

# PUBLISHING RESEARCH FOR 34 YEARS

JAPR is the major interdisciplinary,  
international, and award-winning resource  
for professionals and scholars in  
architecture, design, and urban planning.

# JOURNAL OF ARCHITECTURAL AND PLANNING RESEARCH®

Published in cooperation with  
The American Institute of Architects,  
the Architectural Research Centers Consortium,  
the Division of Environmental Psychology of the  
International Association of Applied Psychology,  
the Environmental Design Research Association,  
the International Association for  
People-Environment Studies,  
People and Physical Environment Research,  
the Royal Institute of British Architects,  
and Society for Environmental Graphic Design.

## AVAILABLE ON OUR WEBSITE:

- Subscribe to JAPR by check or credit card
- Sample articles and tables of contents
  - Sign up for JAPR's mailing list
  - Author instructions, manuscript submissions checklist, and much more

[www.lockescience.com](http://www.lockescience.com)

LOCKE

## AIMS AND SCOPE

The *Journal of Architectural and Planning Research*® is unique in the fields of architecture and urban planning. Reporting both recent research findings and innovative new practices, it provides a link between theory and practice for researchers and practicing professionals. Articles come from authors on every continent, providing truly international coverage of research developments. JAPR has received the **Achievement Award** from the Environmental Design Research Association and the **First Place Award** (Scholarly Journal) from the Successful Magazine Publishing Association. Both were in recognition of JAPR's innovative content and contribution to knowledge development.

Original empirical research papers, theoretical and integrative review articles, book reviews, and high-quality position papers keep readers up-to-date on the latest ideas, designs, and developments in these related fields. A blind refereed, scholarly journal, JAPR includes three major areas in its comprehensive, interdisciplinary coverage:

*Architectural and design research* includes such topics as architectural technology, environment and behavior, design methods, architectural theory, architectural practice, design programming, business design research, computer applications to architectural practice, information technologies for design professionals, post-occupancy evaluation, environmental evaluation, social-impact assessment, forecasting for the environmental professions, user participation, environmental education for the public, energy, site planning, topology, and building configuration.

*Urban planning research* topics include, but are not limited to, social, geographic, administrative, and political studies of the factors that contribute to the shaping of neighborhoods, cities, and urban regions. Also of interest are topics that relate research to public- or private-sector policy setting and administrative decision making.

*Architectural design, interior design, and urban design* may be of particular interest to practicing architects, designers, and urban planners. They cover the above topics as related to practice and allow for publication of architectural, interior, and urban design projects.

Original and broad in scope, the *Journal of Architectural and Planning Research* provides comprehensive coverage of the research and practice of architecture and urban planning. It is the interdisciplinary publication for all those working in architecture and urban planning.

## ORDER FORM

**Journal of Architectural and Planning Research**  
ISSN 0738-0895 Published quarterly.  
Subscription prices are per volume (year).

### For Volume 34 (2017):

Individuals: \$159.00  
Members of cooperating associations: \$127.20  
Institutions: \$649.00

In the U.S., Media Mail postage is included in the base subscription price; subscribers should add \$70 to the base price for Priority Mail postage. In Canada, subscribers should add \$35 to the base price for First-Class International Mail postage or \$150 for Priority Mail International postage. Subscribers in all other countries should add \$75 to the base price for First-Class International Mail postage or \$165 for Priority Mail

International postage. All payments must be made in U.S. funds. Individual (personal) subscriptions must be prepaid; institutions may request invoices. Prepaid, multiyear subscriptions receive a 5% discount.

Complete the form below or visit us at [www.lockescience.com](http://www.lockescience.com) to subscribe online.

Name: \_\_\_\_\_  
Institution: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
State: \_\_\_\_\_ Zip Code/Postal Code: \_\_\_\_\_  
Country: \_\_\_\_\_

Send your subscription order form and payment to  
**Locke Science Publishing Company, Inc.® (JAPR)**  
**332 S. Michigan Avenue, Suite 1032 #L221**  
**Chicago, Illinois 60604-4434, USA**  
or your institutional agency/supplier.

## **ANDREW D. SEIDEL, Editor-in-Chief**

Chair, School of Environmental Planning, University of Northern British Columbia, and Associate, Cities Centre, University of Toronto; email: japr@lockescience.com

**ALISON GILL, Canadian Editor**, Department of Geography, Simon Fraser University, Burnaby, BC, Canada V5A 1S6; email: agill@sfu.ca

**GORDON HOLDEN, Australasian Editor**, Griffith School of Environment, Parklands Drive, Gold Coast Campus, Griffith University, Queensland 4222, Australia; email: g.holden@griffith.edu.au

**RICARDO GARCIA MIRA, European Editor**, Department of Psychology, University of Coruña, Campus de Elvina, 15071 A Coruña, Spain; email: fargmira@udc.es

## **Associate Editors**

**HABIB CHAUDHURY, Book Reviews – Architecture**, Simon Fraser University, Vancouver, BC, Canada V6B 5K3

**AJAY GARDE, Book Reviews – Planning**, University of California, Irvine, Irvine, CA 92697, USA

**MARK FRANCIS**, University of California, Davis  
**ARZA CHURCHMAN**, Technion – Israel Institute of Technology

**MASAMI KOBAYASHI**, Kyoto University  
**JOSEPH MASHBURN**, University of Houston  
**RUTH BRENT TOFLE**, University of Missouri, Columbia

## **Board of Editors**

**SY ADLER**, Portland State University

**SHERRY BOLAND AHRENTZEN**, University of Florida

**ERNEST ALEXANDER**, Tel Aviv, Israel

**KHEIR AL-KODMANY**, University of Illinois at Chicago

**NEZAR AL-SAYYAD**, University of California, Berkeley

**DOUGLAS AMEDEO**, University of Nebraska, Lincoln

**ARDESHIR ANJOMANI**, University of Texas at Arlington

**MAHYAR AREFI**, University of Cincinnati

**LEONARD BACHMAN**, University of Houston

**MARK BALDASSARE**, Public Policy Institute of California

**TRIDIB BANERJEE**, University of Southern California

**PHILIP R. BERKE**, University of North Carolina, Chapel Hill

**IAN BISHOP**, University of Melbourne

**EDWARD BLAKELY**, The University of Sydney

**IAIN BORDEN**, Bartlett School of Architecture, London

**GEOFFREY BROADBENT**, Portsmouth Polytechnic

**MICHAEL P. BROOKS**, Virginia Commonwealth University

**SIDNEY BROWER**, University of Maryland, Baltimore

**BARBARA B. BROWN**, University of Utah

**MARCIA CATON CAMPBELL**, Center for Resilient Cities

**ARTHUR CHEN**, University of Minnesota

**GORDON L. CLARK**, University of Oxford

**PAUL B. CLARK**, Architect, PLLC

**WILLIAM CLARK**, University of California, Los Angeles

**MICHEL CONAN**, Dumbarton Oaks

**GALEN CRANZ**, University of California, Berkeley

**DANA CUFF**, University of California, Los Angeles

**G. SCOTT DANFORD**, State University of New York at Buffalo

**KRISTEN DAY**, New York University Polytechnic School of Engineering

**CHRISTOPHER DE SOUSA**, Ryerson University

**KIM DOVEY**, University of Melbourne

**RICHARD DUKE**, University of Michigan

**NNAMDI ELLEH**, University of Cincinnati

**W. RUSSELL ELLIS**, University of California, Berkeley

**GARY EVANS**, Cornell University

**JAY FARBSTAIN**, Farbstain and Associates

**ROBERTA M. FELDMAN**, University of Illinois at Chicago

**ALLAN G. FELDT**, University of Michigan

**JOHN FORESTER**, Cornell University

**ANN FORSYTH**, Harvard University

**KAREN FRANCK**, New Jersey Institute of Technology

**AMNON FRENKEL**, London School of Economics

**AVI FRIEDMAN**, McGill University

**KUNIO FUNAHASHI**, Osaka University

**JAN GEHL**, Royal Academy of Fine Arts, Vanlose, Denmark

**JOHN S. GERO**, University of Sydney

**JOHN M. GIBSON**, Bohlen, Meyer, Gibson and Associates, Inc.

**DAVID GODSCHALK**, University of North Carolina, Chapel Hill

**BRIAN GOODEY**, Oxford Brookes University

**DAVID GORDON**, Queen's University

**ROBERT GREENSTREET**, University of Wisconsin, Milwaukee

**LINDA N. GROAT**, University of Michigan

**MIROSLAW GROCHOWSKI**, Rutgers University

**GARY HACK**, University of Pennsylvania

**ELISABETH HAMIN**, University of Massachusetts

**JORGEN PEDER HANSEN**, Royal Academy of Fine Arts, Copenhagen

**TERRY HARTIG**, Uppsala University

**DAVID HAWK**, New Jersey Institute of Technology

**ALAN HEDGE**, Cornell University

**ERIC J. HEIKKILA**, University of Southern California

**SANDRA HOWELL**, Massachusetts Institute of Technology

**YING HUA**, Cornell University

**YOUQIN HUANG**, State University of New York at Albany

**JUDITH INNES**, University of California, Berkeley

**CLARA ZURITA IRAZABAL**, Columbia University

**ALLAN JACOBS**, University of California, Berkeley

**MARTIN JAFFE**, University of Illinois at Chicago

**PAUL ALAN JOHNSON**, University of New South Wales

**RACHEL KALLUS**, Technion – Israel Institute of Technology

**NABIL KAMEL**, Western Washington University

**MIN KANTROWITZ**, Min Kantrowitz and Associates

**RACHEL KAPLAN**, University of Michigan

**IVAN KILPATRICK**, Arkitektskolen i Aarhus

**SUK-KYUNG KIM**, Michigan State University

**ROSS KING**, University of Melbourne

**MOHAMMAD JAVAD KOOHSARI**, University of Melbourne

**SATOSHI KOSE**, Shizuoka University of Art and Culture

**EUGENE KREMER**, Arlington, Virginia

**FREDERICK KRIMGOLD**, Virginia Polytechnic Institute and State University

**FRANCES KUO**, University of Illinois

**VIRGINIA KUPRITZ**, University of Tennessee, Knoxville

**B. LAWSON**, The University, Sheffield

**SUE-ANN LEE**, Kingston University

**ANASTASIA LOUKAITOU-SIDERIS**, University of California, Los Angeles

**ZHONGDONG MA**, Hong Kong University of Science and Technology

**ALI MALKAWI**, Harvard University

**LYNNE MANZO**, University of Washington

**ROBERT W. MARANS**, University of Michigan

**ERIC M. MARCHANT**, Edinburgh Fire Consultants

**STEPHEN T. MARGULIS**, Grand Valley State College

**JAMES MAYO**, University of Kansas

**SANJOY MAZUMDAR**, University of California, Irvine

**WILLIAM MICHELSON**, University of Toronto

**KEITH DIAZ MOORE**, University of Kansas, Lawrence

**JACK NASAR**, Ohio State University

**MICHAEL C. NEUMAN**, University of New South Wales

**ADRIAN NORTH**, University of Leicester

**T. O'RIORDAN**, University of East Anglia

**FRANK OSWALD**, University of Heidelberg

**TANER OZDIL**, University of Texas at Arlington

**J. L. PAULS**, Silver Spring, Maryland

**RICHARD PEISER**, Harvard University

**LUBOMIR POPOV**, Bowling Green State University

**DAVID PROSPERI**, Florida Atlantic University

**GEORGE RAND**, University of California, Los Angeles

**ERIC RAPAPORT**, Dalhousie University

**AMOS RAPOPORT**, University of Wisconsin, Milwaukee

**RIC RICHARDSON**, University of New Mexico

**ROBERT RILEY**, University of Illinois, Urbana-Champaign

**EDWARD ROBBINS**, The Oslo School of Architecture and Design

**DANIEL RODRIGUEZ**, University of North Carolina

**PETER ROWE**, Harvard University

**VIMALIN RUJIVACHARAKUL**, University of Delaware

**THOMAS SAARINEN**, University of Arizona

**LYNN SAGALYN**, University of Pennsylvania

**TORRE SAGER**, Norwegian University of Science and Technology, Trondheim

**NIKOS SALINGAROS**, University of Texas at San Antonio

**LINDA C. SAMUELS**, University of Arizona

**HENRY SANOFF**, North Carolina State University

**SUSAN SCOTT**, Royal Australian Institute of Architects

**DAVID SEAMON**, Kansas State University

**MAGED SENBEL**, University of British Columbia

**MARDELLE SHEPLEY**, Texas A&M University

**WILLIAM SIEMBIEDA**, California Polytechnic State University

**KAPILA SILVA**, University of Kansas

**DAVID SIMPSON**, University of Louisville

**ANDREJS SKABURSKIS**, Queen's University

**JAY STEIN**, Arizona State University

**DANIEL STOKOLS**, University of California, Irvine

**WILLIAM SULLIVAN**, University of Illinois

**MARTIN SUNDEL**, Sundel Consulting Group

**SHARON SUTTON**, University of Washington

**JOHN TARN**, University of Liverpool

**D. W. TEMPLETON**, BDP Acoustics Unit

**RICHARD M. TITUS**, National Institute of Justice

**MICHAEL TOMLAN**, Cornell University

**YI-FU TUAN**, University of Wisconsin at Madison

**ELIF TURAL**, Oregon State University

**M. SUSAN UBBELOHDE**, University of California, Berkeley

**DAVID UZZELL**, University of Surrey

**WILLEM K. T. VAN VLIET**, University of Colorado at Boulder

**DAVID VARADY**, University of Cincinnati

**RICHARD D. WAGNER**, Goucher College

**SUE WEIDEMANN**, BOSTI Associates

**GERALD WEISMAN**, University of Wisconsin, Milwaukee

**NANCY M. WELLS**, Cornell University

**RICHARD E. WENER**, New York Univ. Polytechnic School of Engineering

**JEAN D. WINEMAN**, University of Michigan

**FULONG WU**, Cardiff University

**WEN-HSIN YEH**, University of California, Berkeley

**MING ZHANG**, University of Texas at Austin

**CRAIG ZIMRING**, Georgia Institute of Technology

**Journal of Architectural and Planning Research®**  
**Instructions to Authors**

Manuscripts for papers and design and planning projects should be sent to the Editor-in-Chief, Andrew D. Seidel, via email at [japr@lockescience.com](mailto:japr@lockescience.com). Nearly all scholarly journals are now accepting manuscripts only by electronic means. However, if you absolutely cannot do this, please send us a brief fax at +1-406-794-0216 with your contact information, and we shall do our best to accommodate you. ONLY original works neither published nor under review elsewhere will be considered.

**PAPERS**

*Manuscripts:* Papers should range from 2,000-6,000 words in length. All papers submitted must be created in a word-processing program (such as Microsoft Word), double spaced, and formatted to print on 8.5" x 11" (or A4) size paper. Save the file in .rtf or .doc format. All papers should include on a first title page: (1) a brief title that is descriptive of the paper's contents; (2) the name(s), position(s), professional or academic affiliation(s), and email address(es) of the author(s), as well as the full postal address for the corresponding author; and (3) a 45-character running title. The second page of the manuscript should include the paper's title and an approximately 200-word abstract that emphasizes the paper's contribution to the field and its practical architectural or planning implications. It has been very useful for authors to review recent *JAPR* articles on similar subjects and include reference to those articles in the papers they submit. It is essential to point out how the new paper contributes to this stream of knowledge development because it indicates an understanding of the types of materials *JAPR* publishes as well as currency in the literature. The body of the paper should include an introduction to the subject, background information, discussion of procedure, results, conclusions, implications for practice and advancement of research, references, an autobiographical sketch, and acknowledgments (optional). If funding for the research was received from non-personal sources, the sources must be identified in the acknowledgments.

*Style:* With the exception of letters to the editor and position papers, all papers submitted should be written in the third person. In the interest of appealing to a broad and diverse audience, a clear style, free of jargon, is important.

*References:* References should be arranged in alphabetical order. In the text, they should be referred to by name and year; if the reference has more than two authors, the text citation should use the name of the first author followed by "et al." Papers by the same author(s) published in the same year should be distinguished by the use of lowercase letters following the date. References should contain the following in the order shown: names of all contributing authors (last name followed by first initial), date of publication, title of article, names of editors (edited books only), title of journal or book, volume and issue numbers (journals only), location and name of publishing company (books only), and inclusive pages (journals and articles in edited books only). Authors should review past *JAPR* issues for additional examples of various resources. Some basic examples follow:

*Journal:* Appleyard D (1970) Styles and methods of structuring a city. *Environment and Behavior* 2(3):100-107.

*Book:* Lynch K (1960) *The image of the city*. Cambridge: MIT Press.

*Article in an Edited Book:* Redei A, Kelemen P (1969) The presence of platelets. In A Bertelli and JC Houck (Eds.), *Inflammation biochemistry*. Chicago: Locke, pp. 161-165.

*Figures and Tables:* Illustrations or photographs that illuminate the discussion in the text are encouraged. All artwork accepted for final publication must be in camera-ready black-and-white (halftones) or original line drawings. All photographs must be black-and-white glossy prints. All figures should be submitted as hard copies, one figure per page. Any artwork that is not a table will be considered a figure, so please label all artwork (e.g., matrices, maps) as figures in the order in which they appear in the text. All type must be large enough to still be readable when reduced to fit the journal page size (approximately 5.25" x 8.25"). Please include all tables either in the original manuscript file or as separate Microsoft Word documents, ensuring they can be easily reproduced on the journal page size (approximately 5.25" x 8.25").

**DESIGN AND PLANNING PROJECTS**

*Manuscripts:* All documentation must be submitted via email to Andrew D. Seidel, Editor-in-Chief, at [japr@lockescience.com](mailto:japr@lockescience.com). Both a description of the design or project and a summary of its contribution may be included in written, graphic, and/or photographic form. The objectives of the design, project, or evaluation, and the response to fulfilling those objectives, should be clear to the reader. All written materials accompanying these submissions should conform to the guidelines for papers shown above. Submissions will be judged based on not only the quality of the design solution and its contribution to the field but also on its specified use of systematically collected information in the design decision-making process. Authors of designs will receive an Award Certificate acknowledging their contribution to the field.

*Proofs and Reprints:* The corresponding author for both papers and design and planning projects will receive page proofs, which should be corrected and returned within 48 hours of receipt. Corrections should be limited to printer's errors; authors will be responsible for the cost of making extensive changes. Reprints may be ordered at the price listed on the order form accompanying the proofs.

*Copyright:* After a manuscript is received by the journal, the author(s) will be asked to transfer copyright of the article to the publisher. This transfer will ensure the widest possible dissemination of information under U.S. copyright law.

The *Journal of Architectural and Planning Research*® is abstracted or indexed in Abstracts in Anthropology, Architectural Publications Index, Art Index, Current Contents, Engineering Index, Environmental Periodicals Bibliography, Geo Abstracts, Housing and Planning References, INFOSERV, INSPEC, National Institute of Justice/National Criminal Justice Reference Service, PAIS Bulletin, Psychological Abstracts/Psych INFO, Recent Publications on Governmental Problems, Science Culture, Scopis, Social Sciences Citation Index, Sociological Abstracts, and Urban Studies Abstracts.

The *Journal of Architectural and Planning Research* is available online to individuals and via libraries at [JSTOR.com](http://JSTOR.com).

**Email contact information:**

Regarding manuscripts, please email

[JAPR@LockeScience.com](mailto:JAPR@LockeScience.com)

Regarding subscriptions and fulfillment, please email

[CustomerCare@LockeScience.com](mailto:CustomerCare@LockeScience.com)

From:  
JAPR  
Locke Science Publishing  
Company, Inc.®  
332 S. Michigan Avenue  
Suite 1032 #L221  
Chicago, IL 60604-4434, USA

NON-PROFIT ORG.  
U. S. POSTAGE  
  
PAID  
  
CHICAGO, ILLINOIS  
60604  
PERMIT No. 215