Picturales:** représentent la langue "symbolique" plus traditionnelle. Elles traitent de la représentation des renseignements perceptuels en partie. Le langage symbolique que Kevin Lynch a développé dans son "The Image of the City" par exemple, définit les caractéristiques du paysage qui identifient visuellement la perception physique de l'espace: le node, la barrière, le point de repère, le sentier, etc. M. Lynch, avec Donald Appleyard et John R. Myer, ont ajouté la dimension du mouvement à leur langage symbolique pour la perception de l'espace en mouvement dans "The View From The Road".

**Le Graphisme par Ordinateur ou basé sur l'Ordinateur:** traite de la combinaison

*\* Ces enseignes routières, pourtant, nous croyons devront appartenir à la catégorie suivante, puisqu'elles s'apprennent aux combinaisons et aux qualifications syntactiques qui permettent la description immédiate de l'image, tel que le degré de danger, la vitesse, l'angle d'un tournant, etc.*

de données et de l'imprimerie automatique des données dans n'importe quel combinaison. La forme d'imprimerie n'est pas forcément limitée à la page imprimée. L'oscillographe, et éventuellement l'oscillographe couleur, sont considérés comme forme de graphisme d'ordinateur.

Un brillant exemple de graphies basées sur l'ordinateur est l'étude d'Alexander-Manheim, "The Use of Diagrams in Highway Route Location: An Experiment". Bien qu'ils ne soient pas dessinés par ordinateur, les diagrammes représentent la combinaison de données nécessaires pour arriver à un certain but, dans ce cas, l'emplacement d'une route.

Plus récemment, la firme de Wallace, McHarg, Roberts et Todd de Philadelphie a produit une étude similaire: "Comprehensive Highway Route Selection Method", qui n'est pas basée sur l'ordinateur mais détermine quand même les variations en valeur dans chaque groupe de facteurs et rassemble ces facteurs directement par surimposition sans "graphie intermédiaire".

William Fetter, directeur de graphies par ordinateur de la Société Boeing Aircraft, a développé des techniques pour les perspectives dessinées par ordinateur aussi bien que toute une série d'études de simulation dessinées par ordinateur (rayons cathodiques et traceur) et des films animés décrivant la topographie, l'atterrissage et le décollage des avions, les tensions d'aile, etc.

Steven A. Coons et Timothy Johnson de M.I.T. ont initiés et rendus possibles d'autres développements en techniques d'exposition par tubes à rayons cathodiques. Leur célèbre "Sketchpad" a ouvert les yeux à bien des gens qui travaillent actuellement dans ce domaine.

Robert Cralle et George A. Michaels, des Laboratoires Lawrence Radiation à Livermore, Calif., possèdent peut-être les meilleures connaissances des capacités des moyens disponibles et possibles pour faire des films par ordinateur. Bien que les tubes à rayons cathodiques n'offrent pas une gamme complète de couleurs, ils ont réussi à produire des films en couleur de façon automatisée.

**Modèles de Renseignements:** la représentation des renseignements en trois dimensions. Skidmore, Owings et Merrill, bureau de San Francisco, et le "Regional Plan Association de New York" avec l'aide de Frank Williams, ont produit deux modèles évocatifs de systèmes de mouvements dans certaines régions locales de Philadelphie et de la Ville de New York. De belle présentation, espérons que ces modèles mèneront aux techniques permettant leur fabrication plus facile, à moins de frais, et ce qui est plus important, permettant la mise à date continue qui les rendront la contrepartie en trois dimensions d'un film animé.

Nous devrions pouvoir décrire un édifice de la même façon systématique, c'est-à-dire, il devrait y avoir des techniques qui dépassent les capacités descriptives des perspectives et des dessins d'exécution. Un tel système devrait décrire un système raisonné de plans, d'élevations et de coupes qui pourrait être couplé visuellement avec la structure - indiquant non seulement où elle se trouve mais comment elle réagit - avec la qualité de lumière, le rapport d'une pièce à l'autre et avec le système de circulation (normale et mécanique) - pas forcément où il se trouve mais comment il fonctionne. "Various Dwellings Described In A Comparative Manner" par Richard Saul Wurman traite sur ce système du point de vue de comment il pourrait servir dans une telle exposition.

**La Photographie:** est d'une importance immense à tout système d'information visuelle. Les combinaisons possibles de méthodes photographiques diverses, et surtout les combinaisons de la photographie avec d'autres modes visuels méritent bien plus de considération qu'on peut donner ici. Pourtant, ces combinaisons nous mènent à la considération des usages éventuels de ce qu'on pourrait appeler la photographie systématique. Par exemple, un appareil à action retardée pourrait être monté dans un satellite stationnaire pour enregistrer systématiquement les changements dans une zone ou région urbaines pendant un temps donné.

Des techniques pourraient être développées pour utiliser la photographie infra-rouge ou sensible à la chaleur pour pouvoir mesurer la chaleur produite par les automobiles, les camions, autobus, etc., donc, mesurant directement les volumes de circulation véhiculaire des rues et des grandes routes.

La technique d'allier le film animé aux procédés habituels cinématographiques n'a pas encore fait l'objet de recherches en profondeur. C'est une technique qui semble être particulièrement utile dans la représentation des changements prévus pendant un certain temps avec l'usage de maquettes diverses de simulation développés pour prévoir l'accroissement et le changement de nos villes.

Dans plusieurs exemples cités plus loin, une situation évidente semble paraître. Deux données surimprimées en deux couleurs différentes produisent une troisième et nouvelle donnée. Il semble concevable que cette nouvelle donnée peut être une donnée qu'on ne pourrait pas recueillir autrement. Elle est donc produite graphiquement sans effort.



Richard Saul Wurman, AIA  
and Scott W. Killinger

*Mr Wurman is a partner in the firm Murphy Levy Wurman, Architects, in Philadelphia, on the faculty of Princeton University, and author of several books including The Notebooks and Drawings of Louis I. Kahn, and The City, Form and Intent. Mr Killinger is on the faculty of the University of Pennsylvania.*

Part of our ability to work with more complex problems and more complicated programs is dependent on our ability to comprehend the data at our disposal.

The data may be in many forms. What you are reading here is largely the literary form, made more comprehensible, however, by the visual assists of line length, type face, and the choice of black print on a white field.

There are also the statistical or numerical forms of data as well as forms which are specifically related to the machinery which process them; tapes, punch cards, cathode ray tube displays, and others.

In fact, things can be described visually, audibly and in print in any one of thousands of lingual and cybernetic dialects.

The designer is more attuned to using the visual mode in "conversation" not only with clients, but with himself and his associates.

This is evidenced by the fact that his instructions for the execution of his ideas are largely drawings, only supplemented by words and numbers.

The designer must begin a project with some body of information. The degree to which he can go into the information in depth and make use of it is, of course, dependent upon his ability to assimilate the information and make it useful to his purposes.

The amount of information a designer must deal with is increasing at an accelerating rate; with more factors and more data to contend with it is becoming difficult to manage.

For example, problems dealing with aspects of time (growth and change) and large scale problems where comparable information is important, are two situations which lead directly to systematic and automated information handling.

It is our feeling that the talented, very

creative designer will produce products that are handsome. It appears likely that these same people, without the means to manipulate and comprehend enormously complicated programmatic material, might very well produce handsome solutions with basic functional or sociological failings, or both.

This article describes by example some of the possible visual ground rules that we feel merit further clarification and amplification. The emphasis is to describe the scope of the problem rather than prothesize specific solutions.

The motivation for many of these studies has been the simple desire to place some rather complicated information in a form that can be readily understood and thereby used with efficiency and confidence.

The article forms the outline of the results of a grant from the Graham Foundation for Advanced Studies in the Fine Arts.

Our desire to develop means to manage difficult information in a comprehensible manner stems from a series of questions we asked ourselves in the beginning.

- 1 What kinds of information, normally used by the designer, would find best expression in visual form, be it a painting or computer produced movie?
- 2 What are the ground rules for visual display such that the graphic form can be produced easily and automatically, be manipulated, aggregated, filtered, etc.?
- 3 What work is now being done by others that, either individually or in combination, can most efficiently and easily lead to the above goals?
- 4 How do the graphic capabilities, touched on above, feed back and influence the kinds of information that one wants to gather? What influence does this have on the form in which the information is gathered and the gathering technique?
- 5 How, and to what extent, does all this allow the designer to allocate his creative time more effectively, and how can it produce excellence?



1  
William Fetter's diagram describes some of the characteristics of comprehension and measurability of six different kinds of mechanical drawings. Charts like this should be created to describe these same characteristics for the myriad graphic modes.

2  
Model of movement systems for midtown New York for the Regional Plan Association

There are many ways of representing things visually. These range from Norman Rockwell illustrations to computer graphic film analyses of aerodynamic wing stresses.

The determination of the proper visual mode of expression for a particular kind of information must naturally be an early decision of the designer. Conversely, the visual characteristics of a piece of information determine its best mode of expression.

Another basic decision to be made in graphic display is the choice of the "grain" or unit size of information to be displayed. Note should be taken that more abstract and generalized patterns can be evoked from larger unit sizes than from a very fine grain display. The unit size is dependent, not only upon the manner in which the information is gathered, but also on the use to which the display is to be put.

Two pieces of information interact when overprinted, overlaid by transparencies or simply laid adjacent, to produce a third piece of data. This interaction increases geometrically with the type of information displayed at one time. This spiralling characteristic is often not considered and, in the desire to show many things, one ends up with such a complexity of interacting patterns that nothing is conveyed clearly.

Judgment of the graphic display of information must be based on comprehension of the information, not on its beauty. For instance, land use and urban data maps are often judged non-objectively, as a painting. The choice of colors, textures and patterns is that which comes under judgment, and not its value as a piece of information to be understood and used.

In order to determine the best graphic mode of expression for a particular kind of information, we have made up the following partial list of some of the more orderly graphic modes.

**Pictograms:** the literal representation of instructions or processes. The normal method of pictographic representation would include things like road signs \* and

3  
Tomas Maldonado's symbolic electronic data processing alphabet. The basic symbols are modified by adding or subtracting detail within the symbol to change its meaning.

4  
Information model by students at the University of Pennsylvania, Graduate School of Fine Arts basic design workshop, Richard Saul Wurman, critic.

international information symbols such as those developed for the Tokyo Olympics.

**Systematic Pictograms:** the basic pictographic language consists of the symbol which is then modified by the addition or subtraction of detail within the symbol. Tomas Maldonado, in his work for the Olivetti Company, has developed an inventory of symbols, or an alphabet, for electronic data processing machines. His alphabet "contains the elements whose combination permits the presentation of the various referents". The referent, here, is the entity designated by the symbol. "The alphabet comprises two classes of symbols. Visually, the basic symbols are comparable with the substantives in a language, and the determinatives are comparable with the adjectives and verbs in a language."

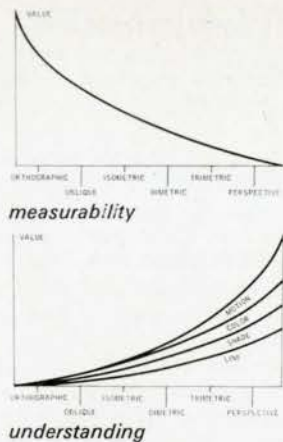
**Pictorial Graphics:** represent the more traditional "symbolic" language. It deals, in part, with the representation of perceptual information. The kind of symbolic language Kevin Lynch has developed in his *The Image Of The City*, for example, defines characteristics of the landscape which identify visually, the physical perception of space: the node, barrier, landmark, path, etc.

He, along with Donald Appleyard and John R. Myer, added the dimension of motion with their symbolic language for the perception of space in motion in *The View From The Road*.

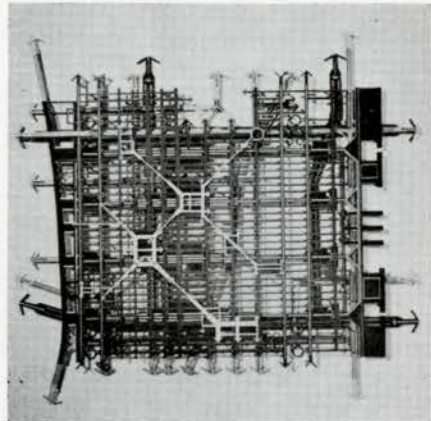
**Computer and Computer Based Graphics:** deal with the combination of information and the automatic print-out of information in any combination. The form of the print-out need not necessarily be limited to the printed page. The oscilloscope, and eventually the color oscilloscope, is considered one form of computer graphics.

*Continued on page 44*

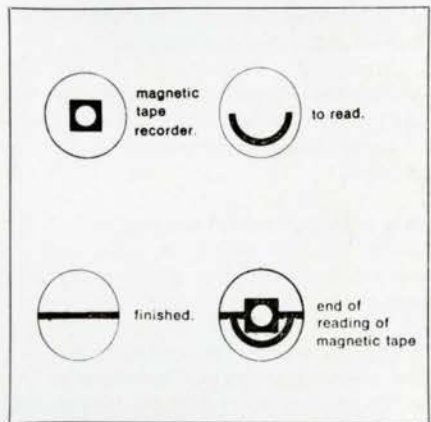
\* Such road signs, however, we believe, should properly fall in the next category in that they lend themselves to syntactical combination and qualification that allow for the immediate description of image, as in degrees of danger, speed, acuteness of curves, etc.



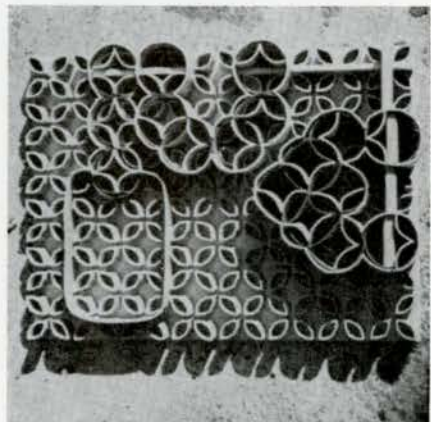
1



2



3



4



# Visual Program

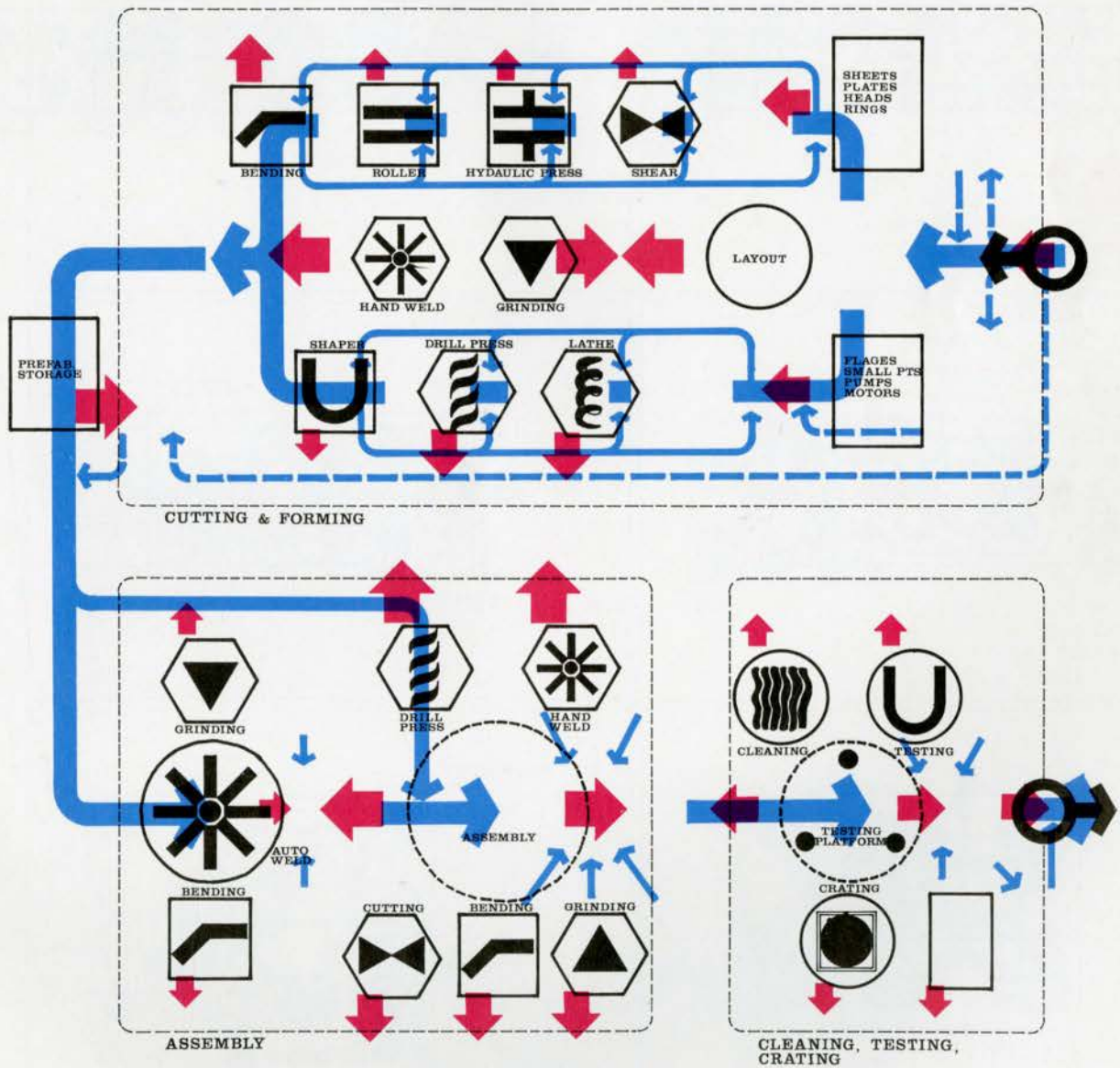
Murphy Levy Wurman, Architects  
Bauerle & Morris, Inc.

*This study is an attempt at a visual program for an architect.*

*The industrial corporation described manufactures large monel metal and stainless steel containers and tanks, and requires not only more space for their operation, but the consolidation of two separate plants into one new facility.*

*The red expansion arrows indicate those processes which, with any increase in production, would feel pressure for expansion at the varying rates shown.*

*This study, only part of which is shown here, represents a visual method of describing and analyzing the space requirements and programmatic needs of the manufacturing process.*



IDEAL PROCESS LAYOUT

MOVEMENT

EXPANSION PRESSURE

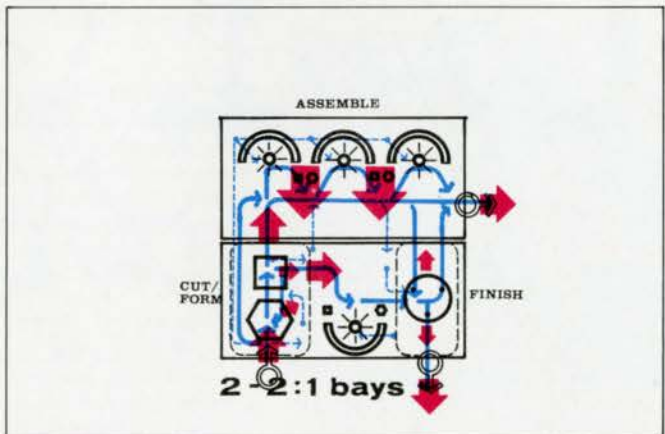
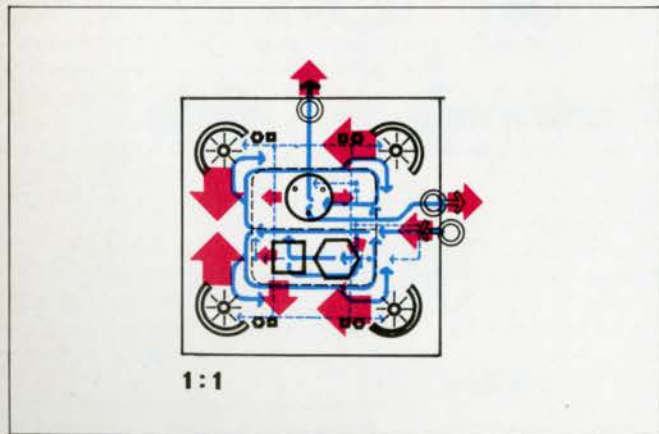
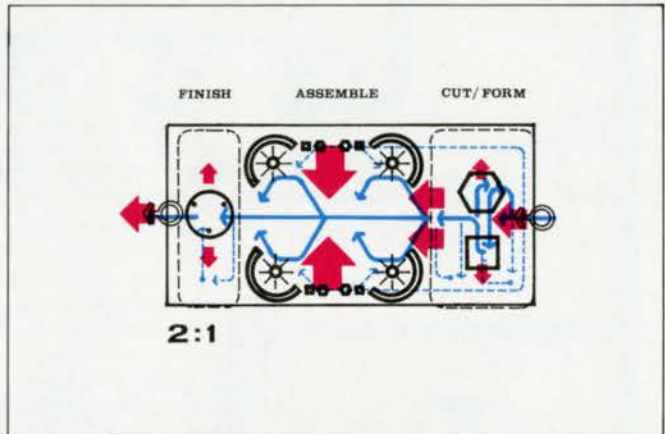
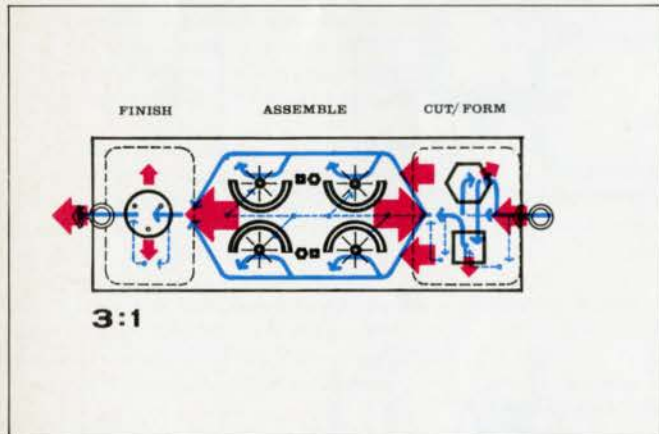
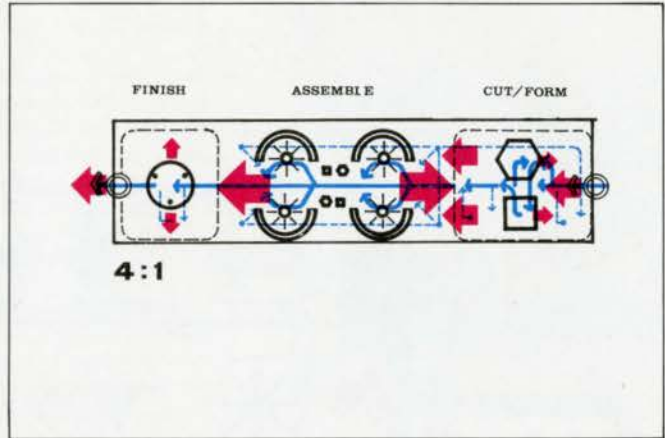
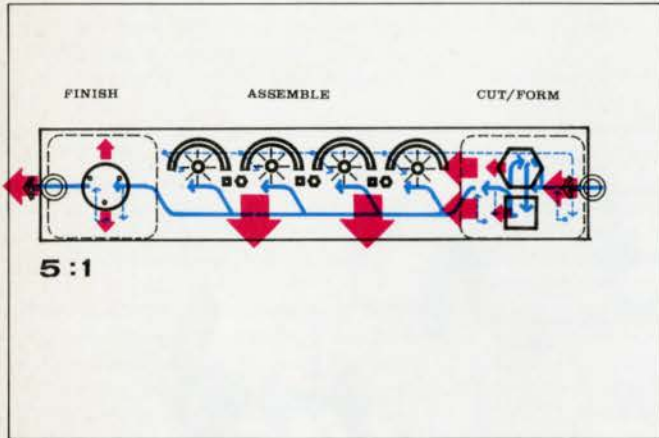


The full study consists of four separate sections.

- 1 Ideal Process
- 2 Basic Plans
- 3 Alternate plans based on different street access
- 4 Equipment and Expansion

The method was to first simplify the manufacturing process to its fundamental parts and organize them into "operational" categories.

The shape of the building influenced the



BASIC PLAN LAYOUT

MOVEMENT EXPANSION PRESSURE



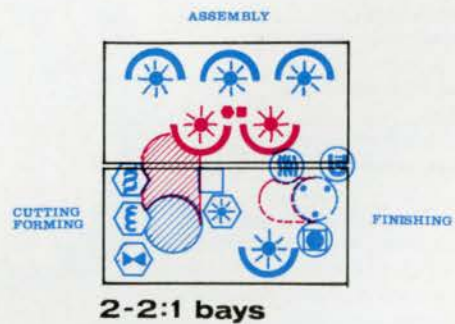
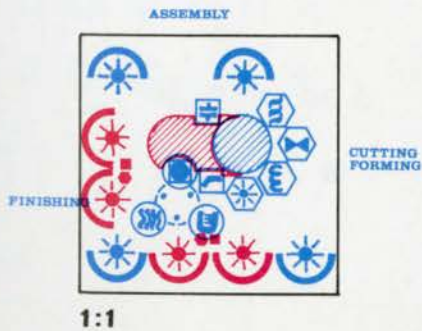
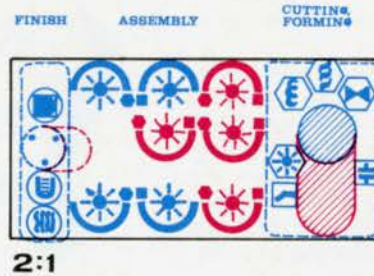
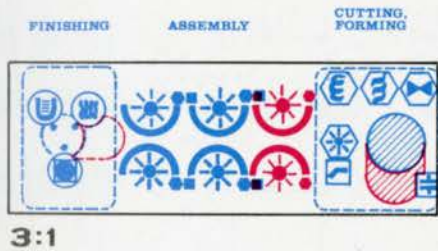
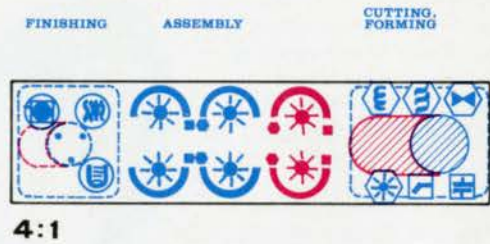
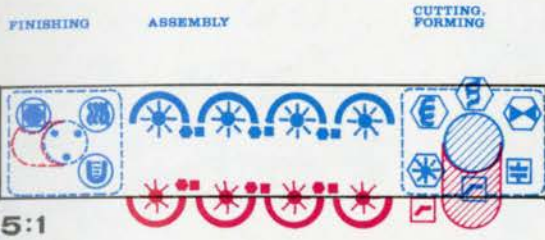
layout of the equipment and in turn the efficiency of movement, the handling equipment and future expansion.

Each building shape had advantages in terms of efficiency of operation, movement, cost and expansion possibilities.

By being able to compare the merits of one building shape against another, the "best shape" considering all factors could be determined.

The initial equipment layout obviated constraints on future expansion. Comparatively, the "most" and "least" expansion capability was determined.

The study is produced completely on integrally colored acetate sheets in order that various combinations and groupings of the information is possible.



EQUIPMENT PLAN INITIAL LAYOUT

EXPANDED LAYOUT



# Ground Rules

## Combination of Information

### From Different Sources

#### Ground Rule 2

- 1 *Infra-red Photograph, Camden, N.J.*
- 2 *Activity Pattern (Visual Perception)*
- 3 *Availability of Open Land Based on Least Cost (Computer Tapes)*

## Grain of Information

### Ground Rule 10

- 1 *Continuous Tone*
- 2 *100 meter grid*
- 3 *500 meter grid*

## Graham Foundation For Advanced Studies In The Fine Arts

Richard Saul Wurman, with  
Scott W. Killinger, and  
Murphy Levy Wurman, Architects

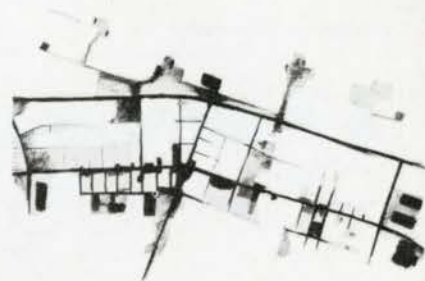
In developing a method of systematic information handling, we have established certain ground rules to which the visual system must answer. This gives a means, first of all, of establishing what is useful to such a system and, secondly, a means of evaluating the system to insure that it fulfills the criteria established in the first place.

This is not to say that the methods must always obey all the rules. Certain combinations of rules form the basis of a system which is applicable for a particular end.

Following is a partial list that forms the basis of a primer on visual information handling. The system must allow for the ability to:

- 1 handle discrete pieces of information.
- 2 use information from many diverse sources together. This implies that they must be in similar visual form.
- 3 handle quantities of information. This implies that it must be done automatically.
- 4 put the information in systematic form.
- 5 syntactically qualify one piece of information with another. This implies the use of a space grid and symbols within the grid.
- 6 show by the use of symbols the locational, type and magnitude characteristics of the information.
- 7 aggregate symbols as well as filter or subtract them.
- 8 qualify categories of information by types within the category.
- 9 select relevant data from an infinite list of data, and make the array of the data produce the desired display.
- 10 abstract and emphasize certain data automatically.
- 11 show data over a period of time (growth and change).
- 12 automatically control and assign value or weight to data in combination.

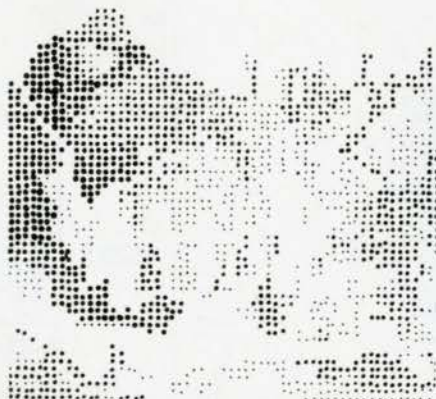
These ground rules have been developed concurrently with an urban design study for the Camden, N.J. Office of Planning and Renewal, and use a portion of that city as a prototype for developing and testing the visual system.



1



2



3

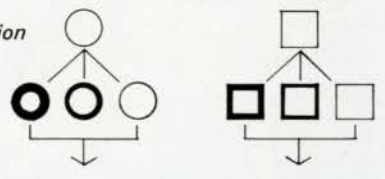


Land

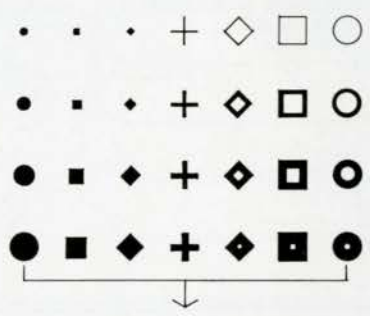
1. Residential Land Use
2. Commercial Land Use
3. Public Facilities
4. Streets
5. Industrial Land Use
6. Parks and Recreation
7. Vacant Land
8. Developed Parcels Without Structures
9. Developed Parcels with Structures
10. Number of Structures
11. Building Types
12. Land Area Occupied by Building Types
13. Floor Area Ratios
14. Assessed Values: Value Per Square Foot
15. Activity Types
16. Activity Size
17. Rhythm and Time Shape of Activity
18. Range of Influence of the Activity (Dollars)
19. Effect on Human Senses
20. Land Employed in Single Economic Function
21. Land Used by Single Activity Type
22. Public Ownership
23. Quasi-Public Ownership
24. Private Ownership
25. Public Investment in Services and Facilities
26. Building Construction
27. Structures in Good Condition
28. Structures in Deteriorating Condition
29. Structures in Dilapidated Condition
30. Land's Recreational Value
31. Land's Wildlife Value
32. Land's Value in Natural Processes
33. Land's Agricultural Value
34. Historic Value
35. Symbolic Value
36. Educational Facilities
37. Physical Barriers and Boundaries
38. Entrances to an Area
39. Number of Structures
40. Number of Housing Units
41. Number of Commercial Establishments
42. Number of Commercial Establishments in Residential Units
43. Number of Industrial Establishments
44. Number of Residential Units Per Structure
45. Average Number of Rooms Per Structure
46. Total Occupied Units
47. Total Units Occupied by Non-White
48. Number of Persons Per Room
49. Number of available Vacant Housing Units
50. Age of the Structure
51. Age of Structures Occupied by Non-Whites
52. Year Moved Into Structure
53. Year Moved Into Structure by Non-Whites
54. Owner Occupied Structures
55. Renter Occupied Structures
56. Average Value of Owner Occupied Structures
57. Gross Rents of Renter Occupied Structures
58. Contract Rents of Renter Occ. Structures
59. Median Contract Rents
60. Characteristics of Non-White Housing
61. Building Permits for New Construction
62. Building Permits for Alterations and Additions
63. Real Estate Transactions
64. Public Investment in Facilities
65. Topography
66. Standards of Open Space
67. Proximity to Amenity

Phylum: Classification

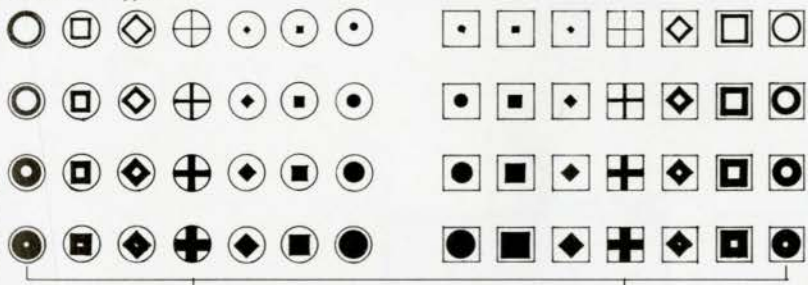
Class: Value



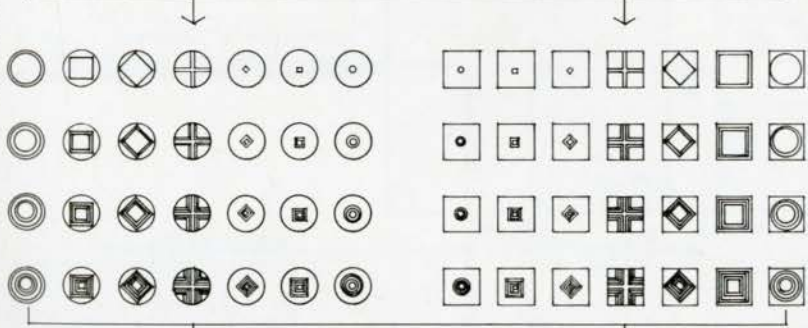
Order: Category



Families: Type



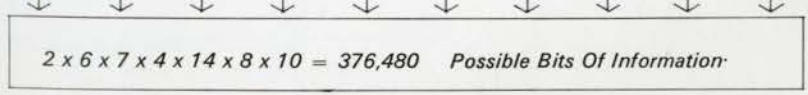
Growth Through Time



Genus: Color



Species



People

100. Population Distribution
101. Population Growth
102. Non-White Population Distribution
103. Racial Composition
104. Age of the Population
105. Sex of the Population
106. Average Household Size
107. Total Personal Income Distribution
108. Per Capita Income Distribution
109. Education of the Population
110. Population in Group Quarters
111. Marital Status
112. Children Under 18
113. Total Labor Force: Males
114. Total Labor Force: Females
115. Total Employed
116. Total Unemployed
117. Employment Characteristics for Non-White
118. Place of Work
119. Means of Transport to Work
120. Automobile Ownership
121. Inmates of Institutions
122. Crime Statistics (Incidence of Crime)
123. Welfare Rolls
124. School Board Data
125. Racial Composition of Schools
126. School Service Areas
127. Public Investment in Services

Movement

200. Street Patterns
201. Volume/Capacity Ratios for Streets
202. Street Use by Type of Traffic
203. Movement Desire Lines
204. Public Transit Routes
205. Rail Rapid Transit Routes
206. Automobile Ownership
207. Origin-Destination Data
208. Pedestrian Movement Patterns
209. Trip Origins by Land Use Type
210. Total Vehicle Trip Origins
211. Total Person Trips
212. Home to Work Person - Trips
213. Mass Transit Trip Origins
214. Total Transit Trips
215. Traffic Volumes on Principal Streets and Highways
216. Traffic Capacities of Principal Streets and Highways
217. Density of Travel

See next page

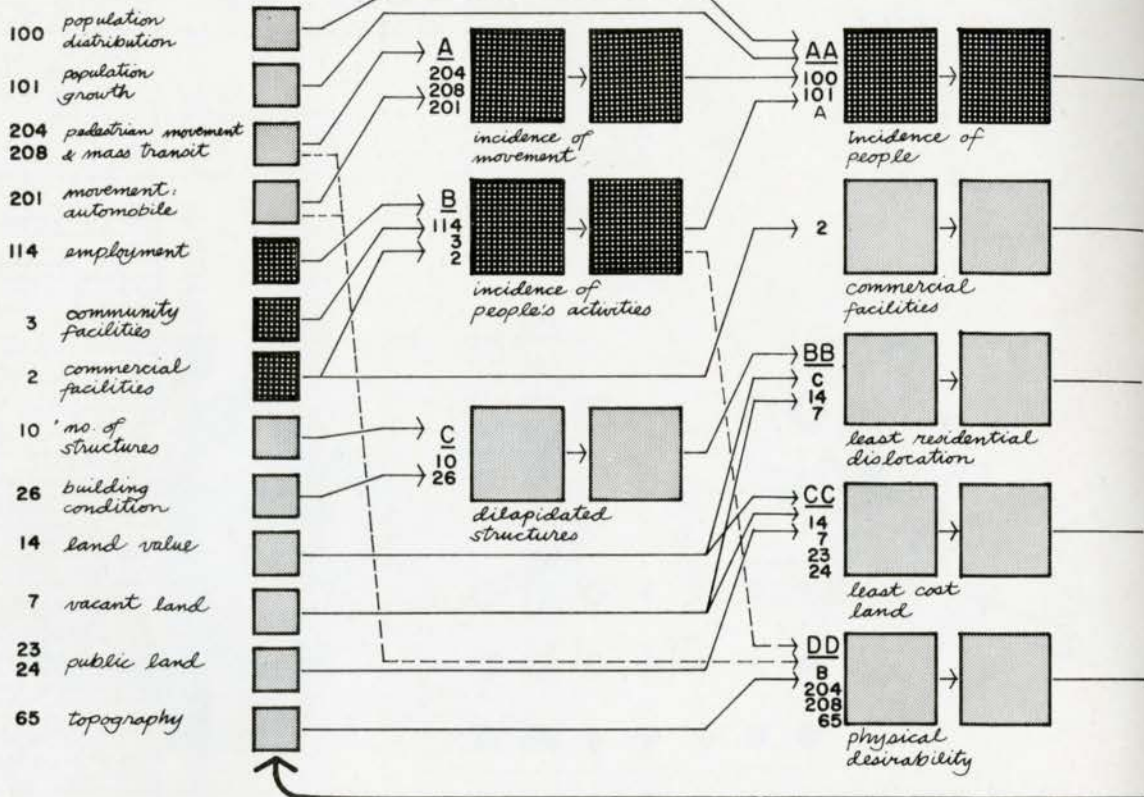


# Problem

# Data Applicable To Problem

# Data Aggregation

## Selection Of A Site For A Commercial Center



## Drawings



114 Employment



3 Community Facilities



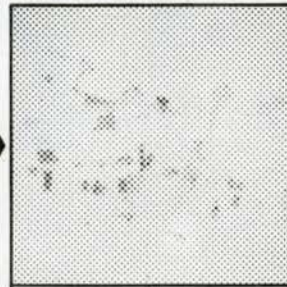
2 Commercial Facilities

## Combined Drawing



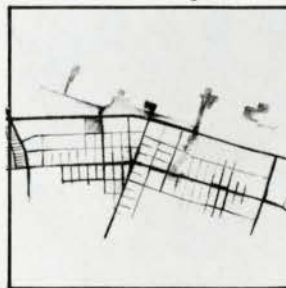
**B**  
114  
3  
2  
Incidence of People's Activities

## Photo Screen



aggregation of drawings is not a direct mechanical combination

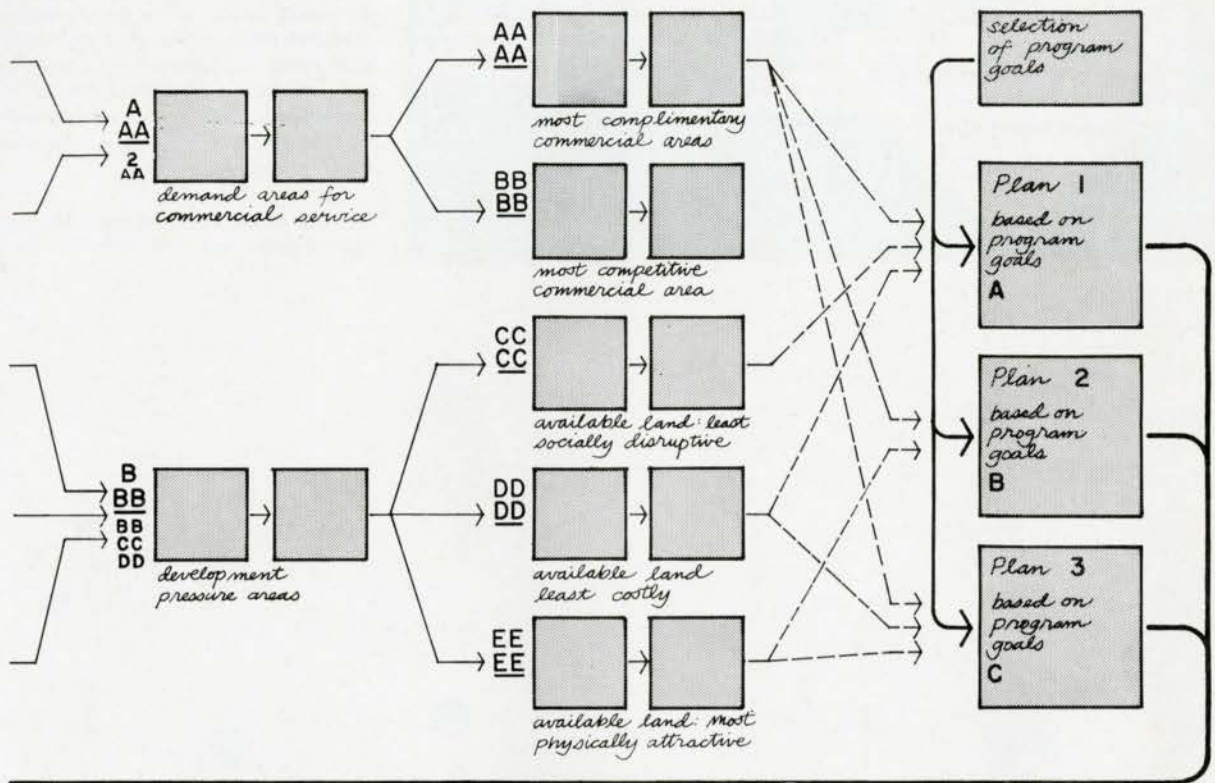
## Combined Drawing



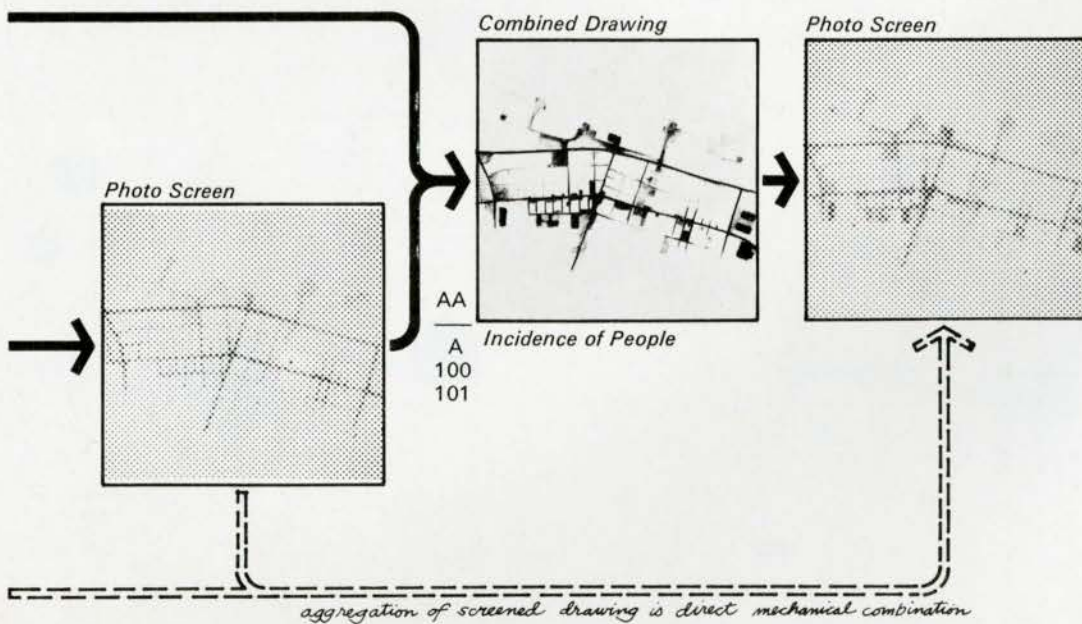
**A**  
204  
208  
201  
Incidence of Movement



# Alternative Plans



*testing and iteration of alternative plans*





# Urban Crescent Film

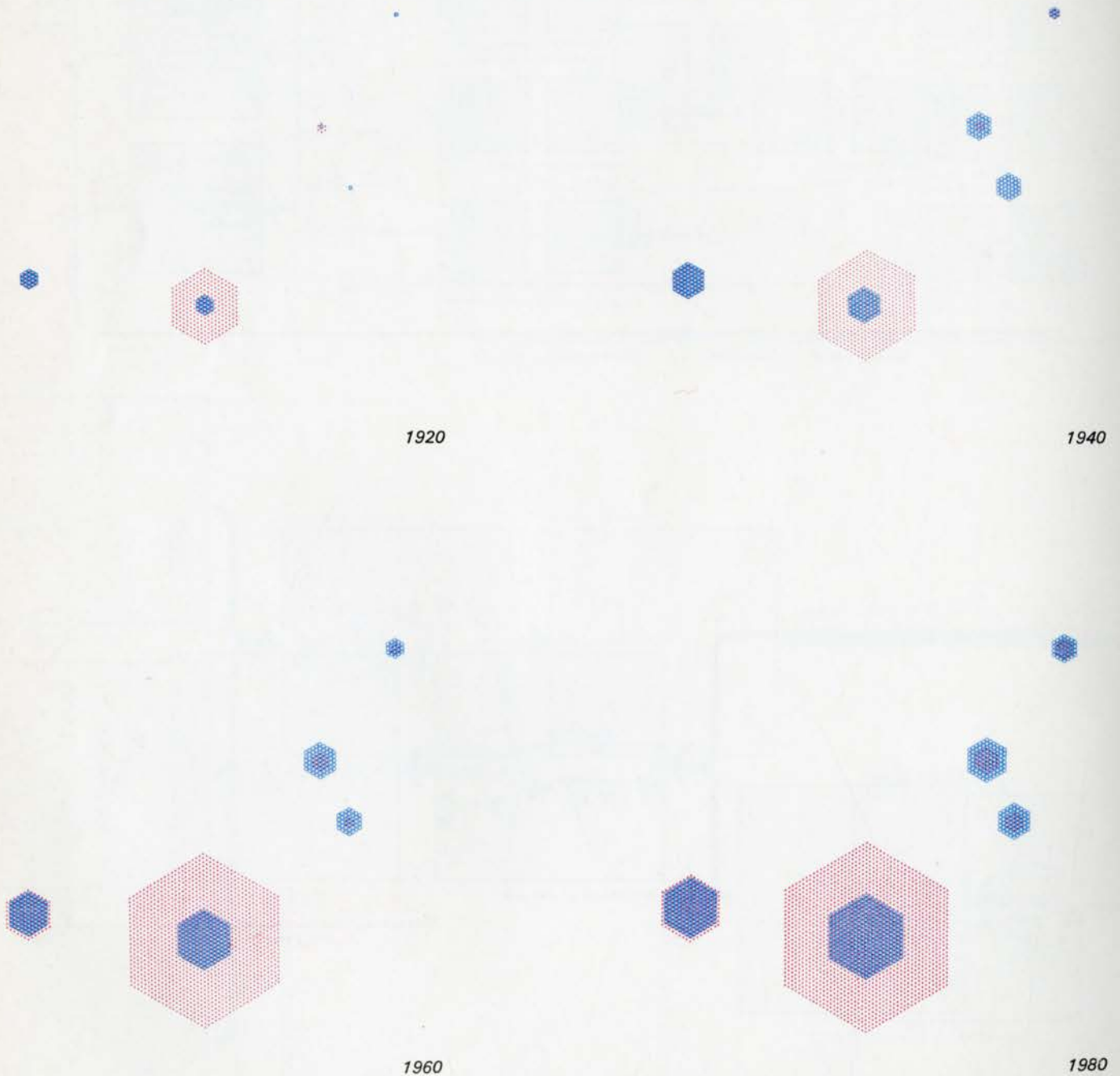
Richard Saul Wurman, Project Director,  
NCFB, Eugene Messick, Assistant to  
Project Director, James Beveridge,  
Director, NCFB

Wholesale Dollars  
Manufacturing Dollars

*In 1963 Governor Terry Sanford requested that a study related to the most populated area of North Carolina, nominally the Urban Crescent, be initiated through the newly created State Film Board. The end product was to be a cogent description of this twelve county area, aimed to educate the citizenry of the State to enthusiastic acceptance of a regional planning body, which was to be created. The theme of the film is the growth of the twelve Piedmont Counties from 1850 to the year 2000. These counties are initially set in the context of the State of North Carolina, then the southeastern region of the US, the eastern US from the Mississippi River, and the entire US.*

*In order to handle the statistics graphically in a comparable and interrelated way, various experiments were begun concerned with notation in a concurrent geometry, as well as the expression graphically of the particular visual characteristics of each category of information. Some of the categories that were described through time were as follows: trails, roads and highways; rail lines; population magnitude and urbanized areas; secondary schools; higher educational facilities and their magnitude; manufacturing dollar; wholesale dollar.*

*The area shown on these maps represents approximately one-third of the 12 counties so*

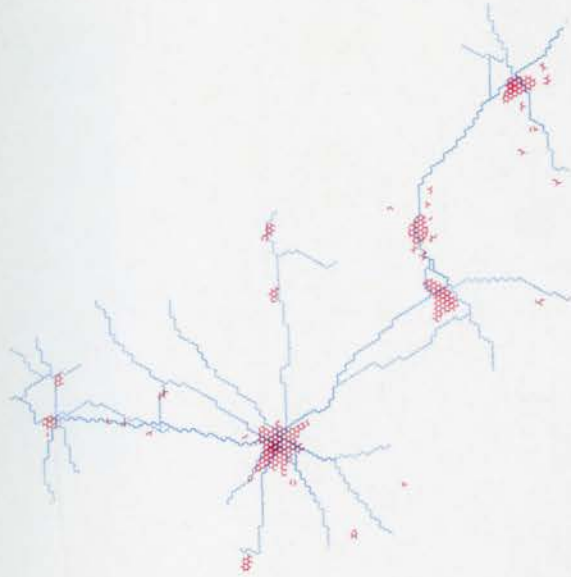




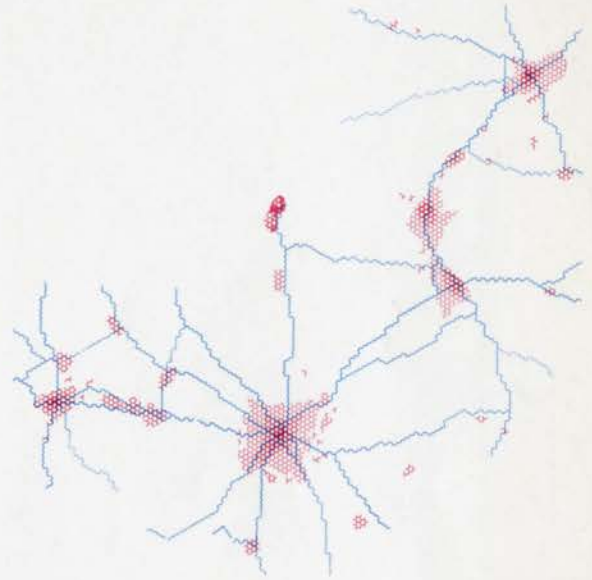
Urban Crescent



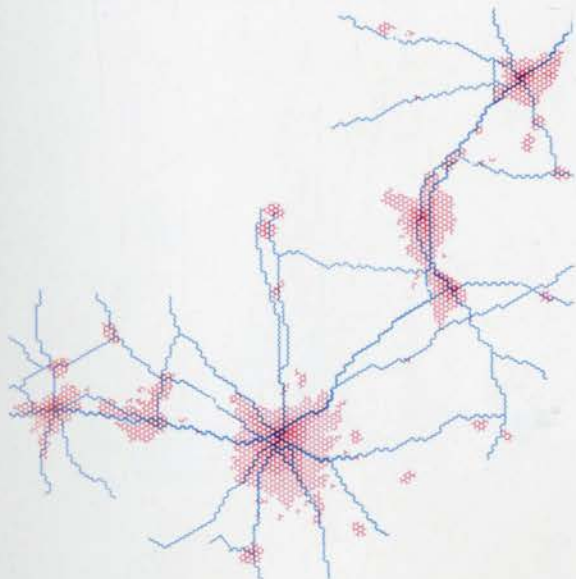
Population  
Highways



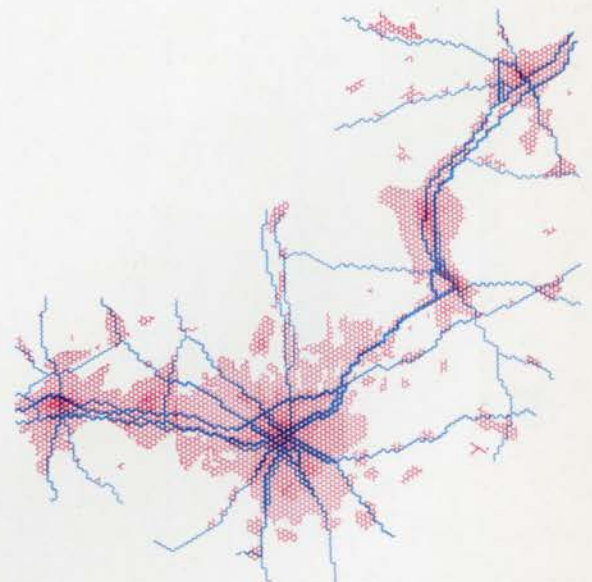
1890



1920



1950



1980



studied. The illustration on the top of page 53 encompasses the whole of the crescent region from Raleigh to Charlotte/Gastonia, while all of the others center on the Charlotte area only.

Note should be taken of the following additional points:

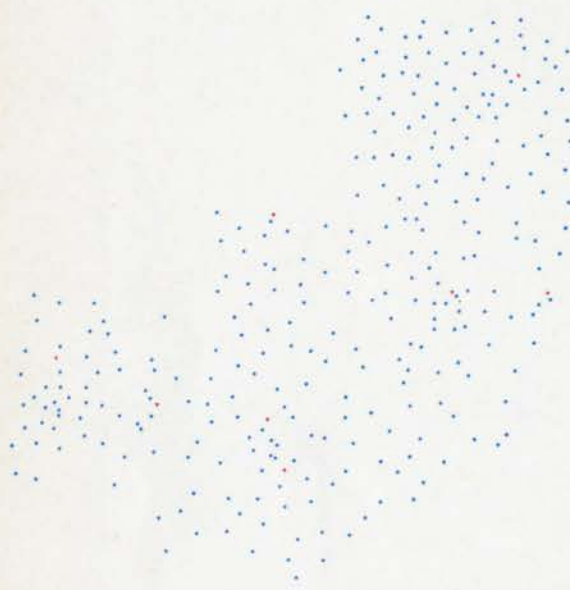
- 1 The two economic types of information are shown growing relative to each other and independent of the exact urbanized area that they emanate from.
- 2 The increment of road future growth is based on the understandable unit in North Carolina, which is the four-lane

limited access highway and its capacity.  
3 Population is shown as a characteristic and qualification of total urbanized development.

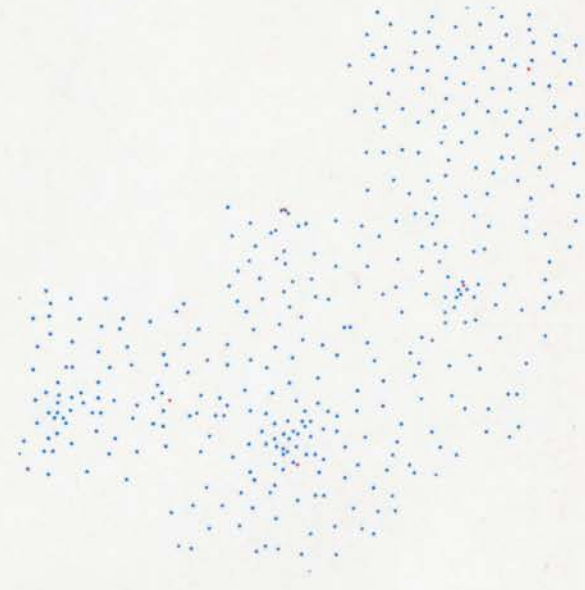
4 Secondary schools are shown by position and incidence and not by magnitude.

This project, the statistical research, the map gathering, and drawing production are complete; it remains now to be put under the animation camera.

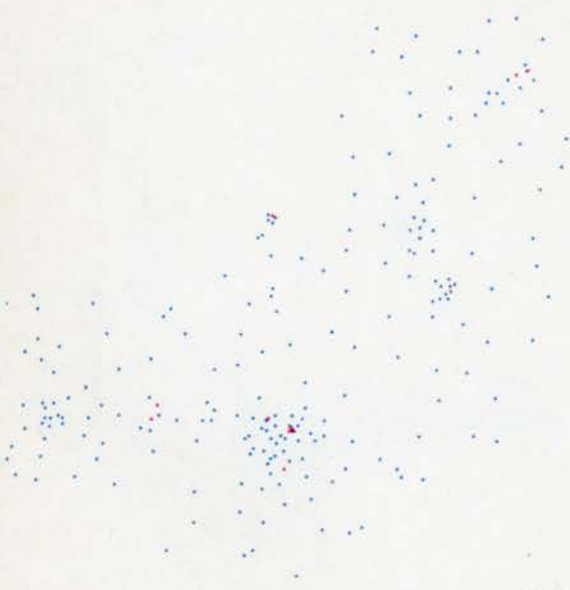
Higher Education  
Secondary Schools



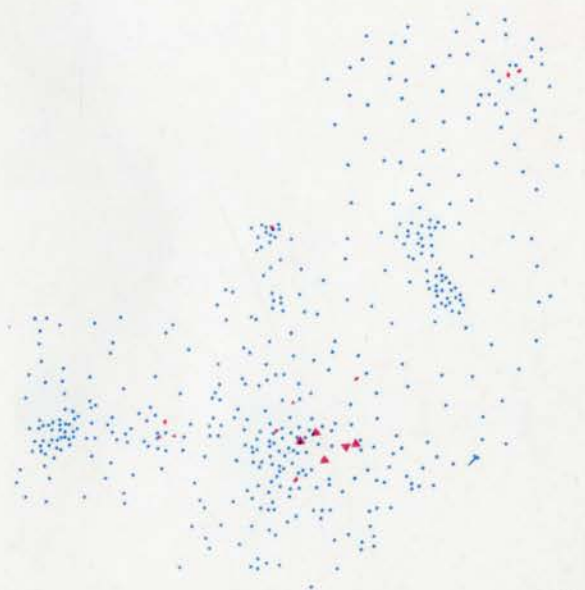
1890



1920



1940



1960

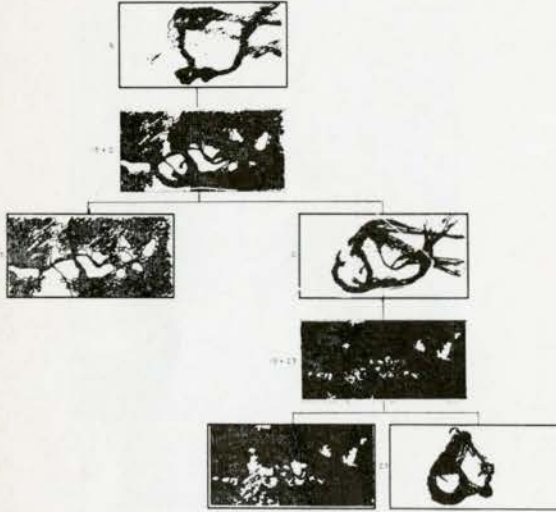




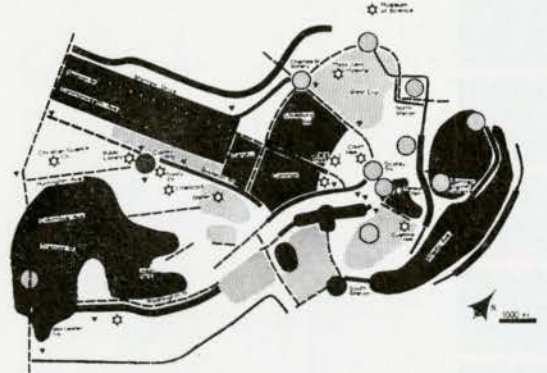


In addition to those shown, the work of the following should be included: Edgar Horwood, Director, Urban Data Center, University of Washington, Seattle; Messrs. Garrison and Tobler of the Graduate Program in Planning at Northwestern University; and Joseph R. Passonneau, Dean, School of Architecture, Washington University, Saint Louis, Neil Mitchell of Harvard.

**ALEXANDER-MANHEIM:** The use of diagrams in ordering the programmatic requirements for the location of a highway route. The requirements, represented by a single diagram, may be aggregated by combining the diagrams to determine the best route location.



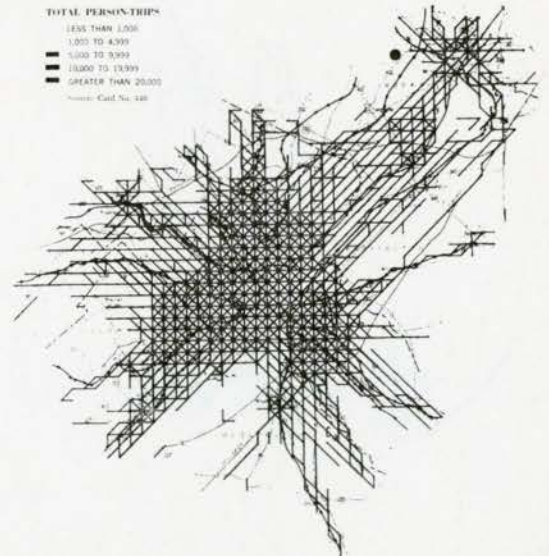
**KEVIN LYNCH:** The visual form of Boston as seen in the field and notated by the use of his pictorial vocabulary.



**CHICAGO AREA TRANSPORTATION STUDY:** Cartographatronic reproduction (computer, camera and cathode ray tube) of the desire lines of internal person-trips using rapid transit in the Chicago region.



**PENN-JERSEY Transportation Study:** Computer mapping of total vehicle trips in the Philadelphia Region. "Travel demand in certain corridors (US30, US13, NJ42, and New Jersey Turnpike) may be easily identified on the map".





Garneau Apartment Building, Edmonton, Alberta  
Owner: Campus Corner Building Company, Limited  
Architects: Richards, Berratti, Jelinek and Associates, Edmonton  
Fabricators and Erectors: Guardian Steel Fabricators Ltd., Calgary



## Structural steel chosen with a view to the future

Structural steel frame construction was selected over competitive materials for this 14-story Campus Block in Edmonton, Alberta.

The first three floors are designed for commercial use and the remainder for apartment occupancy. Approximately 600 tons of steel were fabricated and erected by Guardian Steel Fabricators Limited of Calgary during some of the coldest weather in the 1965-66 winter.

Composite design was used to advantage to help produce an economical, lightweight building structure.

The commercial area includes a banking hall with the

apartment tower being designed with a look to the future. In the opinion of the architects and builders, the size of apartments in vogue today may prove insufficient in the future and an advantage of using structural steel is that it will allow redesign of the apartment layouts.

Steel has again proved to be the most modern building material, to allow the designers unlimited freedom of expression.

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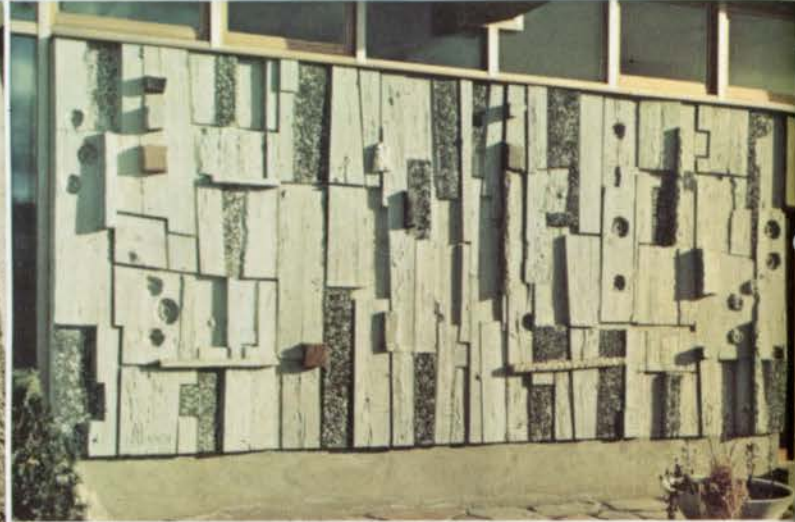
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General Contractor: Sheraton Construction Ltd.  
Precast concrete panels: Beer Precast Concrete Ltd.
2. Architects: Brassard & Warren  
General Contractor: J. H. Dupuis Ltée  
Sculptured panels: National Cut Stone (Que.) Ltd.

3. Architect: Paul H. Lapointe  
Exterior Mural: Claude Th  berge  
Sculpture: Arco Stone Co. Ltd.  
General Contractor: J. H. Dupuis Lt  e
4. Masonry contractor: U. Tomassini  
Concrete blocks: H. Beaudry Lt  e
5. Architect: Floyd H. Magnuson
6. Architect: G. D. Neville  
General Contractor: L. M. Goldenberg Enterprises Ltd.

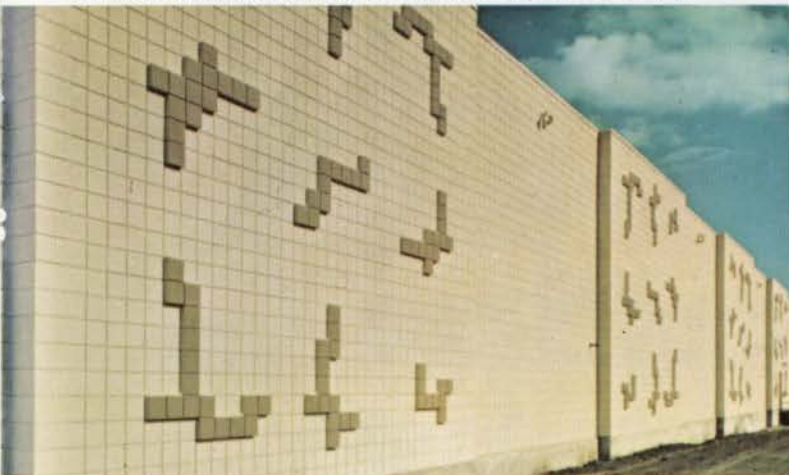
- Precast concrete panels: Beer Precast Concrete Ltd.
7. Consulting Structural Engineers: Underwood, McLellan & Associates Ltd.  
General Contractor: Commonwealth Construction Co. Ltd.  
Concrete masonry units: Con-Force Products Ltd.

8. Architects: Rule, Wynn & Rule; Aberdeen, Groves, Hodgson; John McIntosh and Associates.  
General Contractor: Universal Construction Co. Ltd.  
Precast concrete panels: Con-Force Products Ltd.
9. General Contractor: Village Plaza Ltd.  
Concrete masonry units: J. Cooke Block Ltd.

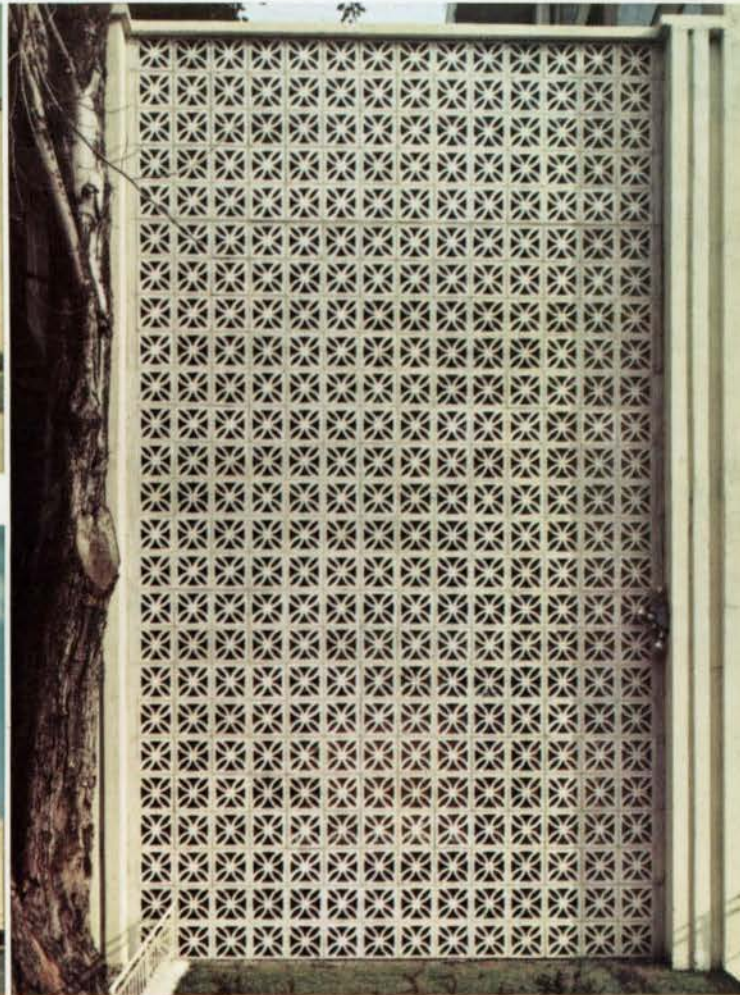
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by Robert W. Anderson MRAIC, and Ronald W. Marsh

*Mr Anderson is an associate of the firm John Andrews Architect, Toronto. Mr Marsh is president of the Specification Writing firm, Marsh and Associates Toronto.*

The Horizontal Structural Elements, particularly the suspended floor and roof slabs, can sometimes become so integrated with the entire structure as to make a study of these elements alone impractical.

The structural system adopted for the University of Guelph Student Housing Complex is one where the circulation and service areas are treated in an entirely different way from the cellular room areas. This distinction allows each to develop on its own rationale, the former being a poured concrete system while the latter is a unit assembly comprised of 4" vertical celled structural clay tile units supporting a precast

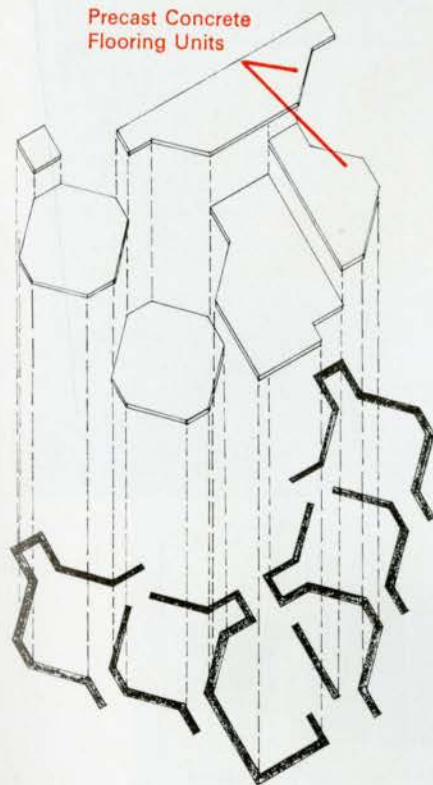
concrete floor system, in a six story building. This was achieved through extensive study of the tile and mortar strengths and their relationship to the precast concrete floors, and stability is largely dependent upon this relationship and the design of the components.

The development of this approach has been consistent with an endeavor to combine available technologies and labor and material resources in a way which makes a number of acceptable options available to the contractor for the organization of his site work. The segregation of function has been exploited to provide a high degree of vertical standardization of structure so that the load

bearing capacity of structural clay tile can be used to the full and so that there is a high degree of repetition in the structural flooring units.

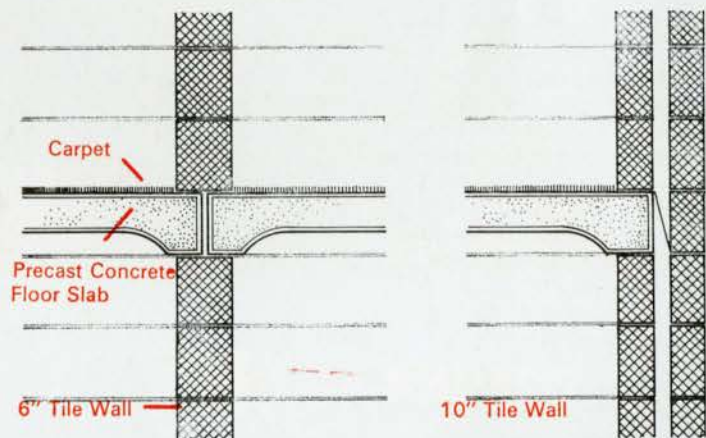
Electrical and mechanical services are organized to run within vertical duct shafts and partitions, and there are no embedded service lines in the suspended slabs or horizontal duct runs in the rooms. The co-ordination problems are thereby greatly simplified and separate ceilings are made unnecessary.

The pre-casting approach provides a top surface adequate to receive carpet and under-

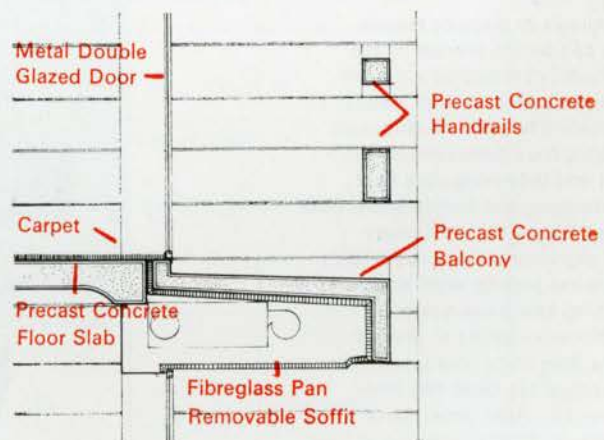


1, 2, 3

*Structural system, University of Guelph Student Housing Complex, Architect John Andrews  
Système de construction pour le complexe de logement d'étudiants de l'Université de Guelph*



2



3



lay and a bottom surface capable of receiving paint finish.

The edges of slabs are thickened to provide dimensional integration with the tile units and at the same time create edge strength to resist handling stresses and warpage.

*Robert W. Anderson*

The flooring system and supporting wall units, as they operate here are inter-related. Therefore, some detailed review of the walls is necessary.

The tile is available plain or salt glazed, of modular and non-modular sizes, and conforms to CSA A82.4. The salt glazed tiles are less accurate than the non-glazed, due to the glazing process.

Tiles are not uniform in thickness and present irregular faces where exposed-to-view on two sides.

Because the tile shells run vertically, tile cores must be cut for installation of horizontal conduits. If the wall is to be non-plastered, these holes for electrical and mechanical services must be cut with emeraldum saws. Cutting by trowel or masonry hammers is not recommended, due to poor appearance and hairline stress cracks, the latter destroying the structural qualities of the tile.

Sound transmission through interior walls can be reduced by filling vertical cores of tile with concrete or mortar, and staggering the height of back-to-back electrical outlets.

Thermal insulation of exterior walls can be achieved by applying rigid insulation to the exterior face of the interior wythe or by filling the wall void full with granular insulation. The most practical and economical method appears to be the use of granular, vermiculite type fill, which gives the wall assembly a thermal transmission value of U.135. It is recommended that the vermiculite be water repellent type. Perlite fill (silicone treated) would also be acceptable ("U" value 0.126), but it is not yet commercially available at competitive prices, except in B.C.

Of particular significance in this system of concrete horizontal members to the supporting wall is the fabrication options available for the horizontal members.

Slabs can be poured-in place or precast. If precast, they can be site precast by the contractor, or factory precast by a precast sub-trade. Site precasting of floor slabs is an important innovation because to date most precast sub-trades have been recalcitrant about studying and improving their field fabrication techniques, and therefore, installed prices have been higher than necessary. Providing the contractor with an opportunity to field fabricate the precast work should have a disciplining effect upon prices. Theoretically, there is nothing to prevent poured-in place floor slabs; but practically, keeping the exposed tile faces free from damage and staining from concrete or formwork is difficult, if not prohibitive in cost.

Another important factor to keep in mind

during working drawing and erection stages of precast floors is the task of stabilization and final placement of the slabs. *Simply stated, the problem is that thin shell walls offer little support during erection for the pushing and drifting of heavy slabs into the final 1" or so of position.* Erectors will need to provide some robust temporary vertical column or platform for this drifting operation.

Technical details and background information on the wall performance was provided by J. F. Cutler, General Manager, Brick and Tile Institute, and the use of the Institute's new handbook "Clay Masonry Manual".

*Ronald W. Marsh*

### Estimating

The structural system used on the University of Guelph Student Housing Complex shows how an elemental breakdown can, unless used with discretion, tend to be misleading. In a method of construction where the interior partitions and exterior walls are performing a dual function, acting not only in the roles normally assigned to them but also as part of the structural system, one might expect the costs of the suspended floors and the roof construction to be lower than average and the costs of the exterior walls and interior partitions to be correspondingly higher. This is borne out by the fact that on this project the following costs have been analyzed.

Suspended floor slabs \$1.65 per SF

Roof construction \$1.90 per SF

Walls above ground \$2.57 per SF

Permanent partitions and doors \$1.85 per SF  
Of these four figures the walls above ground is the only one which does not fit into the pattern due to the use of an economical masonry cavity wall construction. Prices which can be applied to the horizontal structural elements when preparing preliminary estimates are as follows:

- 1 Normal slab on grade .60-.75 per square foot
- 2 Suspended floor slabs
  - (a) Wood floors for house construction .70-.80 per square foot
  - (b) Light steel bar joists with metal pan and concrete, wall bearing 1.10-1.40 per sq. ft.
  - (c) Steel beam and girder with precast slabs 2.80-4.60 per square foot
  - (d) Concrete flat slab 2.50-3.00 per square foot
  - (e) Concrete beam and slab 2.60-3.25 per square foot
  - (f) Concrete waffle slab 2.70-3.30 per square foot
- 3 Roof construction
  - (a) Wood roof for house construction .70-1.00 per square foot
  - (b) Light steel bar joists with metal pan and concrete, wall bearing 1.00-1.30 per sq. ft.
  - (c) Steel beam and girder with precast slabs 2.55-4.50 per square foot
  - (d) Concrete flat slab 2.25-2.75 per square foot
  - (e) Concrete beam and slab 2.50-3.20 per square foot
  - (f) Concrete waffle slab 2.60-3.25 per square foot

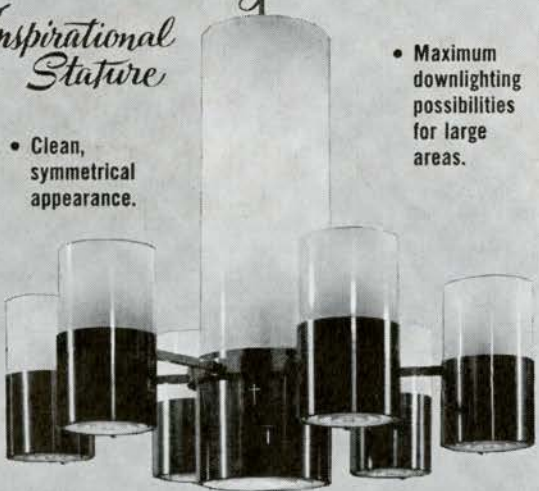
*F. W. Helyar*

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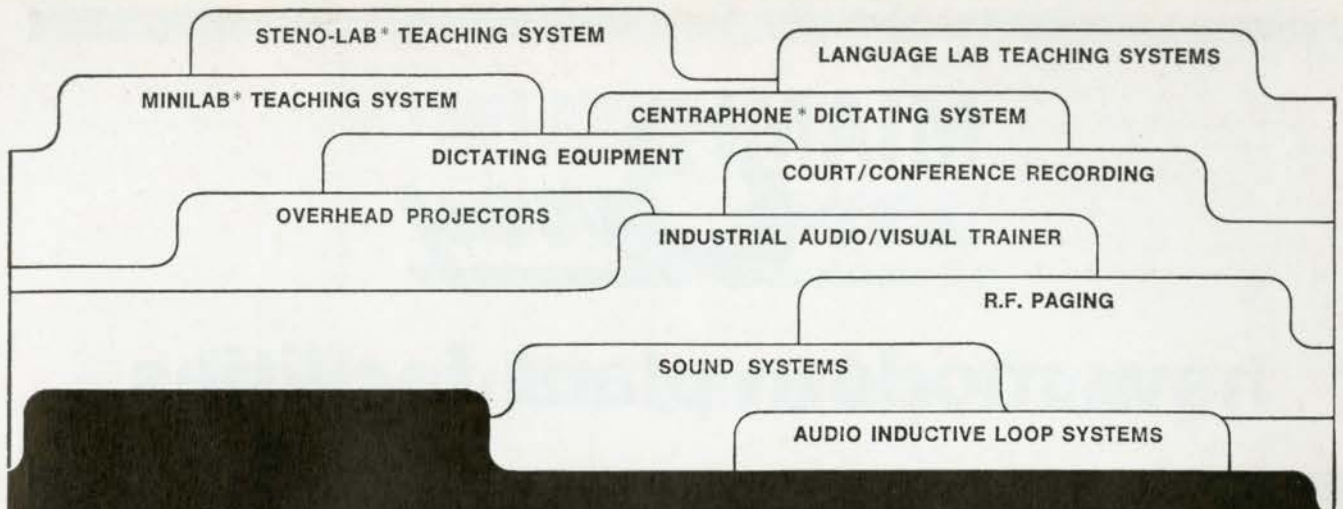


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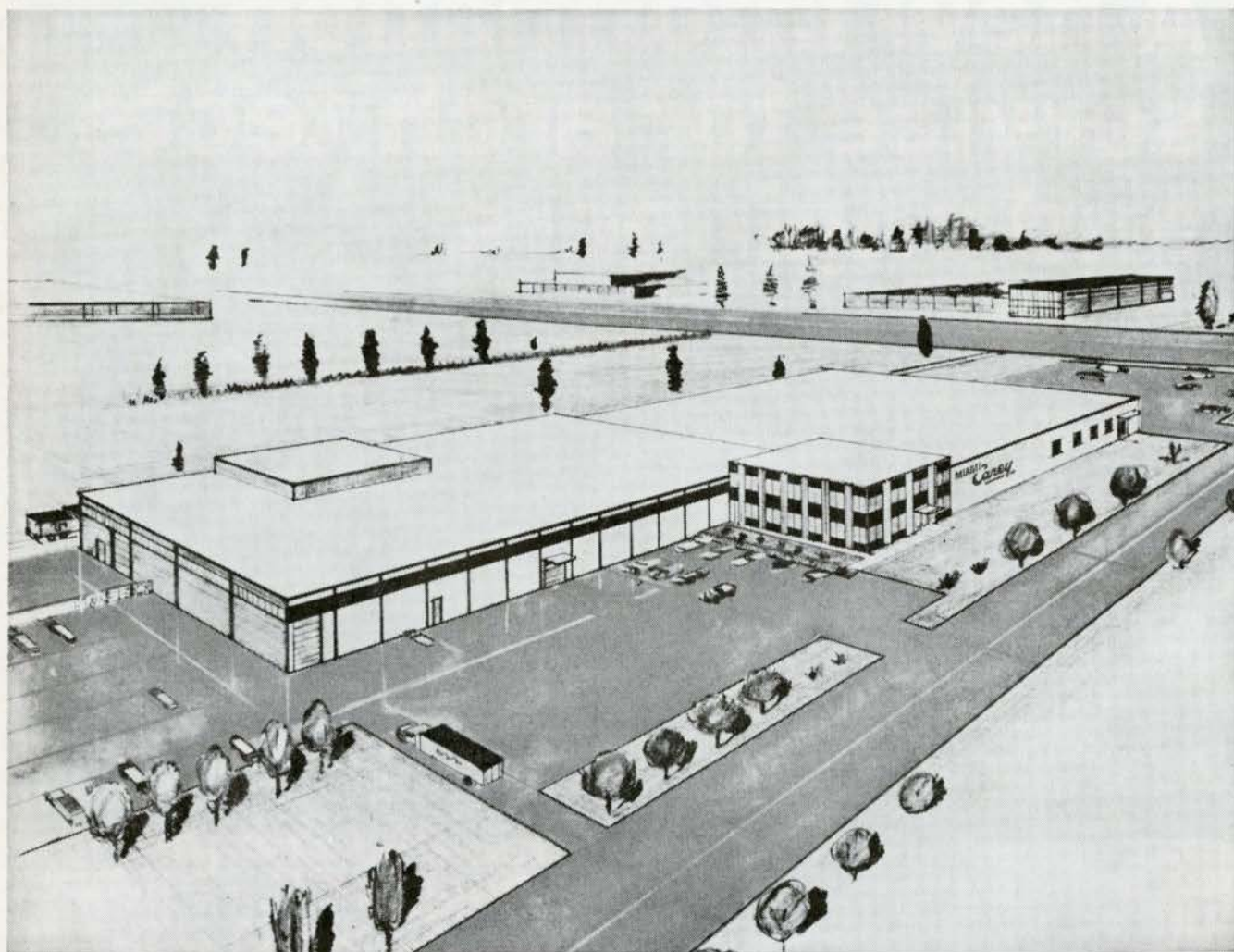
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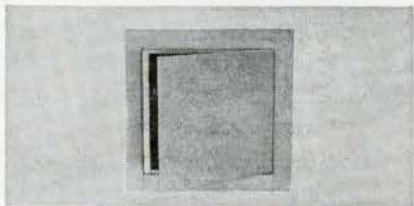
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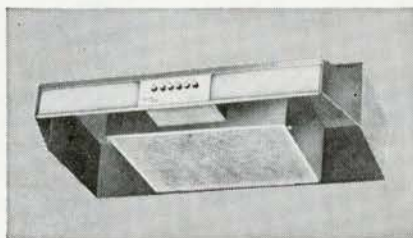
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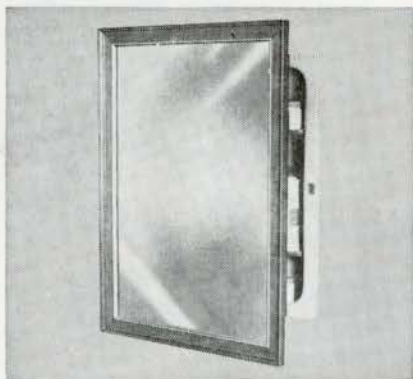
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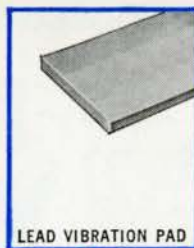
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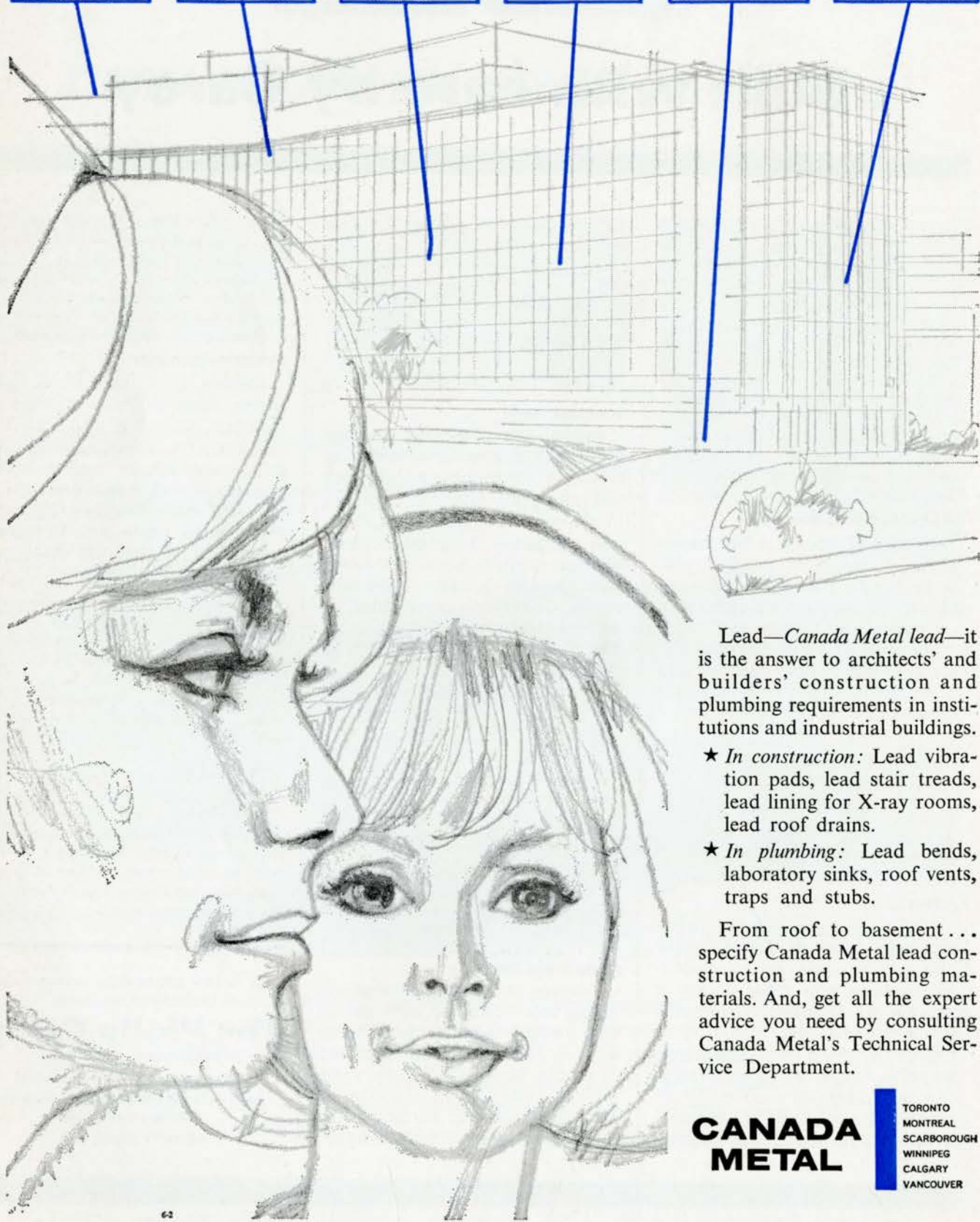
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# Urban Sociology as an Aid to Urban Physical Development: Some Research Strategies

by William Michelson, Ph.D.

*Dr Michelson teaches Urban Sociology in the Graduate Design Studio, School of Architecture, University of Toronto, and lectures in the Dept of Sociology, U of T; in the Dept of Educational Planning, Ont. Inst. for Studies in Education; Harvard and MIT. He is engaged in research in the relation of life styles to physical environment. This article will also appear in a future issue of the AIP Journal.*

The question I pose is relatively simple: what significant contribution can the urban sociologist make to the physical building of the future metropolis? The answer, I submit, is equally simple: he must study at present the crucial variables linking man and buildings which must by definition appear throughout the future. But here the simplicity ends, for the variables are many and the research difficult. It is not, however, an impossible task. I shall endeavor to outline how I conceive the sociologist's path to the future city and to point out some strategic methods whereby he may achieve his goals. These methods are not daring or new to the sociological repertoire, but they depart from the research strategies commonly used these days within urban sociology and ecology.<sup>1</sup>

The above question is a burning one to those in the design fields of architecture and planning. These professionals must design buildings, neighborhoods, and cities which will accommodate people, and the very design of them includes assumptions, however implicit, on how people will adjust to new urban structures and patterns which may be unfamiliar to them. Indeed, some of the most valued products of their labors are those which depart totally from conventional designs. How, then, can the designer prepare for a modern, more efficient future, but yet successfully anticipate public reaction to his brainchild?

Designers typically react in one of two ways to this dilemma. The first is a defiant stance that people do not usually know what's best for themselves. Were they to have what they know and want, cities would become backward, inefficient and ugly. The designer, therefore, must produce through his superior training and intellect a physical plan for a pattern of living deemed (by the designer) desirable. People are assumed to be infinitely variable, ever-changing and adaptable. When such plans include considerations of human behavior, they involve the designers' random, personal observations, often based on how they and their upper-middle class friends live. Such plans are typically called noble experiments but they seldom, if ever, contain follow-up research on the supposed

effects on the physical form; the architectural "experiment" is an exercise in design, not an empirical assessment of the relation of housing to behavior.

The second type of reaction is more complex. Systematic knowledge of the impact of differential patterns of housing on the lives of different types of people is not yet part of each designer's skills. Many of them recognize this lack and seek to discover their missing knowledge from specialists in other fields. The urban sociologist is asked for help. But interdisciplinary cooperation in this area is no bed of roses. Designers have deadlines, and they must make decisions. Thus, what they want from sociologists are answers. But, these answers are not immediately forthcoming from men trained to understand the intricacies of human behavior but who have little exposure to design variables, let alone conclusive data on their interrelations with social variables. Social scientists are more apt to point out past situations which court disaster than to propose positive principles for working towards the future.

The reaction of the designer to this is often one of guilt. He realizes the possible dysfunctions of his handiwork but he has no way of eliminating or even minimizing them. A further reaction to this guilt by some involves lashing out against social science as hopelessly impractical and even fraudulent.

## The Research Link to the Future City

But it need not be this way. There are finite elements at present in the environment which also will be part of future cities — specific arrangements of space separating people from other people and from all the various kinds of activities. Such arrangements of space, while created by the achievements of technology, exist independent of any one technology. Thus, sociologists can now study how people adjust to these arrangements of space even though the cities in the future may incorporate them in very different ways. They can help designers plan for a future with vast changes in appearance while studying constant phenomena.

## Schools Ecoles

# 7

The urban sociologist then is not assigned to a role of defending the status quo.<sup>2</sup> For, even if the apparent promise of unlimited technological progress is only minimally fulfilled, we can expect great changes in how designers shape space in cities. New building techniques abound. New types of transportation make fairly recent science fiction seem outmoded. There is certainly no basis for suggesting that our current stock of buildings should remain in toto the yardstick for future oriented policies.

But, while *methods* of arranging space must, of necessity, become more sophisticated in an age of megalopoli, it is highly unlikely that the end results will produce a relation of man to other people and to activities not found somewhere today, even though it may now be formed by an outmoded technology. What sociologists must study, then, is the nature and degree of accommodation of different types of people to significant basic variations in arrangement of space. This can and should be studied systematically, empirically. Designers could then proceed with the task of creating the needed and desired spatial arrangements, as determined by research, in the most efficient and farsighted way.

I have elsewhere suggested a scheme for describing these spatial arrangements, and I shall not go into it in detail at this point.<sup>3</sup> Generally, people are separated from other people and non-residential activities in terms of perceptual distance — the potential for impingement of other persons upon one's recognition and attention as proximate — and accessible distance — the degree of difficulty in overcoming the actual spatial separation. A person's own physical environment in these terms, his spatial arrangement, is a

<sup>2</sup> Many people criticize studies which show that people lost cultural advantages when forced to move from physically deteriorated neighborhoods as the result of public programs. They argue that the sociologist is defending the status quo while ignoring the total context. Most sociologists, however, are guilty of this *faux pas* only when they are taken out of context.

<sup>3</sup> "An Empirical Analysis of Urban Environmental Preferences", *Journal of the American Institute of Planners*, Vol. 32 (1966): 355-60.

<sup>1</sup> See, for example, Jack P. Gibbs, *Urban Research Methods*, Princeton, N.J. Van Nostrand, 1961.



function of the nature of his 1) housing type, 2) separation from others' homes, 3) perceptual distance to non-residential activities, 4) accessible distance to them, and 5) the scale of activities (e.g. boutique vs. department store).

One can point to a minimum of existing findings linking the social characteristics of people with such basic arrangements of their spatial environment and to a slightly larger literature which treats these relationships incidentally.<sup>4</sup> Such research generally isolates the following social variables as important in this context: stage in the life cycle, socio-economic status, life styles, kinship patterns, value orientations, and local-cosmopolitan orientations. No variable, however, has been shown to have overriding importance, and indeed the surface of research in this area has barely been scratched.

### Some Approaches to Research

Nonetheless, two necessary approaches to knowledge in this area have been isolated, and some significant strategies have been used which promise to be fruitful toward this end.

Man, as a rational being, relates to his spatial environment both in his mind and in actual presence. This gives rise to two approaches to research, both necessary: *mental congruence* and *experiential congruence* between people and their environment. The former exists if a person thinks that particular spatial patterns will successfully accommodate his personal characteristics, values, and styles of life. Regardless of how well particular people would actually get on in a particular situation, if given the chance, their feelings for the relationship between themselves and their environment guide the actions they take for and against particular environments and form a large part of the basis for successful or unsuccessful accommodation to them. If a person believes that certain kinds of activities, say, handyman activities, are incompatible with a certain environment, say, high rise apartment living, then this belief may turn into a self-fulfilling prophecy. This contrasts with *experiential congruence* – the actual positive reaction, documented by systematic evidence, of a person when placed in living contact with a given physical pattern, whether he's aware of the connection or not. Mental congruence and experiential congruence should be thought complementary if the assumption were made that people are completely rational; but both logically and empirically, the two types of congruence are independent of each other.

<sup>4</sup> See the data and bibliographic references in my "Value Orientations and the Urban Physical Environment: An Empirical Assessment", unpublished paper presented to the 1966 Annual Meeting of the Eastern Sociological Society, Philadelphia, Pa., April 15–17, 1966.

Knowledge of both types of congruence is necessary for successful planning. I shall outline below three research strategies which I believe will be instrumental in the empirical study of the interrelations of social and physical phenomena.

### a Studying Mental Congruence

Research on the mental congruence between people and their urban environment has centered around survey research. What do people *think* about aspects of their housing and cities? What are their preferences? Past surveys have shown both the problems and the promise of this approach.

The problems stem from the difficulty of obtaining information through a finite series of questions which shows how a respondent rates many variables in a complex substantive area *vis à vis* each other. In one study, for example, respondents were asked to rate the importance they attached to specific elements of the environment on a three point scale (1 = unimportant, 2 = somewhat important, and 3 = very important); every element suggested was rated on the average at least somewhat important, and most of them received a plurality of ratings as very important.<sup>5</sup> How should one establish "real" importance? Or comparative importance?

I submit that a fruitful approach to mental congruence is the semi-projective game situation. Within the context of the intensive interview it is possible to set up hypothetical situations in which people can get involved, in which they must make relevant choices, and where their rationales are analytically important. It is not possible for a respondent to attain all aspects of environment under such circumstances, and the respondent is forced to isolate in manageable steps those which are most important for reasons which are of theoretical relevance.

Wilson, for example, conducted a "game" in a study in two southern cities in which respondents were supplied with a limited amount of play money and were forced to spend it judiciously among a variety of elements which present or absent, distant or close, as determined by the respondent's expenditure, constituted the nature of a neighborhood.<sup>6</sup> He forced people, through a familiar medium, to declare the relative importance to themselves of various aspects of the environment.

In my own research, as part of intensive interviews, I had people draw sketch maps of their ideal environment – from housing type to lot size to block and on outwards to

<sup>5</sup> Richard A. Lamanna, "Value Consensus Among Urban Residents", Journal of the American Institute of Planners, Vol. 30 (1964): 317–23.

<sup>6</sup> Robert L. Wilson, "Livability of the City: Attitudes and Urban Development", in F. Stuart Chapin and Shirley Weiss (eds.), Urban Growth Dynamics, N.Y.: John Wiley & Sons, Inc., 1962, pp. 359–99.

the placement of activities in appropriate places throughout what they later designated as their neighborhood and the rest of the city. One question which the research set out to answer was the relative importance to people of different *levels* of environment. Hence, it was possible to ask the respondents to rank aspects of the sketch (home, block, neighborhood, and city) in which they had invested time and thought with respect to their relative value to them. But rather than to ask for simple rankings, which are difficult for an honest respondent if the alternatives are many or complex, I had them choose between pairs of all the dichotomous combinations of the four levels ("If you could have *either* the (e.g. home) you designed *or* the (e.g. neighborhood), which would you choose?") It was by this technique that the continuing importance of the neighborhood (though not any single conception of it) in urban areas was brought out, a finding which agrees with Wilson's.

In short, in a realm where opinion is important but where traditionally straightforward questions may be inadequate, the semi-projective game situation may be a source of needed data.

### b Studying Experiential Congruence

The study of experiential congruence by its definition involved activity not opinion. Hence, research into this aspect demands straightforward, but comprehensive accounting of behavior asserted to be congruent with particular types of spatial arrangements under conditions of exposure to those environments. Design and techniques are both critical in this context.

The design of the research must specify that such systematic relationships as are recorded are related to the environment and not to some spurious factor. Thus, people in the process of moving to housing which contrasts to that previously inhabited are natural subjects for study, and it is not surprising that some of the most suggestive

<sup>7</sup> See, for example, Chester Hartman, "The Consequences of Relocation for Housing Welfare", Boston: Center for Community Studies, Research Document 25, 1964, Marc Fried, "Grieving for a Lost Home", in Leonard Duhl (ed.), The Urban Condition, N.Y.: Basic Books, Inc., 1963, pp. 151–71, Michael Young and Peter Willmott, Family and Kinship in East London, London: Routledge and Kegan Paul, Ltd., 1957, and Daniel M. Wilner and Rosabelle P. Walkley, "Effects of Housing on Health and Performance", in Duhl (ed.), op. cit., pp. 215–28.

<sup>8</sup> Herbert J. Gans, "Planning and Social Life: Friendship and Neighbor Relations in Suburban Communities", Journal of the American Institute of Planners, Vol. 27 (1961): 134–40, S. D. Clark, The Suburban Society, Toronto: University of Toronto Press, 1966, and Peter Willmott, The Evolution of A Community, N.Y.: Humanities Press, 1963.



research in this area comes from before and after studies of urban renewal "victims".<sup>7</sup> Yet, in determining relations and interrelations, one intervening variable has shown up consistently in the literature, although the extent to which it intervenes in the relationship between housing and life style is as yet uncertain; this variable is *time*.<sup>8</sup> To what extent is a person's behavior a function of change and the newness of an environment, as opposed to the environment itself?

Therefore, the design of the studies we need must include time, as well as control over many other factors. The whole question of the extent to which prototype neighborhoods involve self-selection of residents as opposed to spatial determination with respect to post-move behavior becomes more clear in long-term longitudinal perspective. The person who moves a second time is just as great a source of information as the person who remains in answering crucial theoretical questions: Do modal styles of life develop in particular physical settings (e.g. high rise central city residences vs. the suburban single family house) in the absence of strong mitigating circumstances? Does nonadjustment to a "congruent" style of life constitute grounds for personal strain for a minority, which can be expressed in numerous ways, including moving again?<sup>9</sup>

The second research strategy for experiential congruence I single out is a technique of eliciting accurate descriptions of behavior, not opinion. The time and activity *budget* appears a fruitful device towards this goal. The researcher asks his respondents for an account of what they did in finely divided periods of time the day before, where, and with whom the activity took place. By such relatively straightforward means, the researcher can ascertain the qualitative and quantitative aspects of social activity as well as its spatial distribution, together with the necessary information to construct interaction networks and other aspects of social structure.<sup>10</sup> While participant observation and poll-type interviewing can give *glimpses* of the same data, time and activity budgets can serve as the basis for extremely fine environmental comparisons in time and

<sup>9</sup> Richard E. Gordon, Katherine K. Gordon, and Max Gunther, *The Split Level Trap*, N.Y.: Dell Publishing Co., orig. publ. 1962.

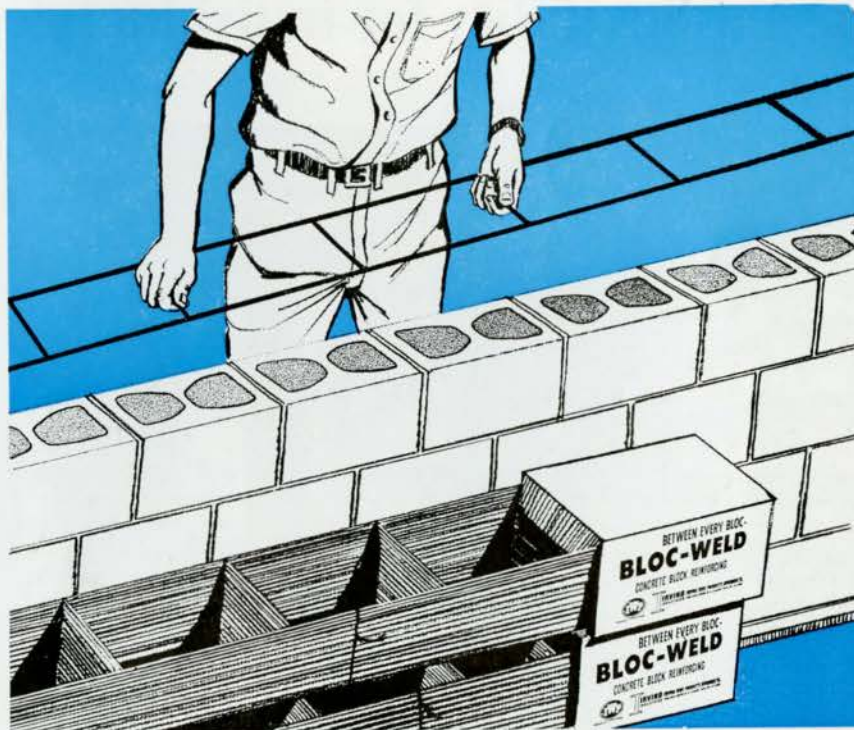
<sup>10</sup> See, for example, Albert J. Reiss, "Rural-Urban and Status Differences in Interpersonal Contacts", *American Journal of Sociology*, Vol. 65 (1959): 182-95. See also F. Stuart Chapin and Henry C. Hightower, *Household Activity Systems - A Pilot Investigation*, Chapel Hill: University of North Carolina, Center for Urban and Regional Studies, 1966; in this study, the authors apply fruitfully the concept of activity systems to physical planning, but in a different context than the above suggestion that it be used to compare the "effects" of contemporary physical environments which differ physically. An expert implementation of this tool can be found in the current "Boston Housing Study" of Charles Tilly.

space which can be greatly aided by contemporary computer technology.

### Conclusions

The urban sociologist can be an instrumental part of designing future cities through imaginative use of strategies and techniques present in the larger field of sociology. He must study people's mental and experiential relations to basic arrangements

of space which exist today and which may be recreated more effectively in the future by an ever-improved design technology. Some strategies which appear fruitful towards that end are the semi-projective game in interviewing for opinions, the longitudinal factor in the design of studies to assess the effects of spatial arrangements, and the use of time and activity budgets to account for relevant behavioral and structural variables. □



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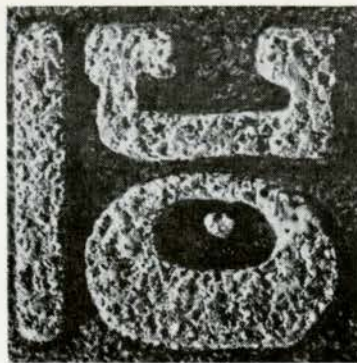
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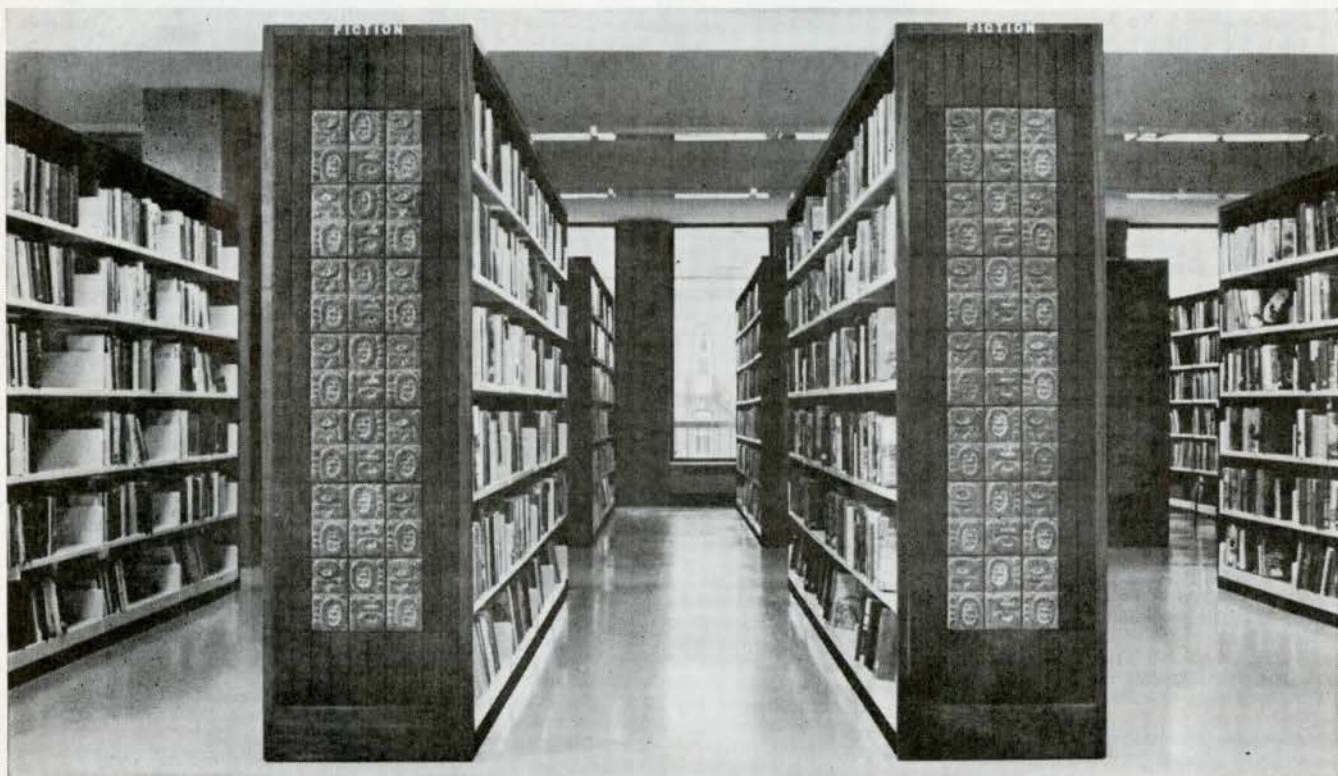
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**For Distressed Architects**

*The Editors :*

My brother in London sent my wife the enclosed, thinking it might be of interest to the wife of a related professor who was also a fellow of the RIBA. It may be of interest to others in a similar precarious situation. "Sir John Soane's Gift - In the month of March the Trustees of Sir John Soane's Fund will distribute the interest (about £130) accrued during the year of the principal sum given by Sir John Soane as an anniversary gift for the relief of Distressed Architects and widows and children of deceased architects in Distress. Forms of application are to be obtained from the Hon Secretary, at 13 Lincoln's Inn Fields, W.C.2, and must be filled in and delivered there on or before March 1, 1967, after which no application can be received.

*Eric R. Arthur (F), Toronto*

**On the Allied Arts Catalogue**

*The Editors :*

Please accept my somewhat belated congratulations for your very excellent *Allied Arts Catalogue*.

As luck would have it we were able to make use of the catalogue the very first day we received it. Information in this form, as you know, has been long overdue and I am sure the other members of the profession are going to find it most useful.

*Norman McMurrich, FRAIC, Toronto*

*The Editors :*

The new *Allied Arts Catalogue* produced by the RAIC is a real breath of fresh air in the field of Architecture and the Allied Arts. It appears to me to exactly fill the needs of architects in this area - for quick reliable graphic information on available artists in the various media.

My congratulations go to Anita Aarons and her associates in this venture.

*R. T. Affleck, MRAIC, Montreal*

*The Editors :*

The *Allied Arts Catalogue* is terrific and has been much admired by those whom I have shown it to. I should have commented before but just thought of it now, when occasion to refer reminded me. Sincere congratulations.

*R. W. Siddall, FRAIC, Victoria*

*The Editors :*

Congratulations on a really impressive and infinitely useful contribution to the Canadian art scene, and to all those concerned with the visual arts in this country.

*Dorothy Cameron, Art Consultant, Toronto*

*The Editors :*

The publication of *Allied Arts Catalogue* is so welcome to those concerned with the visual arts that it makes one wonder why such a folder has not appeared before. Its value lies principally in the fact that it is the only organized and ready source of photographs covering artists whose work might be considered for inclusion in architectural schemes. The quality of the photographs is often disappointing but does not, in fairness, detract from the usefulness.

To make the publication loose leaf, so that it can be kept up to date, was one of a number of wise decisions made by the editors. The RAIC are to be congratulated on this practical contribution to the cultural life of Canada.

*W. J. Withrow, Director, Art Gallery of Ontario*

*The Editors :*

I have received my long awaited copy of the *RAIC Allied Arts Catalogue*.

First let me say that those responsible for this venture are to be complimented. It is no small undertaking to obtain and organize material for such a publication. In particular, I would commend Anita Aarons because I know that it has been primarily through her diligent efforts that this directory ever got off the ground.

However, I have one criticism, and that is, the color reproductions are appalling and in my estimation just a degree above poor color postcards.

Since I understand that there are future issues to follow, should not some reappraisal take place with respect to improving this segment of an otherwise excellent publication?

I am sure all artists and craftsmen so generously represented would be forever indebted to you.

*A. Alan Perkins, Toronto*

**Wild Flower Department**

*The Editors :*

Modern buildings are rising higher and higher - and higher. Architects vie with each other to top off one more story up. One may well argue the merit of this trend with land at such a premium in densely populated urban areas.

To the thinking architect, however, and there must be some, this approach to building design has created some devastating, in fact, some quite disturbing ancillary problems. Can he really take much pride that he is higher than his competitors, or that he must have been, to conceive the structure that rises from his blueprints into the unoffending sky?

It is becoming increasingly pointless to bother about design above the sixtieth floor. From the outside, one's vision fails to register an image even if the clouds were removed. Inside, room at the top outweighs any aesthetic or architectural triumph anyway.

Dr V. Papilionacea published a learned treatise recently on the deteriorating condition of the eyes of denizens of high rise areas, to say nothing of spinal problems in the vertebrae, roughly in the neck area. Admittedly, the sampling for this treatise was not nation wide but it is ominous in its implications. Further, it has been reliably reported that pedestrians running into pedestrians are causing an accident rate not too ridiculously removed from pedestrian-vehicle mishaps.

But there is a much more serious aspect to this whole problem and that is, of course, the aesthetic value, or lack of it, in the high rise architectural concept. Not only architects have the urge to throw up when faced with an uncompromising mile of concrete, aluminium, stainless steel or glass. Reliable surveys of people who have to live at ground level prove that high rise buildings make them sick - and look at all those bags on airplanes.

While the aesthetic problems involved in high rise structures are highly apparent, what is the solution? Admittedly, they are with us



until the ninety-nine year lease expires and in a sense, therefore, interim measures would be sufficient until some new, aesthetically impossible concept replaces them.

The final solution is in no way revolutionary or patentable. Even if it were, it is hereby offered gratuitously for purely humanitarian reasons.

Wild flowers are our heritage. By the very nature of their profession architects have aided and abetted, nay, been instrumental in the destruction of this heritage. Every line on their drawing boards (if it's a buildable design) wipes out some beautiful wild flower from its

native soil. One more touch of color replaced by the drabness of concrete.

But it is not only on aesthetic and ethical grounds that it is urged that wild flowers be used as foundation planting for high rise structures. True, the contrast of monumental structures and diminutive violets will be aesthetically satisfying and one can have no qualms about the morality of a wild calla lily and a Jack-in-the-Pulpit. There is also the practical aspect of the problem which may have more impact on those architects who have had a hand in the design of some of our more extraordinary high rise buildings.

Wild flowers, being small and beautiful, the search to find them at the base of a building will mean that little or no attention will be paid to the building itself, not only up from the cloud line (designated as C/L on most drawings) but down also. Architects could then continue to pay no attention to the design and no extra work would be involved.

More land can be used for building purposes as wild flowers take up much less space than artificial trees, abstract concrete and welding rod sculptures.

While the commission would be lost, wild flowers can be obtained free in the frontier areas where the architects' plans have not sold well.

Notwithstanding the hidden admonishments in this letter, with the use of modern building materials and techniques, architectural genius has flowered. It is time, however, to be literal - try a trillium.

If such provincialism offends the more sophisticated architect, the *Cypripedium Reginae* (Showy ladyslipper) can add a very elegant touch, being one of the wild orchid family. A similar wild flower, perhaps more suitable than the *Reginae* for Quebec and other republican countries, might be the *Cypripedium Pubescens*, a Ladyslipper in another color.

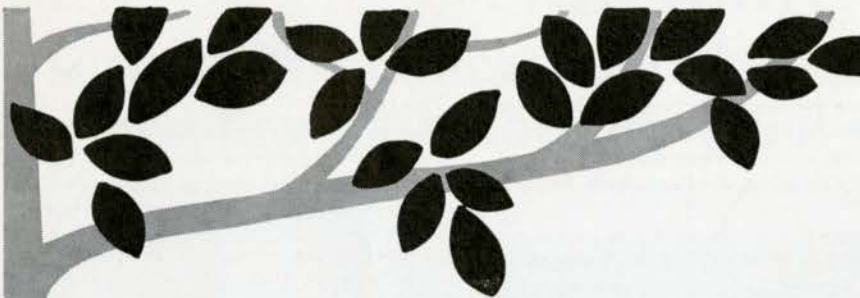
For specification sheets it should be noted that wild orchids require an acid soil so lime from concrete foundations should be neutralized.

The variations in use of wild flowers are limitless with respect to color, texture and growth pattern so the individual architect will find great scope to practice his vivid imagination on ground level - in the gutter so to speak but with aesthetic embellishments. Unquestionably, technical difficulties will crop up in the initial phases of implementing this new concept in architecture but the advantages should far outweigh them. Cranial fractures of pedestrians running into concrete slabs in their search for anhepatica should not be a hazard. Look what they have done with padded dash boards. During the running in period it might be wise to include it in the liability insurance.

For those who have found this too technical there are a number of excellent books on wild flowers for the beginner.

*G. T. Baylay, MA (Cantab),  
Silverdown Farm, Streetsville, Ont.*

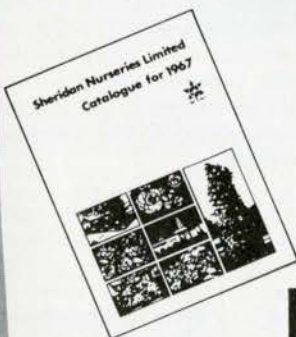
*Editor's Note:  
In 1959 Mr Baylay was appointed Honorary Wildflower Consultant to the Editor. We are glad after all these years to hear from him.*



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#### Practice Notes

Hideo Sasaki has retired from the practice of Landscape Architecture. The firm of Sasaki, Strong and Associates Limited is now known as Richard Strong Associates Limited. New principals are William Coates, BSCE, MLA; Gerald Englar, MLA; Steven Moorhead, MLA; Emil van der Meulen, MLA, CSLA, and associates are John Bentley, MLA; Gerry Harsch, BS, BA. The firm will continue at 45 Colborne Street, 366-9238.

Bernard Gillespie, MRAIC, ARIBA, has commenced practice at 6 Thorncliffe Square, Toronto 17, Telephone 425-3661.

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Member of the RAIC who is sole principal of a small but developing practice in Toronto would like to hear from others in a similar position interested in forming a group practice. Write to Box 136, *Architecture Canada*.

#### Positions Wanted

Armando F. Gutierrez of 921 Dos Castillas Sampaloc, Manila, Philippines, Bachelor of Science in Architecture from the Far Eastern University, 1963; Member League of Philippine Architects, seeks position in Canada. Senior Draftsman from 1960 to 1965, presently in private practice. Skills: Drafting and Rendering.

25-year-old architect-designer, graduate of the College of Architecture, Bombay, AIIA, three years experience in architects' office in London, England, wishes a job with a

Toronto architectural firm. Write to *Architecture Canada*, Box 137.

27-year-old Dutch architect, graduate of the University of Amsterdam in 1962 with four years' experience in a consulting engineers firm, wishes a position in Toronto. Write Mr William Kerhoss, 10 Westgate Boulevard, Downsview, Ontario.

43-year-old Filipino architect, graduate in 1948 from the University of Sto Tomas, practicing architect since 1951, wishes a position in Canada. Write Federico G. Capinpin, 1229 Antonio Street, Sampaloc, Manila, Philippines.

Graduate of Sir J.J. College of Architecture, 26 years old, AIIA, 2 years experience as architectural designer wishes a position with a Canadian architectural firm. Contact Vasant R. Bhagat, Frabhudas N. Building, 27/2nd Floor, Tank Bunder Road, Mazgaon, Bombay 10, India.

Filipino architect, B.Arch. University of Santo Tomas, seven years of experience, looks for a job in Canada with view to immigration. Write Rogel R. Valdes, P.O. Box 4124, Manila, Philippines.

Young Draftsman/Junior Architectural Assistant with second year RIBA, seeks employment in architect's office in Canada. Reply A. M. Kermally, P.O. Box 269, Darnessalaam, Tanzania.

B.Sc. in Architecture 1964, with experience in architects and engineers offices, seeks a position as a draftsman in Toronto. Contact Yolanda A. De Leon, 2356 Leveriza Street, Pasay City, Philippines.

Young English architect, graduating in June 1967, requires work as assistant architect in Ontario from August 1967. Five years honors degree at Manchester University, 12 months experience in system building and large scale housing development. Member RIBA. Reply R. A. Cockle, 7 Wolseley Place, Withington, Manchester 20, England.

English speaking student from Texas A & M University desires summer position in the Montreal area in order to facilitate compilation of his final year research paper on Habitat '67. Contact Roger D. Manny, P.O. Box 5246, Texas A & M University, College Station, Texas, U.S.A.

31-year-old architectural assistant with ten years experience in design, general layout drawing, site supervision, etc., seeks employment in the Toronto or Vancouver areas. Contact Robert Hall, 937 West 19th Avenue, Vancouver, B.C.

British architect, competent perspective artist, aged 29, with nearly six years office experience in London, immigrating to Canada, wishes a position in Toronto or Vancouver. Write Leonard Curtis, ARIBA, 4 Midhurst Court, Hook Road, Surbiton, Surrey, England.

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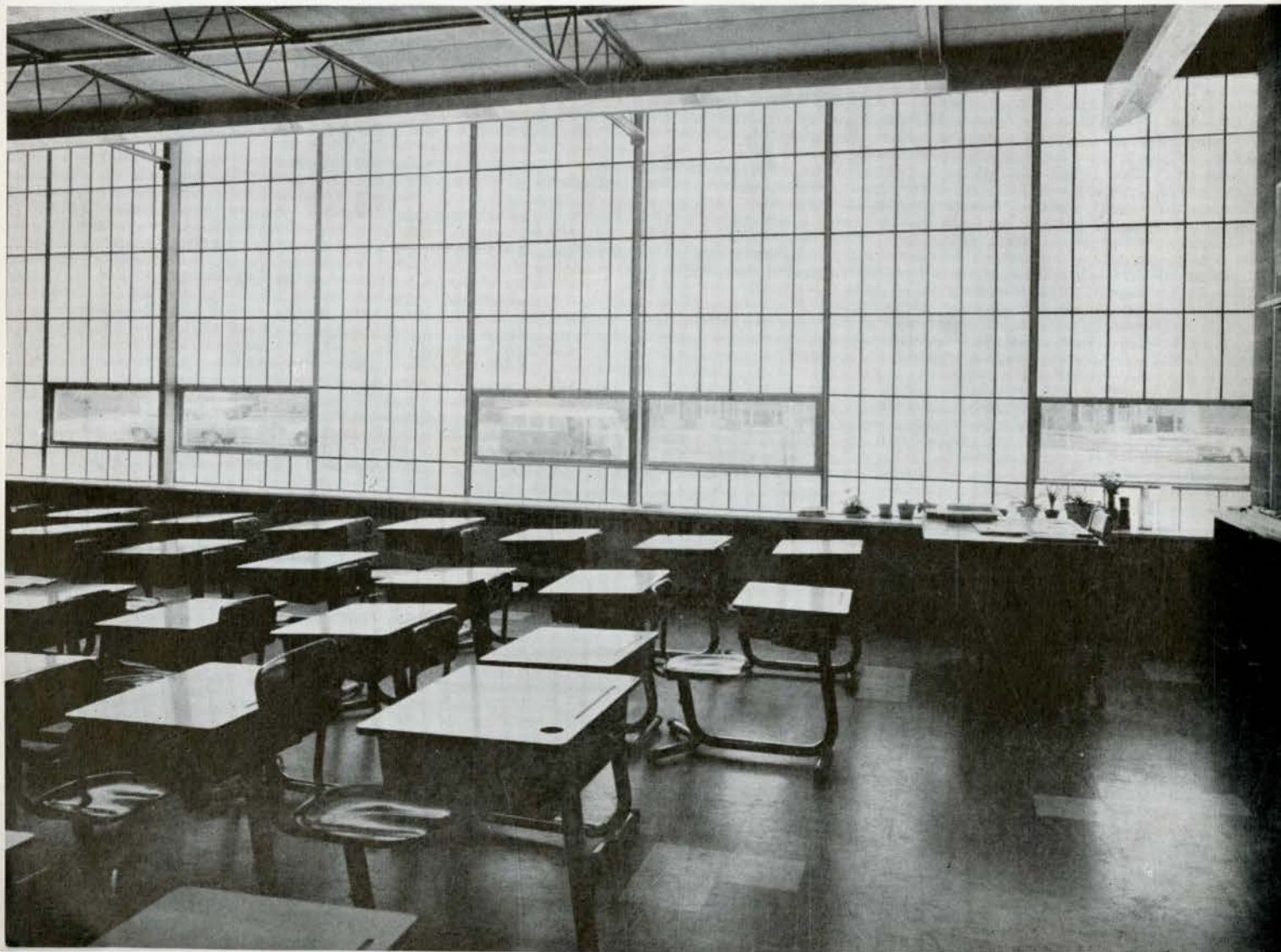
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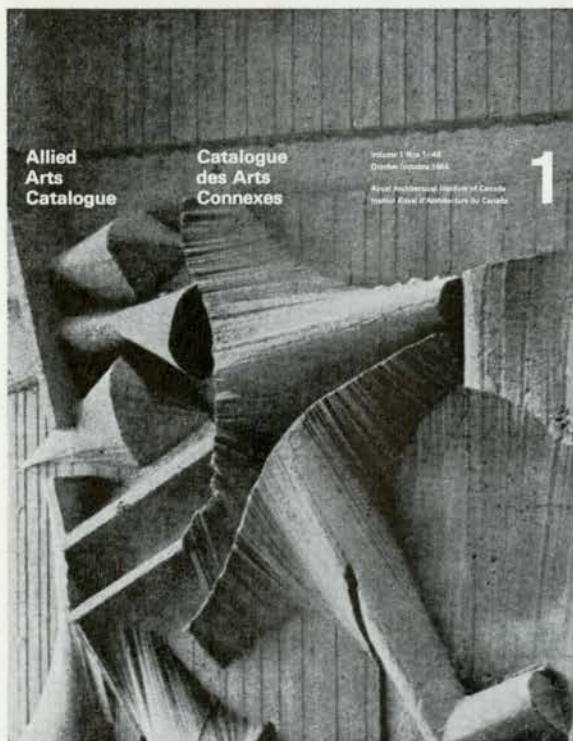
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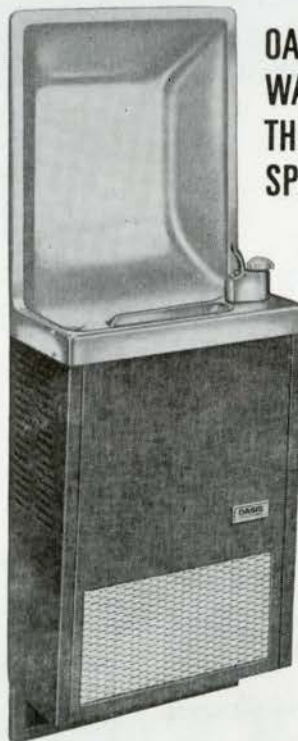
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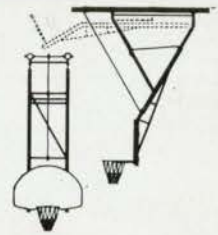
A unique new ALUMINUM approach to basketball equipment is completely detailed in 34 pages of plan views and specifications. Retractable stages; hinged jungle frames; Olympic equipment and dozens of other fully illustrated products provide the broadest range of gymnasium equipment available in Canada. Have you received your copy of Madsen's new catalogue?



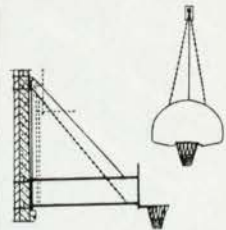
FACTORY REPRESENTATIVES  
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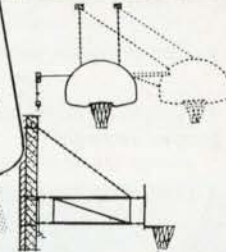
## BASKETBALL BACKSTOPS



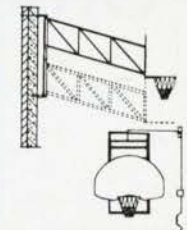
Model BB-15  
Swing Forward Ceiling  
Suspended



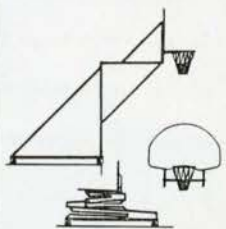
Model BB-9  
Swing-Up Wall Mounted



Model BB-10  
Side Swing Wall Mounted



Model BB-13  
Height Adjustable  
Wall Mounted



Model BB-7  
Folding: Stage Mounted



# Can Pozzolith help keep the world's largest prestressed tunnel from leaking?



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The people who built the remarkable Louis-Hippolyte Lafontaine Tunnel used POZZOLITH concrete for two reasons.

To increase watertightness of the concrete and obtain high, uniform strength.

One way POZZOLITH does this is by reducing the amount of mixing water.

With low water content, bleeding is greatly reduced. By as much as 50%. This (1) makes denser concrete with a more uniform aggregate coating, (2) lowers permeability and absorption, and (3) reduces cracking.

POZZOLITH actually plasticizes the mix. Add it to a plain mix and you can increase slump by 150%—without any reduction in strength.

This allows better, easier flow of concrete around

closely spaced reinforcement. With little chance of honeycomb.

You can control rate of hardening, too. Which helps avoid unwanted cold joints between lifts.

POZZOLITH also gives up to 25% greater compressive strength than plain concrete of the same slump and cement content. And bonds to reinforcement up to 40% more strongly.

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Our general office and factory is in Toronto. Our branch offices are in Vancouver, Calgary, Edmonton, Winnipeg, Regina, Ottawa, Montreal and Moncton.

Shown is part of the six-lane, 4,500 foot long Louis-Hippolyte Lafontaine Tunnel. It runs under the St. Lawrence River Ship Channel linking up the Trans-Canada highway. *Engineers:* A joint partnership of Brett & Ouellette, Lalonde, Valois & Associates, Per Hall & Associates. *General Contractor:* Atlas-Winston, Janin. *Ready-Mix Supplier:* De-Mix Limitée.

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