

Organized by Liat Margolis & Aziza Chaouni

# Sustaining Development in Arid Climates

— — — — —

OUT OF WATER

OUT OF WATER

OUT OF WATER

John H. Daniels Faculty of Architecture, Landscape, and Design  
230 College Street, Toronto, Ontario M5T 1R2

**April 1 & 2, 2011**

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



## CONFERENCE DESCRIPTION

This conference will offer a forum for water experts in the fields of design, engineering, natural and social sciences to identify not only specific disciplinary methodologies, but also areas of applied and theoretical intersections with respect to water scarcity in arid regions. These investigations will be discussed in context of varying technical and sociopolitical dimensions of water scarcity.

Twenty-two established and emergent designers, scholars and scientists will be brought together to evaluate currently-implemented solution with regard to their efficiency and geographic relevance.

The disciplines represented in this conference include environmental law and water policy, public health, agronomy, hydrology, geography, building science, business strategies, civil engineering, landscape architecture, architecture and urban design.

There are numerous factors that cause water scarcity worldwide, including climatological, environmental and anthropogenic factors such as over-consumption, failing infrastructure, unsustainable agricultural practices and contamination. The challenges posed by water scarcity are currently most acute in arid and underdeveloped regions. Research in these regions should prove to be relevant to those interested in the role that water will come to play in shaping our built environments and our political and economic arenas. In fact, water issues will likely come to play an increasingly important role in instigating academic and professional collaborations and fostering meaningful political dialogues.

## SPEAKERS

**Antoine Picon**, Harvard Graduate School of Design

**Alon Tal**, Ben Gurion University of the Negev, Mitrani Department of Desert Ecology

**James L. Wescoat, Jr.**, School of Architecture+Planning, MIT

**Hadley Arnold**, Arid Lands Institute, Woodbury University

**Gini Lee**, Queensland University of Technology

**Kai Babetzki** and **Matthias Schuler**, Transsolar KlimaEngineering

**Kristin Malone**, Center for Architecture Science & Ecology (CASE)

**Aziza Chaouni** and **Liat Margolis**, Daniels Faculty

**Eilon Adar**, Ben Gurion University of the Negev, Zuckerberg Institute for Water

**Camille Dow Baker**, Centre for Affordable Water and Sanitation Technology (CAWST)

**Virginie Picon-Lefebvre**, Ecole Nationale Supérieure d'Architecture Paris-Malaquais

**Drew Wensley**, Moriyama & Teshima and **Alan Travers**, Buro Happold

**Walter H. Kehm**, LANDinc.

**Farid Esmail**, X-Architects

**Lennart Woltering**, GFA Consulting Group GmbH and **Dov Pasternak**, International Crops Research Institute for the Semi Arid Tropics (ICRISAT)

**Anthony M. Watanabe**, Innovolve Group, Canada

**Felipe Correa**, Somatic Collaborative

**Fadi Masoud**, Harvard Graduate School of Design

**Byron Stigge**, Buro Happold, New York

## MODERATORS

**Robert Levit** (Architecture and Urban Design), **Jane Wolff** (Landscape Architecture),

**Ted Kesik** (Building Science), **Robert Wright**, **Alissa North** (Landscape Architecture),

**Mary Lou Lobsinger** (Architectural History and Theory)

## CONFERENCE FORMAT

The keynote lectures will include Antoine Picon, Professor of the History of Architecture and Technology and Alon Tal, Professor of Environmental Policy and Law whose talks will address the relationship between water, technology, and society.

The conference talks are divided into three thematic sessions:

**Collecting** – water supply and storage

**Converting** – water quality

**Distributing** – water delivery networks

Each session is further divided into two groups:

1. engineers, social and natural scientists will describe their respective methodologies
2. landscape architects and urban designers will present water focused case studies

A moderated panel discussion will follow each session.

Conference participants were asked to consider the following questions within their papers and discussion:

1. What is the definition and position of technology relative to your discipline and approach to water issues?
2. Highlight the methodological approach specific to your discipline / practice in relation to your session's theme?
3. How does technology influence the built environment and its water infrastructural systems? How does it promote design innovation that deals with water shortage or conversely, efficiency?
4. How does technology modify the behavior or cultural perception of water systems and its users/stakeholders?
5. In the next few decades, how do you envision the position of water technologies and infrastructure within the built/urban environment?

**Introduction & Keynote Lectures**

09:00 - 09:10

Dean's Welcome

**Richard Sommer**, Daniels Faculty

09:10 - 09:40

Introduction to Conference

**Liat Margolis** and **Aziza Chaouni**, Daniels Faculty

09:40 - 10:40

Keynote Lecture

Water, Technology and Society: A Historical Overview

**Antoine Picon**, Harvard Graduate School of Design

10:40 - 11:40

Keynote Lecture

Technological Optimism as an Antidote to Water Scarcity

**Alon Tal**, Ben Gurion University of the Negev, Mitrani Department of Desert Ecology

11:40 - 12:30

Discussion

Moderators: **Robert Levit**, **Jane Wolff**

12:30 - 13:30

Lunch break

**Session 1 : COLLECTING / water supply and storage**

13:30 - 14:00

Water-Conserving Design: A Multi-Scale Water Budget Approach for Arid Regions

**James L. Wescoat, Jr.**, School of Architecture+Planning, MIT

14:00 - 14:30

Retrofitting the West: Burbank and the Soft Path of Water

**Hadley Arnold**, Arid Lands Institute, Woodbury University

14:30 - 15:00

Micro-Urban Communities and Water-Made Landscapes: Critical Refugia, Technologies and Coexistence in Central South Australia

**Gini Lee**, Queensland University of Technology

15:00 - 15:15

Break

15:15 - 15:45

Water Out of Air: Canopy Design for the Sheikh Zayed National Museum

**Kai Babetzki** and **Matthias Schuler**, Transsolar KlimaEngineering

15:45 - 16:15

Building-Integrated Solar Absorption for Water Reuse & Thermal Control

**Kristin Malone**, Center for Architecture Science & Ecology (CASE)

16:15 - 16:45

Taragalte Ecolodge: Regenerating the Oasis Edge in the Draa Valley, Morocco

**Aziza Chaouni** and **Liat Margolis**, Daniels Faculty

16:45 - 17:30

Discussion

Moderator: **Robert Wright**, Daniels Faculty

**Session 2 : CONVERTING / water quality**

9:00 - 9:30

From Innovations to Products - From Water Research to Water Technologies Management of Scarce Water Resources and Development of Water Technologies for Sustainable Water Supply with Adequate Water Quality

**Eilon Adar**, Ben Gurion University of the Negev, Zuckerberg Inst. for Water

9:30 - 10:00

An Innovative Institutional Model to Scale-up the Implementation of Low-cost, Appropriate Water Treatment Technologies in the Developing World

**Camille Dow Baker**, Centre for Affordable Water and Sanitation Technology

10:00 - 10:30

Greening the Desert at All Cost, Hyper-Conversion in the Arabic Peninsula

**Virginie Picon-Lefebvre**, Laboratoire Infrastructure Architectue Territoire (LIAT), Ecole Nationale Supérieure d'Architecture Paris-Malaquais

10:30 - 10:45

Break

10:45 - 11:15

Wastewater Treatment as Urban Park, Wadi Hanifah in Riyadh, Saudi Arabia

**Drew Wensley**, Moriyama & Teshima and **Alan Travers**, Buro Happold

11:15 - 11:45

Design With Climate - Case Studies on Built Form in Egypt

**Walter H. Kehm**, LANDinc.

11:45 - 12:15

Xeritown: Closed-Loop Water Urbanism in Dubai, UAE

**Farid Esmaeil**, X-Architects

12:15 - 13:00

Discussion

Moderator: **Ted Kesik**, Daniels Faculty

13:00 - 14:00

Lunch break

**Session 3 : DISTRIBUTING / water delivery networks**

14:00 - 14:30

Low Pressure Drip Irrigation Technology in the Context Of Water Management in West and Central Africa

**Lennart Woltering**, GFA Consulting Group GmbH and  
**Dov Pasternak**, International Crops Research Institute for the Semi Arid Tropics (ICRISAT)

14:30 - 15:00

The Economics of Regenerative Design: Our Water Future

**Anthony M. Watanabe**, Innovolve Group, Canada

15:00 - 15:30

Transforming Traditional Water Canals in the Qattara/Jimi Oasis in Al Ain, UAE

**Felipe Correa**, Somatic Collaborative

15:30 - 15:45

Break

15:45 - 16:15

A New Model for Integrated Agricultural Urbanism in the Jordan River Basin

**Fadi Masoud**, Harvard Graduate School of Design

16:15 - 16:45

Water Strategies of Eco-City Master Plans in India and Saudi Arabia

**Byron Stigge**, Buro Happold, New York

16:45 - 17:30

Discussion

Moderator: **Alissa North**, Daniels Faculty

17:30 - 18:00

Closing Comments

**Aziza Chaouni, Mary Lou Lobsinger, Liat Margolis**, Daniels Faculty

18:00 - 20:00

Reception, drinks and refreshments, Daniels Faculty

**Eilon Adar** is Director of the Zuckerberg Institute for Water Research and professor in the Department of Environmental Hydrology and Microbiology at the J. Blaustein Institutes for Desert Research, Ben Gurion University of the Negev in Israel. Adar's main research activities are associated with quantitative assessment of groundwater flow systems and sources of recharge in complex arid basins with puzzling geology and scarce hydrological information. Adar has developed the novel transient Mixing Cell Model (MCMtr) which has been developed to define groundwater flow patterns in multiple-aquifer flow systems by environmental tracers. The model has been applied in several hydrological basins worldwide, from the Kalahari Desert (Namibia), Jezreel, Bessor basins (Israel), Arava Basin (Jordan-Israel) to the Ili basin in Kazakhstan. Other research activities include: (1) the role of water reservoirs and shallow groundwater on top-soil salinization; (2) the effects of forestation over sand-dune terrain on local groundwater reservoirs; (3) the dynamics of flow and pollutant transport in a fractured chalk aquitard; (4) identification and quantification of pollutant sources into ephemeral rivers from anthropogenic activities; (5) the effect of industrial effluents on the hydraulic properties of a fractured chalk aquitard; (6) identification of irregular salinization processes in the Coastal Aquifer of Israel; (7) salinization and deterioration of topsoil water quality due to anthropogenic activities; (8) soil and groundwater contamination in the coastal aquifer of Israel by organic industrial pollutants and (9) hydrological aspects of management and policy associated with transboundary water resources in Israel and the Middle East. Professor Adar holds a B.Sc in Geology , Physical Geography and Climatology and a Master in Physical Geography and Hydrology from the Hebrew University of Jerusalem, and a PhD in Hydrology from the University of Arizona, Tucson, Arizona.

**Hadley Arnold** is Co-Director of the AridLands Institute at Woodbury University. Arnold received her Bachelor's degree from Harvard and earned her Masters in Architecture at the Southern California Institute of Architecture (SCI-Arc) in Los Angeles. She has taught at SCI-Arc, UCLA and Woodbury School of Architecture, with an emphasis on urban design and "critical infrastructures"—infrastructures that not only conserve natural resources, but interrupt or reshape customary social behaviors, reordering public space and civic discourse around them. With Peter Arnold, she has led ten years of Dry Studio, an advanced-level course on water, energy, and the design of low-carbon building systems and water infrastructures. Her research into the role of water infrastructure as a shaper of civic life and urban form has been supported by the Graham, LEF, Bogliasco, and Frankel Foundations. In 2008, she and Peter Arnold co-founded the Arid Lands Institute, a multidisciplinary education and outreach arm of Woodbury University devoted to training designers and citizens to innovate in the face of water scarcity and climate change. ALI is funded in part by a multi-year grant from the US Department of Housing and Urban Development.

**Kai Babetzki** is Project Manager at Transsolar KlimaEngineering in Stuttgart, where he develops energy concepts and simulations of thermal, light and computational fluid dynamic for buildings and cities. He works in collaboration with architects, structural engineers, and HVAC-engineers. He holds a Master degree in physics from the University of Siegen. Kai is visiting lecturer for sustainable building design at the University of Liechtenstein, Vaduz since 2007, and a lecturer at the University of Stuttgart since 2009. Kai has been involved in a number of projects in Germany as well as in the Middle East. There he was not only dealing with energy conservation and comfort optimization issues, but also cared about water conservation. The lack of water in combination with the changes in lifestyle and comfort expectations is one of the main problems in those regions and requires a detailed look at new innovative water conservation and exploitation techniques. As project manager for the new Sheikh Zayed museum in Abu Dhabi, Babetzki developed a 'water out of air' device that is integrated into the façade.

**Camille Dow Baker** is Co-Founder of the Centre for Affordable Water and Sanitation Technology (CAWST) as well as its volunteer President and CEO. CAWST is a Canadian NGO and charity that focuses on providing training and expert consulting services in water and sanitation for organizations that serve the poor in developing countries. Baker has more than thirty years experience as a professional engineer. Prior to founding CAWST, Baker enjoyed a very successful twenty year career in the petroleum industry in various leadership positions at significant Canadian energy corporations. She left the oil and gas industry in 1998 to earn a graduate degree from the University of Calgary in environmental design, with a focus on water and sanitation in developing countries. CAWST was founded in 2001. Baker has been President of the Board of Directors for the YWCA of Calgary, a long standing Calgary NGO, as well as a member of the board of the Alberta Oil Sands Technical Research Authority, a provincial government agency. She has been awarded an honorary Doctor of Laws degree honoris causa from the University of Calgary, and, an honorary Bachelor of Business Administration in Non-Profit Studies from Mount Royal University. She is also a recipient of the Alberta Centennial Medal, Global Woman of Vision Award, the National GRIOT Award for science and technology, and a Rotary Integrity Award.

**Aziza Chaouni** is Assistant Professor at the John H. Daniels Faculty of Architecture, Landscape and Design and a co-organizer of the Out of Water Conference. She is co-principal of Bureau E.A.S.T, which has been recognized with top awards for both the Global and Regional Africa and the Middle East competition from the Holcim Foundation for Sustainable Construction; the Architectural League of New York Young Architects Award; Environmental Design Research Association Great Places Award; the American Society of Landscape Architects Design Awards; among others. Bureau E.A.S.T.'s work has been published and exhibited internationally, including the International Architecture Biennale in Rotterdam; INDEX: Design to Improve Life in Copenhagen; and the United Nations Human Settlements Programme (UN HABITAT) World Urban Forum. Chaouni is also the Director of the Research Board of DO.CO.MO.MO Morocco, a chapter of an international organization that seeks the preservation of the modern heritage. She is the co-author with Virginie Lefebvre of *Visiter le desert: architecture durable et architecture* (2009). She holds a B.Sc in Civil Engineering from Columbia University and a Master of Architecture from the Harvard Graduate School of Design.

**Felipe Correa** is Assistant Professor and Director of the Urban Design Program at Harvard Graduate School of Design (GSD). He is co-founder of the Somatic Collaborative, a research based design practice, which focuses on a trans-scalar approach to architecture and urbanism. Some of the studio's most recent projects include a waterfront redevelopment proposal for the Magok District of Seoul (Korea), a senior citizen housing and eco-park proposal in Novato (California), and the Itchimbia Residential Complex in Quito (Ecuador). At the GSD his most recent research focuses on resource extraction models within the South American continent and the diverse models of urbanization these have enabled. In association with Joan Busquets, Correa published *Cities X Lines: A New Lens for the Urbanistic Project* a project-based investigation that documents and evaluates the most salient design strategies and methods that inform contemporary urban projects. Most recently he co-edited with *Invention / Transformation: Strategies for the Qattara / Jimi Oases in Al Ain*, a comprehensive study of the role of the Oasis in the 21st Century arid city. He holds a Bachelor of Architecture degree from Tulane University, and his Master of Architecture in Urban Design from the Harvard Graduate School of Design.

**Farid Esmaeil** is Founding Partner of X Architects, a leading architecture and urban design practice in Dubai. He graduated from the American University of Sharjah (AUS) in 2003. His design work addresses issues of contemporary society, urban identity, and architecture. Farid has been responsible for conceptual projects such as "Xeritown" 60 hectare sustainable city in Dubai, and "Al Nasseem" a 12 hectare community development in Al-Ain, amongst others. Farid has lectured and exhibited work in various universities and institutions worldwide, including Venice Biennale 2008, AUS, Technical University [TU] Berlin, AIA Berlin 2002, and Archiprix international Architecture thesis program. His design work has won several awards including the Middle East Architect Award 2010, and Cityscape Awards for Sustainable Design 2009 in Abu Dhabi. He has contributed to Al Manakh, Architecture+, Art and Architecture and several other publications.

**Walter H. Kehm** is Senior Principle at LANDinc. in Toronto, and former Director of Landscape Architecture at the University of Guelph. His project at LANDinc. include West Parliament Hill Master Plan, the Nouveau Ville de Zenata in Morocco, and international sport and recreation venues in Edmonton. Kehm studied at the American Academy in Rome where researched historic growth patterns of indigenous (hill town) villages. He was co-founder and President of E.D.A. Collaborative. He consulted in Canada with Project Planning Associates and was a design leader on projects including the Master Plan for Dodoma, the new capitol of Tanzania, the Ottawa-Hull National Capitol Region growth strategy plan, Bronte Creek Provincial Park master plan, University of Guelph master plan and implementation, and the King Abdul Aziz University master plan in Jeddah, Saudi Arabia. Kehm has been appointed as a senior urban design advisor to the Municipality of Abu Dhabi and was responsible for developing and chairing a competition for the improvement of the city's downtown infrastructure including parks, open spaces and roads. He is currently involved with major projects in Egypt and chaired the recent competition for the development of a new city in the Cairo region. Kehm holds a BSc. in Landscape Architecture from Syracuse University and a Master in Landscape Architecture from Harvard University.

**Ted Kesik** is Associate Professor of building science at the John H. Daniels Faculty of Architecture, Landscape, and Design at the University of Toronto. Kesik completed his undergraduate studies in civil engineering at the University of Ottawa in 1983, followed by graduate studies at the University of Toronto from 1983 to 1992. In 1986 he was licensed as a professional engineer and has since practiced in the areas of building science engineering and sustainable architecture. Kesik joined the University of Toronto in 1999 where he now teaches in the Architecture and Landscape programs, conducting research and supporting graduate students. His research interests include building envelope performance and durability, life cycle assessment and sustainability. Kesik continues to practice as a consulting engineer to architectural projects and various government organizations. He is also involved in continuing education for architects and engineers. Kesik maintains active involvement in technical committees and is the author of numerous books, studies, reports and articles related to his areas of research and professional practice.

**Gini Lee** is a landscape architect and interior designer and is Professor of Landscape Architecture at Queensland University of Technology. She is past Head of School at the University of South Australia where she was a researcher and lecturer in spatial interior design and cultural and critical landscape architecture studies. Her PhD entitled *The Intention to Notice: the collection, the tour and ordinary landscapes*, investigated ways in which designed landscapes are incorporated into the cultural understandings of individuals and communities. Focusing on the arid environments of Australia, her multidisciplinary research into the water landscapes of remote territories contributes to the scientific and cultural and indigenous understanding and management strategies for fragile landscapes. She is a registered landscape architect, executive editor of the IDEA Journal and a member of the Queensland Heritage Council.

**Virginie Picon-Lefebvre** is Professor of Architecture, History and Theory at the Ecole Nationale Supérieure d'Architecture Paris-Malaquais. She was a professor at the Ecole d'architecture de Paris Versailles and a lecturer at the GSD, Harvard University. She is a founding member of the LIAT (laboratoire Infrastructures, Architecture et Territoire). She is currently working on an Atlas of La Défense and on a book on the Architecture of Tourism. Her last books were about the modernization of Paris in the Sixties and Seventies, *Paris- ville moderne, Maine-Montparnasse et La Défense, 1960-1975*, and the development of tourism in the desert with Aziza Chaouni, *Visiter Le désert, architecture et tourisme durable*. Lefebvre holds a Master degree in Urbanism from the Ecole Nationale des Ponts et Chaussées and a Doctorate in History of Art from the Université de Paris I-Sorbonne.

**Robert Levit** is Associate Professor at the John H. Daniels Faculty of Architecture, Landscape and Design. Robert Levit joined Daniels in January of 2002 and was director of the Master of Urban Design program from 2003-2010. He is a partner in the design firm Khoury Levit Fong and has won several international architecture and urban design competitions. He is currently designing the research district for a new satellite city in Tai Yuan, Shanxi province, China. His work links the urban and architectural scales. He has led research funded by the Province of Ontario examining the relationship between density and urban form and providing models for urban intensification. His work on housing types has received academic and professional awards. His design work and writing on architecture have appeared in numerous domestic and foreign publications. Levit teaches in both the Urban Design and Architecture programs of the Faculty. Prior to beginning his own practice he worked for the architect Alvaro Siza in Portugal. He holds a Bachelor of Arts degree from Columbia University and a Master of Architecture from the Harvard Graduate School of Design.

**Mary Lou Lobsinger** is Associate Professor at the Daniels Faculty of Architecture, Landscape and Design. Lobsinger's scholarly work has appeared in *Grey Room*, *Werk*, *Daidalos*, *Journal of Architecture Education*, *Thresholds*, *Architecture+Ideas*, *Journal of the Society of Architecture Historians* and in anthologies including *Architectural Periodicals in the 1960s and '70s* (Institut Recherche en Histoire de l'Architecture, 2008), *Docomomo: Import-Export: Postwar Modernism in an Expanding World, 1945-1975* (2008), *Le Citta' visibili* (il Saggiatore, 2007), *Concrete Toronto: A Guidebook to Concrete Architecture from the Fifties to the Seventies* (Coach House, 2007), *Italian Cityscapes. Culture and Urban Change* (Exeter, 2004), *Anxious Modernism. Experimentation in Postwar Architectural Culture* (MIT, 2000), and *Architettura spazio scritto* (UTET, 2001). She has held fellowships and research grants from the Canadian Centre for Architecture, the Graham Foundation, the Social Sciences and Humanities Research Council, the Canada Council for the Arts, the Toronto Arts Council, the Ontario Design Council, the Graduate School of Design, and Harvard University. She recently completed the book manuscript *The Realist Impulse: Aldo Rossi and Postwar Italian Architectural Discourse* and is currently working on a second book project on architectural avant-gardism and the politics of post-materialism. Lobsinger holds a Bachelor of Architecture from the University of Waterloo, a Master of Design Studies and a PhD from the Harvard Graduate School of Design.

**Kristin Malone** is a PhD Candidate at Rensselaer Polytechnic Institute (RPI). As current participant at the Center for Architecture Science and Ecology (CASE), Malone address complexities inherent to the global problem of water resource scarcity, relative to architectural and local ecological factors. Her primary research is focused on building-integrated water reclamation at the intersection of architectural articulation, effective energy management, building-systems integration, and social implications. Through the research and previous professional experience, she maintains her commitment to pursue and converge environmental criteria with the design process. Malone recently achieved two fellowships from the Syracuse Center of Excellence and RPI. She holds a Bachelor of Architecture and a Master of Science in Architectural Sciences from Rensselaer Polytechnic Institute.

**Liat Margolis** is Assistant Professor at the John H. Daniels Faculty of Architecture, Landscape and Design and a co-organizer of the Out of Water Conference. She is principal investigator of GRIT LAB (Green Roof Innovations Testing Laboratory) at the University of Toronto, where she examines the environmental performance of Green Roofs, Green Facades and Solar Technologies in the context of the City of Toronto's Green Roof Bylaw and Energy Incentive Program. Margolis is the co-founder and former director of Harvard Graduate School of Design's (GSD) Materials Collection, and former director of research at Material ConneXion, Inc. New York. She is the co-author of the book *Living Systems: Innovative Materials and Technologies for Landscape Architecture* (2007). Margolis received a Bachelor degree in Industrial Design from the Rhode Island School of Design (RISD), and a Master in Landscape Architecture from Harvard GSD.

**Fadi Masoud** is Post-professional Candidate of the Master of Landscape Architecture degree at the Harvard Graduate School of Design. Masoud is the recent recipient of the Fulbright Fellowship and the Dean's Merit Scholarship at Harvard University. He has received several awards including the Heather M. Reisman Gold Medal in Design and the ASLA Certificate of Honor. Masoud has been selected as a finalist in over 14 international design competitions and has been published in Spacing Magazine, the John Wiley & Sons book *Design for Flooding*, FORM Magazine, Landscapes I Paysages, and Landscape Architecture, with contributions to the *New Geographies Journal* and *Ecological Urbanism*. His work has been exhibited at the Canadian Centre for Architecture, The National Building Museum, the Saint Étienne International Design Biennale, The Harbourfront Centre, Tresp/ Apra Design Centre in New York City, and at the Graduate School of Design. Masoud holds a Bachelors of Environmental Studies from the University of Waterloo's School of Planning, and a Master in Landscape Architecture from the University of Toronto, John H. Daniels Faculty of Architecture, Landscape and Design.

**Alissa North** is Assistant Professor in the Landscape Architecture Program at the University of Toronto. She teaches graduate design studio, visual communication, and history, theory criticism courses. She is a partner with her husband, Peter North, in North Design Office, which has received recognition for entries in several national design competitions, a number of which have also been published in Europe and Canada. Prior to establishing North Design Office, Alissa worked at the firms of Hargreaves Associates, Urban Strategies, and with the Tree City Team on Parc Downsview Park. Professor North has been a guest critic and lecturer in landscape architecture programs across North America, and has edited or co-edited a number of publications on the work of leading landscape architects in Canada and the USA. North holds a Bachelor of Landscape Architecture Program from the University of Toronto and a Master in Landscape Architecture from the Harvard Graduate School of Design, where she was awarded the Jacob Weidenman Prize.

**Dov Pasternak** is Principal Scientist for Systems and Crops Diversification at ICRISAT (International Crops Research Institute for the Semi-Arid Tropics) Sahelian Center-Niger since 2001 and Director of the International Program for Arid Land Crops (IPALAC) since 1997. He was former Head of the Institute for Agriculture & Applied Biology at the Ben Gurion University of the Negev from 1976-2001. Working for IPALAC, an Israeli initiative designed to share relevant aspects of the Israeli experience in combating desertification, Pasternak has developed a pilot project in Africa which uses his expertise on arid land agriculture and the Israeli invention — the low pressure drip irrigation systems (LPDI) — to help farmers grow crops. The Israel Ministry of Foreign Affairs international development organization — MASHAV — has recently appointed Pasternak as the Israeli representative for Western Africa. Among Pasternak's achievements, he has pioneered the practice of using saline water for irrigation, has developed novel "solar" greenhouses and systems that produce crops without chemical sprays, and co-developed a system that allows farmers to supervise agricultural operations remotely. His work follows a theme: research and systems that help farmers reclaim degraded land. In addition to the technologies and research Pasternak is giving to Africa, he is currently developing a new education program for village primary schools that he calls 'Farmers of the Future.'

**Antoine Picon** is Professor of the History of Architecture and Technology and Co-Director of Doctoral Programs at the Harvard Graduate School of Design. He teaches courses in the history of architecture and technology. Trained as an engineer, architect, and historian of science and art, Picon is best known for his work in the history of architectural technologies from the eighteenth century to the present. His *French Architects and Engineers in the Age of Enlightenment* (1988; English translation, 1992) is a synthetic study of the disciplinary “deep structures” of architecture, garden design, and engineering in the eighteenth century, and their transformations as new issues of territorial management and infrastructure-systems planning were confronted. In addition to six other books, *Claude Perrault (1613-1688) ou la curiosité d’un classique* (1988), *L’Invention de L’ingénieur moderne, L’Ecole des Ponts et Chaussées 1747-1851* (1992), *La ville territoire des cyborgs* (1998), and *Les Saint-Simoniens: Raison, Imaginaire, et Utopie* (2002), *Tra utopia e ruggine, Paesaggi dell’ingegneria dal Settecento a oggi* (2006), *Marc Mimram Architect-Engineer: Hybrid* (2007). Picon has received a number of awards in France for his writings, including the Medaille de la Ville de Paris and twice the Prix du Livre d’Architecture de la ville de Briey. Picon received engineering degrees from the Ecole Polytechnique and from the Ecole Nationale des Ponts et Chaussees, an architecture degree from the Ecole d’Architecture de Paris-Villemin, and a PhD in history from the Ecole des Hautes Etudes en Sciences Sociales.

**Matthias Schuler** is founder of Transsolar KlimaEngineering in Stuttgart, Germany and Adjunct Professor of Environmental Technology at the Harvard Graduate School of Design. Transsolar has a strong technical basis, and commonly performs highly sophisticated computational simulations (e.g., thermal, lighting) for concept validations. Schuler has worked with a large number of well-known architects in the field on high-profile projects. Among others, he has collaborated on projects by the following: Herzog/de Meuron (Parrish Art Museum, Topeak Towers); Stephen Holl (Linked Hybrid, Herning Art Museum); Behnisch, Behnisch and Partners (Nord LB, Skylofts, etc.); Jean Nouvel (Musee de la Mer, Philharmonie Paris, Louvre Abu Dhabi); Gehry Design Architects (Novartis, Museum of Tolerance, World Trade Center Performing Arts Center, etc.); Murphy/Jahn (New Bangkok International Airport, Posttower, etc.) and OMA (Center for Performing Arts, Museum Plaza). His design solutions are always innovative, and backed up by massive analytical simulation studies that confirm their effectiveness. Recently his activities have moved beyond the building scale and he is now working on energy and comfort solutions at the urban master plan level, like the carbon-neutral Masdar development in Abu Dhabi in conjunction with Foster + Partners. Schuler received the Diplom-Ingenieur degree in mechanical engineering from the University of Stuttgart.

**Byron Stigge** is Associate Principal at Buro Happold, New York, where he leads the Sustainability Consulting group for the North American region. His background is in architecture, mechanical engineering and environmental planning. Since joining the firm in 1998, Stigge has worked in more than 15 countries on a wide range of projects from city-scale sustainable master planning projects to LEED Platinum buildings to detailed systems and facade analysis projects. Recent projects include: Orange County Great Park in Irvine, CA; Tellapur City, Hyderabad, India; CSOB Bank, Prague; Governors Island Strategic Plan, New York City; Genzyme Center, Cambridge, MA; The World Trade Center Competition with "Team Think"; Lotte Super Tower in Seoul, Korea; Lifestyle Hotel at MGM CityCenter, Las Vegas, Koukeny Design Initiative, Kibera, Nairobi, Kenya. Stigge has been a visiting lecturer at Yale University, Harvard Graduate School of Design (GSD) and Washington University. He holds a B.Sc in Civil Engineering from Washington University in St. Louis, a Master of Science in Building Technology from the Massachusetts Institute of Technology, and a Master of Design Studies from the Harvard GSD.

**Alon Tal** is an Associate Professor at the Jacob Blaustein Institutes for Desert Research at Ben-Gurion University of the Negev. He has held faculty appointments at Tel Aviv and Hebrew Universities in Israel, at the University of Otago in New Zealand and between 1990 and 1999 was an adjunct faculty member at Harvard University. He was also the founding director of Adam Teva V'din (The Israel Union for Environmental Defense) in 1990, today Israel's leading environmental advocacy organization. Professor Tal served as chairman of Life and Environment, an umbrella group for 110 environmental organizations in Israel from 1998-2004. In 1996, Professor Tal founded the Arava Institute for Environmental Studies, a graduate studies center in which Israeli, Jordanian and Palestinian students join environmentalists from around the world in an advanced interdisciplinary research program. In February, 2011 he was elected chairman of the "Green Movement", Israel's green party. Professor Tal holds a Bachelor degree in Political Science from the University of North Carolina, Chapel Hill, a Criminal and International Law degree from the Hebrew University Law faculty, a Master of Science and Policy in Environmental Science and Law and a Doctorate in Health Policy from the Harvard School of Public Health.

**Alan Travers** is Partner of Buro Happold in Bath, England and Technical Director for the Water Group, leading and carrying out international projects. He is chartered Civil Engineer with over 30 years experience in water resource management and waterfront development. Since joining Buro Happold in 2001, Alan has worked on a wide range of projects involving the sustainable management of water resources in arid and semi-arid zones. These have included the Comprehensive Development Plan for Wadi Hanifah in Riyadh, involving master planning, water resource and quality management through bioremediation, flood risk management, environmental improvements, highways design, urban planning and infrastructure, through a Joint Venture with Moriyama & Teshima Planners. Other projects have included the Integrated Development Plan for Wadi Al Asla in Jeddah, which aims to restore this wadi environment, degraded over 20 years by the construction of a 10 million m<sup>3</sup> wastewater lake. Between 2003 and 2007 Alan led Buro Happold's Waterways Team as part of a wider consortium, delivering the Master Plan for the London 2012 Olympics. The Waterways Team was responsible for assessing and mitigating the potential flood risk impacts of the development proposals, and designing the land-water interface, working closely with landscape and ecology specialists. Alan's Water Group provides consultancy on all water resource management issues from the outset of a project, providing a full range of technical and management services from analytical modeling, strategic planning, detail design and construction supervision.

**Anthony M. Watanabe** is President and CEO of the Innovolve Group. Watanabe founded the Innovolve Group almost 9 years ago, at a time when sustainability had not yet penetrated into mainstream consciousness. Today, his counsel is sought by multinationals such as P&G, RBC, Molson Coors and Bayer, and international agencies such as the Asia Pacific Partnership and the World Green Building Council. Watanabe is widely recognized as a thought leader in the business of sustainability. In addition to publications in Canadian Business, Maclean's, the National Post and a host of international trade media, he is an accomplished speaker having delivered presentations on sustainability to business, government and universities in Canada, the United States, Mexico and Europe. He has also made numerous radio and television appearances in both French and English with outlets such as the Canadian Broadcasting Corporation (CBC), CP24 and Business News Network (BNN).

**James L. Wescoat, Jr.** is Aga Khan Professor of Architecture at the School of Architecture + Planning at Massachusetts Institute of Technology (MIT). Professor Wescoat's research focuses on water systems in South Asia and the US, from site to international river basin scales. His interest in water issues began with work as a landscape architect in the semi-arid canyonlands of Colorado and hyper-arid cities of the Middle East, which led to graduate research in water resource geography at the University of Chicago. At the site scale, Wescoat focuses on historical waterworks of Indo-Islamic gardens and cities, including a Smithsonian Institution project on, Garden, City, and Empire: The Historical Geography of Mughal Lahore in Pakistan; and water systems in Agra, Champaner-Pavagadh, Delhi, and Nagaur in India. At the regional scale, his work has addressed water policy issues in the Colorado, Indus, Ganges, and Great Lakes basins. Current work includes three projects on water-conserving and disaster resilient design in the Indus basin. His publications include *Water for Life: Water Management and Environmental Policy* with geographer Gilbert F. White; *Political Economies of Landscape Change: Places of Integrative Power* with Douglas Johnston; and essays in *Sustainable Design in Arid Climates*, published by the Aga Khan Trust for Culture and Dumbarton Oaks.

**Drew Wensley** is Executive Vice President of Moriyama & Teshima Planners since 2003. Drew is a graduate of the landscape architecture program from Ryerson University. In 2001, he began work on the Wadi Hanifah Comprehensive Development Plan in Saudi Arabia and has been involved in every aspect of the project from vision building to design and implementation. The restoration of the 120-kilometer long oasis has now entered its tenth year of development and continues to be recognized as one of the most significant environmental projects in the world. In 2004, Drew was invited to present the plan to the council for sustainable development and delegates at the United Nations in New York as a leading example of sustainable urban renewal. In 2010, the project won the Aga Khan Architecture Award. Continuing to develop a number of international projects, Drew has established a large body of work in the Middle East including the New Campus Plan for Kuwait University. The plan is now in its final phases of design and will be the new home for 40,000 students and showcase a strong environmental focus. Other selected credits include Calgary's East Village Riverwalk, Lakehead University, Havergal College Campus Plan, Canadian War Museum, and his ongoing work with His Highness the Aga Khan in both Toronto and Ottawa.

**Jane Wolff** is Associate Professor and Director of the Master of Landscape Architecture Program at the John H. Daniels Faculty of Architecture, Landscape, and Design. Before Wolff joined Daniels, she was an assistant professor at the Graduate School of Architecture and Urban Design at Washington University in Saint Louis. She studied landscape architecture and documentary filmmaking at Harvard. Before she began her academic career, she worked as a designer in the San Francisco Bay Area; her project experience ranged from private gardens to urban design guidelines for the Main Post of the Presidio of San Francisco. She has taught at the California College of Arts and Crafts and at Ohio State University's Knowlton School of Architecture, and in 2006 she was the Beatrix Farrand Distinguished Visiting Professor in the Department of Landscape Architecture and Environmental Planning, University of California, Berkeley. Wolff is the author of *Delta Primer: a field guide to the California Delta*, a book and deck of cards designed to educate diverse audiences about the contested landscape of the California Delta.

**Lennart Woltering** is Water Management Specialist for the GFA Consulting Group in Hamburg (Germany) in the Agricultural and Rural Development department. His major task is to set up projects in Africa and to find the right pool of experts for the assignment. From 2005-2010 he acted as water management specialist in the Agro-Ecosystems team at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in Niger. He was responsible for the research and dissemination of the African Market Garden (AMG) technology, an integrated horticultural production package based on low-pressure drip irrigation. His research focused on the economic evaluation of the African Market Garden versus traditional irrigation methods through farmer monitoring and on-station experiments. He was responsible for the planning, implementation and management of AMG projects in West Africa using energy sources like solar pumps, artesian wells and natural elevations. Lennart has an M.Sc in Water Resources Management and Hydrology from the Delft University of Technology in the Netherlands.

**Robert Wright** is Associate Professor and Associate Dean of Research at the John H. Daniels Faculty of Architecture, Landscape, and Design. He has also been in the past, the Director of the Landscape Program (8 years), Associate Dean (4 years) and Director of the Knowledge Media Design Institute (4 years). Wright is the Associate Director of the Centre for Landscape Research (CLR) where is head of special projects. His efforts on behalf of the CLR focus on bringing the University's expertise together with Community, Industry, and government research interests. Among other projects, he is co-investigator of the newly launched GRIT LAB (Green Roof Innovations Testing Laboratory) at the University of Toronto, which is dedicated to the study of Green Roofs, Green Facades and Solar Technologies. Wright is an associate of the Cities Centre at the University of Toronto and is member of the OALA and a fellow of the CSLA. Wright has a BSc from the University of Ottawa, Ontario Canada, in Open Space Planning, with a minor in Ecology and an MLA from the University of Guelph, Ontario Canada.

## **WEBSITE AND EMAIL**

[www.oowproject.com](http://www.oowproject.com)  
[www.daniels.utoronto.ca/outofwater](http://www.daniels.utoronto.ca/outofwater)  
E: [oow\\_conference@daniels.utoronto.ca](mailto:oow_conference@daniels.utoronto.ca)

## **SUPPORTED BY**

Social Sciences Humanities Research Council of Canada (SSHRC)

## **SPONSORS**



Ontario Association of Landscape Architecture (OALA)  
John H. Daniels Faculty of Architecture, Landscape, and Design

## **PUBLICATION OF PROCEEDINGS**

The papers, discussions and conference proceedings will become the basis for a forthcoming publication titled *Out of Water*, edited by Liat Margolis & Aziza Chaouni.

Please note that the event will be videotaped and photographed for archival purposes.

## **ACKNOWLEDGMENTS**

Nene Brode, Executive Assistant to Dean; Jacqueline Raaflaub, Senior Development Officer; John Howarth, photography and Audio-Visuals; Mahan Javadi, website designer, Johnny Bui, Facilities/Project Coordinator  
Students: Nicole Napoleone, Vjosana Shkurti, Martha Sparrow, Stefan Marc Kuuskne, Caitlin Blundell, Melissa Cao, Amanda Chong, Bridget Kane, Scott Rosin, You-Been Kim, Danny Tseng, Shannon Wiley, Fadi Massoud, Utako Tanabe, Samar Zarifa, Fred Thwainy and Annie Wang.