LANDSCAPES PAYSAGES

LANDSCAPE ARCHITECTURE IN CANADA

L'ARCHITECTURE DE PAYSAGE AU CANADA

2014
vol.16_ no.4 | 8.00$

resilience
résilience

THE CANADIAN SOCIETY OF LANDSCAPE ARCHITECTS
L'ASSOCIATION DES ARCHITECTES PAYSAGISTES DU CANADA

www.csla-aapc.ca


Best place to steal a kiss since 1962.
L'endroit rêvé pour voler un baiser depuis 1962.
Framers Modern™ Bench
For over 50 years, Victor Stanley has designed, engineered, and manufactured timeless site furnishings so you can bring communities to life.
Depuis plus de 50 ans, Victor Stanley conçoit et fabrique des mobiliers urbains intemporels qui vivifient les collectivités.
VICTOR STANLEY™
Create a timeless moment.®
Créateur de moments inoubliables.®
US Patent D523,263 S; Canada ©110954
Brevet américain Patent D523,263 S; Canada ©110954
VICTORSTANLEY.COM

landscape structures®

Mayor Thomas M. Menino Park
Boston, Mass.

Designs that Inspire

We create signature playground designs to fit your community's personality. With creativity and superior capabilities under our roof, your image of play becomes an amazing reality. It starts by learning about your vision, then collaborating with you to make it real. Begin your signature adventure today! Find your local playground consultant at **playlsi.com,** or call **888.438.6574 or 763.972.5200.**

landscape structures®

Better playgrounds. Better world.®




NEW Shades Available

#38 Old Chicago Cobbled Boardwalk - available only in 3x9x2-1/4 size

4x8 #56 Desert Gray - available in all sizes

Italian Fountain near the Philadelphia Museum of Art | Philadelphia, Pa | Olin Landscape Architecture
2-1/4x9x3 (WxLxH) 50 Ivory, 52 Majestic, 53 Cimmerian, & 54 Chocolate

Permeable Boardwalk Pavers

330.823.1610 | 1.800.WG PAVER | www.wgpaver.com

WHITACRE GREER COMPANY

I-XL Masonry Supplies

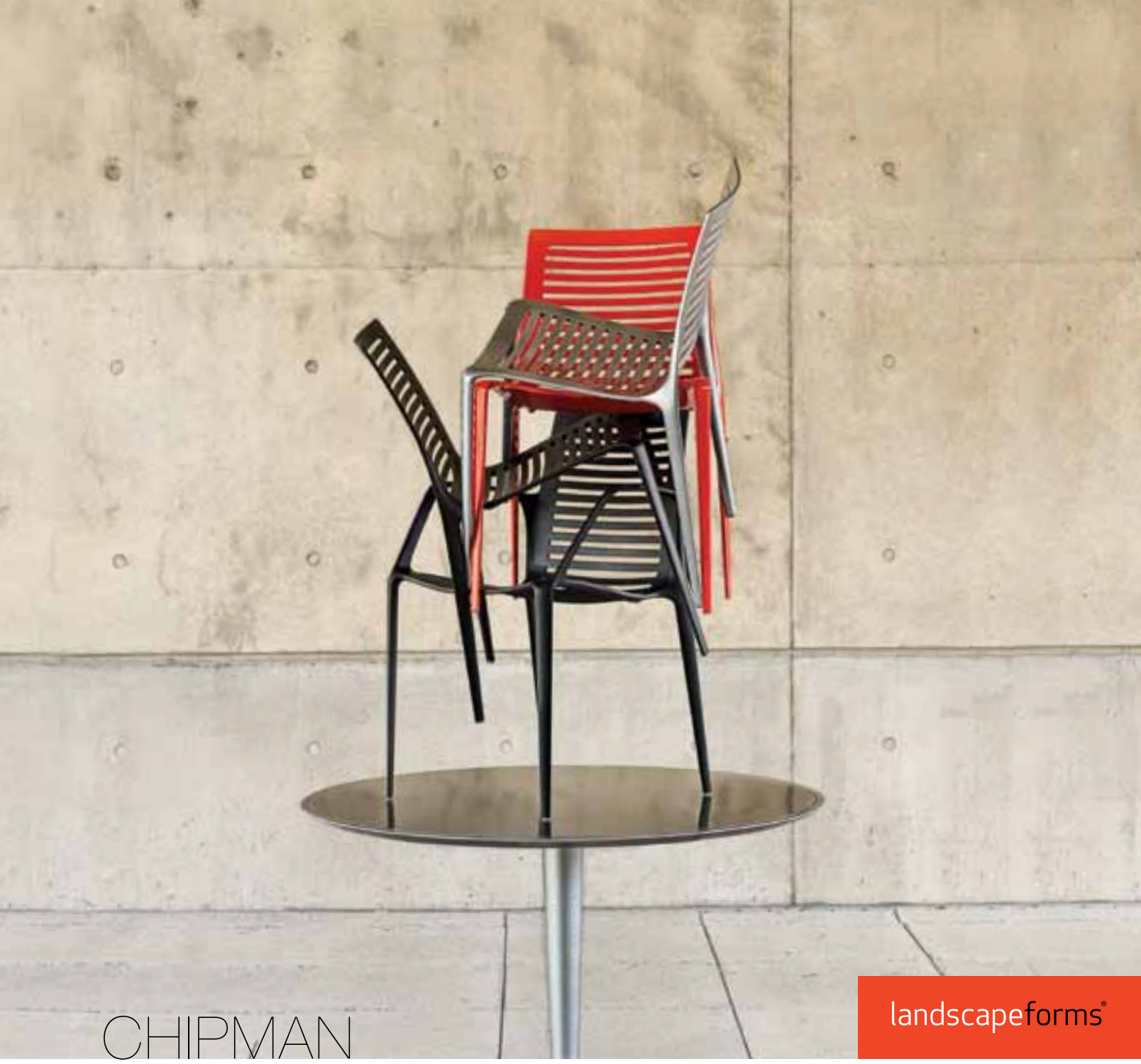
Western Canada
I-XL Masonry Supplies
ixlmasonry.com
888.890.1788

THAMES VALLEY BRICK & TILE

Ontario
Thames Valley Brick
thamesvalleybrick.com
800.567.5800

Ruel Brothers

Quebec
Ruel et Frere
rueletfrere.com
800.463.5282



CHIPMAN

landscapeforms®

We believe beauty and elegance create spaces where memorable experiences happen.

Designed by Robert Chipman.

Find us at landscapeforms.com or contact us toll free at 800.521.2546.

DESIGN. CULTURE. CRAFT.

LANDSCAPES
PAYSAGES

ISSN 1492-9600

Translation | Traduction :
François Couture, trad.a., réd.a. | fcouture@voilatranslations.com
Matthew Sendbuehler | letraducteur@gmail.com

Art Direction | Direction artistique : Wendy Graham

Editor in Chief | Rédactrice en chef : Judy Lord | judylord12@gmail.com

Guest Editor | Rédacteur invitée : Nancy Pollock-Ellwand

Published by | Publié par :
NAYLOR
ASSOCIATION SOLUTIONS
1630 Ness Avenue, Suite 300, Winnipeg, MB R3J 3X1
Tel.: 204.947.0222 | Fax: 204.947.2047 | **www.naylor.com**

Éditeur de groupe : Bill McDougall

Naylor Editor | Rédactrice Naylor : Andrea Németh

Project Manager | Directrice de projet : Kim Davies

Publication Director | Directeur de la publication : Ralph Herzberg

Marketing Associate | Adjointe à la commercialisation : Kaydee Currie

Sales Representatives | Représentants des ventes :
Maria Antonation, Brian Hoover, Wayne Jury, Trevor Perrault, Lana Taylor

Layout & Design | Mise en page et conception graphique : Emma Law

Return undeliverable Canadian addresses to: Naylor (Canada) Inc., Distribution Dept., 1630 Ness Avenue, Suite 300, Winnipeg, MB R3J 3X1

Canadian Publication Agreement #40064978

PUBLISHED NOVEMBER 2014/CSL-Q0414/4678

UPFRONT | PROLOGUE

COVER | COUVERTURE
COURTESY WADE DAVIS
SEE | VOIR P. 22
DESIGN | GRAPHISME WENDY GRAHAM

1 2

RESILIENCE | RÉSILIENCE

FOCUS | FOCUS

FORUM | FORUM

> LP+ ONLINE | EN LIGNE

PLUS
> Resilience Theory (Hunter's Point South Waterfront Park)
> 4 Student Researchers | 4 étudiants
> Street Trees in City Sidewalks
> Readings + References
> Images: West Don Lands

> **LP + TRANSLATIONS | TRADUCTIONS**
> **FR_LP+** | VERSION EN FRANÇAIS
> **EN_LP+** | ENGLISH VERSION

1 ARCTIC ICE, DAVIS, P 22
2 DEBRIS ON HWY. 5 BRIDGE, MANITOBA, MAY 2011, P 18
3 PREET PATEL, RYAN JONES, MICHAEL FILOMENO: RESILIENT COLLECTIVE HOUSING, NJIT, P 26
4 CHERRY STREET, WEST DON LANDS, PFS, P 30

3 4

EN_

UPCOMING ISSUES:

summer 15 | urban agriculture
deadline february 1
fall 15 | awards of excellence
winter 15 | cultural landscapes

LANDSCAPES | PAYSAGES is published by the Canadian Society of Landscape Architects to provide a national platform for the exchange of ideas related to the profession. The views expressed in *Landscapes|Paysages* are those of the authors and do not necessarily reflect those of CSLA. Guest editors and contributors are volunteers, and article proposals are encouraged. For submission guidelines, contact editor Judy Lord at **judylord12@gmail.com**.

FR_

PROCHAINS NUMÉROS :

été 15 | agriculture urbaine
date de tombée : 1er février
automne 15 | prix d'excellence
hiver 15 | paysages culturels

LANDSCAPES | PAYSAGES est publiée par l'Association des architectes paysagistes du Canada pour servir de plate-forme nationale destinée à l'échange d'idées sur la profession. Les opinions exprimées dans *Landscape | Paysage* appartiennent aux auteurs et ne reflètent pas forcément celles de l'AAPC. Les rédacteurs invités sont des bénévoles, et la proposition d'articles est encouragée. Pour connaître les normes rédactionnelles, écrivez à la rédactrice en chef Judy Lord à **judylord12@gmail.com**.

JUNE 2013: THE RISING BOW RIVER, NEARLY UP TO THE DECK OF THE LANGEVIN BRIDGE, FLOODS CALGARY'S EAST VILLAGE. | JUIN 2013 : LA RIVIÈRE BOW, QUI ATTEINT PRESQUE LE TABLIER DU PONT LANGEVIN, INONDE L'EAST VILLAGE DE CALGARY.

PHOTO GABRIEL HERNÁNDEZ SOLANO, AN EVDS MASTER OF ARCHITECTURE GRADUATE | PHOTO : GABRIEL HERNÁNDEZ SOLANO, MAÎTRE ÈS ARCHITECTURE DE L'EVDS

THE TIMES THEY ARE A-CHANGIN'

... BOB DYLAN

NANCY POLLOCK-ELLWAND,
GUEST EDITOR

"The trouble with our times is that the future is not what it used to be."

... FRENCH POET PAUL VALERY

EN_

IT HAS BEEN about a year-and-a-half since I was helping clean out – along with some students and faculty from the University of Calgary's Faculty of Environmental Design – the basement of a colleague. His house along with hundreds of others in Calgary and region had been caught in the June, 2013 flood.

While we hauled out sopping drywall and ruined furniture, my colleague's wife sat looking at her family treasures. There was the soaking ball of paper that was once the kids' art, photo albums with their pages stuck together, letters, books and mementos. There on her front step she was forced to decide what could be saved and what should go into the dumpster.

It was heartbreaking to watch, but for me it was powerful evidence that landscape architecture has a crucial role to play in creating resilient communities. At the University of Calgary we have started this work along with the City of Calgary and the Province. It is the experience of seeing the human side of a disaster which makes this issue of LP so timely and so personal.

In this special issue, as befits such a complex and all-encompassing topic, we examine approaches that vary from the speculative to the practical. The enormity of the problem could induce paralysis but hope lies in innovative actions.

The dynamic and changing forces of water and temperature, not surprisingly, run through this issue. We begin by revisiting Wade Davis' 2009 Massey Lecture, in which he recounts the disturbing phenomenon of vanishing sea ice in April, just 12 degrees south of the North Pole. Two other articles deal with the aftermath of the 2012 Super Storm Sandy. One is a Canadian response, with the master planning of Charlottetown's waterfront (Parnham and Robertson). The other comes from the Centre for Resilient Design at the New Jersey Institute of Technology (Krumwiede and Dallesio), which is working on real world solutions in community-based design studios. In Manitoba's Spruce Woods Provincial Park, planners are anticipating new normals for spring flooding (Derksen), while at the other end of the spectrum, Sandalack and Alaniz Uribe tell of conflicts arising in Southern Alberta when there is not enough water.

Landscape architecture and its allied disciplines seek real solutions to real problems, from master planning to detail design. This is evident in PFS's resilient urban design for Toronto's West Don Lands (Staates et al). Often, research is the key to advancement. For example, the University of Guelph team of Gilbert, Paine and Corry examines anticipatory design in the selection of trees in urban conditions, and Bob Brown reminds us of the powerful impact of evidence-based design approaches.

Meanwhile in Calgary, my colleague and his family are now back in their renovated and more flood-resistant house. Calgary has improved neighbourhood drainage and taken other remedial measures. But the concluding lesson of the Calgary Flood is that there is no conclusion. Expensive and intractable climate-induced problems remain. More than ever before in the history of this profession it is landscape architects that must be at the forefront of meeting those challenges.

ndpolloc@ucalgary.ca

1

« L'avenir est comme le reste : il n'est plus ce qu'il était. »

PAUL VALÉRY, POÈTE FRANÇAIS

NANCY POLLOCK-ELLWAND,
RÉDACTRICE INVITÉE

LE MONDE ET LES TEMPS CHANGENT ... BOB DYLAN

FR_

IL Y A un an et demi, j'aidais à nettoyer le sous-sol d'un collègue, avec quelques étudiants et professeurs de la Faculté d'aménagement de l'environnement de l'Université de Calgary. Il avait été victime des inondations de juin 2013, comme des centaines d'autres foyers de Calgary. Pendant que nous sortions du gypse dégoulinant et des meubles contaminés, l'épouse de mon collègue triait ses trésors familiaux. Assise sur le porche, elle passait en revue les dessins imbibés d'eau de ses enfants, des albums photo aux pages fusionnées, lettres, livres et autres souvenirs, pour déterminer ce qui était récupérable et ce qui devait finir à la poubelle.

Cette vision qui me brisait le cœur me rappelait aussi le rôle crucial que doit jouer l'architecture de paysage dans la création de collectivités résilientes. C'est ce que nous avons commencé à faire à l'Université de Calgary, avec l'aide de la ville et de la province. C'est cette expérience du côté humain d'une catastrophe qui, pour moi, rend ce numéro de LP si personnel.

Dans ce numéro spécial, nous abordons des approches spéculatives et pratiques, comme il se doit pour un sujet si complexe. L'énormité du problème pourrait nous paralyser, mais l'espoir réside dans l'action novatrice.

Les dynamiques de l'eau et de la température se retrouvent partout dans ce numéro, sans surprise d'ailleurs. D'abord, nous revisitons la conférence Massey de Wade Davis, en 2009, dans laquelle il raconte le phénomène troublant de la disparition de la glace de mer en avril, 12 degrés seulement au sud du Pôle Nord. Puis, deux articles s'intéressent aux suites de l'ouragan Sandy en 2012 : le plan cadre du secteur riverain de Charlottetown (Parnham et Robertson) et le Centre for Resilient Design du New Jersey Institute of Technology, qui planche sur des solutions concrètes dans des studios de conception communautaires (Krumwiede et Dallesio). Au parc provincial Spruce Woods, au Manitoba, les aménageurs s'attendent à de nouvelles normales en matière d'inondations printanières (Derksen), alors qu'en contraste, Sandalack et Alaniz Uribe nous parlent des conflits qui émergent dans le sud de l'Alberta, où on manque d'eau.

L'architecture de paysage et ses disciplines connexes cherchent des solutions concrètes à de vrais problèmes, du plan directeur aux projets pointus. C'est évident dans le projet résilient conçu par PFS pour le secteur West Don Lands de Toronto (Staates et coll.). Souvent, la recherche est le moteur du progrès. Par exemple, à l'Université de Guelph, l'équipe Gilbert, Paine et Corry s'intéresse à la conception anticipative dans la sélection d'arbres en milieu urbain, tandis que Bob Brown nous rappelle la force d'une approche fondée sur les faits.

Mon collègue et sa famille ont fini de rénover; leur maison résistera mieux aux inondations. Et la ville a amélioré l'écoulement dans le quartier. Mais la conclusion à tirer des inondations de Calgary, c'est qu'il n'y a pas de conclusion. Mère Nature nous réserve d'autres problèmes coûteux et épineux. Et plus que jamais dans l'histoire de notre profession, les architectes-paysagistes doivent se placer en première ligne pour résoudre ces problèmes.

ndpolloc@ucalgary.ca

2 3 4 5

6 7 8 9

OUR WRITERS | NOS ÉCRIVANS

1_NANCY POLLOCK-ELLWAND is Dean of the Faculty of Environmental Design (EVDS) at the University of Calgary. EVDS delivers Alberta's only accredited programs in Architecture, Planning, and Environmental Design – and soon in Landscape Architecture. As an academic and practitioner Nancy has focused on the meaning, the history and the resilience of significant landscapes, from urban to regional, local to international, and contemporary to ancient.
ndpolloc@ucalgary.ca

2_BEVERLY A. SANDALACK, PhD, M Land Arch, FCSLA, MCIP, RPP, is Professor and Associate Dean (Academic) Environmental Design & Planning, and Interim Ph.D. Program Director at the University of Calgary's EVDS, as well as Research Leader of the EVDS Urban Lab. Her Calgary-based firm, Sandalack + Associates Inc., specializes in urban design, open space planning, campus planning, and small town planning and design. Bev is excited to be developing a landscape architecture program at the university.
sandalack@ucalgary.ca

3_FRANCISCO A. ALANIZ URIBE, BSc Arch, MPDU, MEDes (Urban Design), PhD candidate, MCIP, RPP, is an Assistant Professor in the University of Calgary's EVDS. He has been Research Associate at the EVDS Urban Lab and Associate with Sandalack + Associates Inc. since 2004 when he moved to Calgary from Monterrey, Mexico. His PhD research involves the relationships between urban quality, human behaviour and development processes.
fcalaniz@gmail.com

4_KEITH A. KRUMWIEDE is Associate Professor and Director of Graduate Architecture Programs at the New Jersey Institute of Technology. At NJIT, he is a founding member of the Center for Resilient Design where he guides the Center's academic and research efforts in the graduate program. His research focuses on issues of housing and sustainability in the American city.
keith.a.krumwiede@njit.edu

5_THOMAS G. DALLESSIO, AICP/PP, is Director of NJIT's Center for Resilient Design and an Instructor at the College of Architecture and Design, where he teaches in NJIT's Master of Infrastructure Planning program. He has lectured widely, coordinated studios, instituted roundtable discussions and organized Alternative Spring Breaks to help communities rebuild after Superstorm Sandy and other disasters.
thomas.g.dallessio@njit.edu

6_JEFFREY STAATES, CSLA, BCSLA, OALA, SALA, ASLA, is a Partner and Senior Landscape Architect for PFS Studio. His diverse design background includes a degree in architecture, and practice in interior design, planning and landscape architecture. With over twenty years of professional experience, Jeffrey has led a number of the firm's most challenging public realm design assignments (Vaughan City Hall, West Don Lands, and Ottawa's Lansdowne Park.)
jstaates@pfs.bc.ca


10


11


12


13

7_CECELIA PAINE, FCSLA, OALA, FASLA, is now completing her final year as Associate Dean of Graduate Studies at the University of Guelph. She teaches community design and professional practice and specializes in cultural heritage landscape conservation. Her interest in climate change reflects her focus on design that takes into account the evolution of landscapes through time. She is the founding editor of LP and is currently president of the LACF.
cpaine@uoguelph.ca

8_DAYNA GILBERT, BES, MLA, MCIP, RPP, is Senior Planner, Landscape and Urban Designer with planningAlliance + regionalArchitects in Toronto. She completed her MLA at the University of Guelph in 2013 where she focused her thesis research on climate change adaptation and tree species selection.
dgilbert@planningalliance.ca

9_ROBERT CORRY, OALA, CSLA, is an associate professor of landscape architecture at the University of Guelph, where he teaches graduate and undergraduate students to anticipate alternative future landscapes and respond to them with resilience and adaptive management. Rob's work appears in *Landscape & Urban Planning, Landscape Ecology, Landscape Research, Landscape Review*, and other scholarly journals.
rcorry@uoguelph.ca

10_JILL ROBERTSON, OALA, AALA, LEED-AP (ND), was visiting New York City during Hurricane Sandy, where she experienced the impacts of a changing climate first hand. She believes that LAs should lead the dialogue on responsive and resilient design. When Jill is not working as a senior landscape architect at DIALOG's Edmonton studio, she is exploring her new northern Alberta landscape.
jrobertson@dialogdesign.ca

11_HOPE PARNHAM, MLA, APALA, has been working in climate change impacts and adaptation research since her graduate studies in Manitoba, which included a Flood Design Studio on the Red River Valley and thesis on the impacts of sea level rise on the coast of PEI. Hope is currently working with Atlantic Climate Adaptation Solutions (ACASA) as the PEI Provincial Case Study Coordinator. **hparnham@outlook.com**

12_ROBERT D. BROWN, SALA, FCSLA, FCELA, has been teaching bright and talented landscape architecture students at the University of Guelph since 1985. He received the 2007 CSLA Teaching Award and the 2013 OALA Research and Innovation Award.
rbrown@uoguelph.ca
http://goo.gl/r92Hd | http://bit.ly/RWHiVJ

13_MATTHEW DERKSEN is a landscape architect with an MLA from the University of Manitoba. He recently became a member of MALA.
matthewderksen@gmail.com

OUR FEATURE ESSAYIST


PHOTO RYAN HILL

Pioneering Canadian ethnographer, author, photographer and speaker **WADE DAVIS** joined the University of British Columbia this June, to advance global awareness of cultures and ecosystems at risk. Wade Davis, said David Suzuki, "is a rare combination of scientist, scholar, poet and passionate defender of all of life's diversity." This was nowhere more evident than in his 2009 Massey Lectures, *The Wayfinders,* from which this excerpt is drawn.

Wade Davis' work as a scholar and advocate has taken him to East Africa, Borneo, Botswana, Nepal, Bhutan, Peru, Polynesia, Tibet, Mali, Benin, Togo, New Guinea, Australia, Colombia, Vanuatu, Mongolia, and the high Arctic of Nunavut and Greenland. He served as the National Geographic Society's Explorer-in-Residence for many years, and authored some 20 books and 200 articles, most recently the best-selling *Into the Silence: The Great War, Mallory and the Conquest of Everest,* which won the 2012 Samuel Johnson Prize, one of the world's top non-fiction prizes. *The Serpent and the Rainbow* (1985) was made into a major Hollywood motion picture. He has lectured at leading global universities, and his photographs have been widely exhibited. He lives with his family on B.C.'s Bowen Island. **www.wadedavis.com**

PHOTO : PUDONG AIRPORT, CHINA BY JEAN LANDRY

LP

SOMEWHERE, SOMETHING INCREDIBLE IS WAITING TO BE KNOWN...

QUELQUE PART, QUELQUE CHOSE D'INCROYABLE VEUT ÊTRE CONNU...

CARL SAGAN

WRITE TO US
WRITE WITH US

ÉCRIVEZ-NOUS
ÉCRIVEZ POUR NOUS

JUDYLORD12@GMAIL.COM

TAIL FEATHERS UP!

MUSINGS FROM CAROL CRAIG, CSLA PRESIDENT

DRAWING RYAN JAMES

FR_ > **LP+** DÉPLOYEZ VOTRE PLUMAGE !
EN_

DURING A RECENT discussion with a young landscape architect, I was introduced to a story called "A Peacock in a Land of Penguins." He told me that sometimes in his office, he looks over his shoulder and sees lots of black suits (i.e., penguins!) and feels somewhat out of place. So I checked out that reliable source, YouTube, (www.youtube.com/watch?v=8G16urFgo5s) to find out more. If you are not familiar with the story, it is about Perry, the peacock, who joins a firm of penguins. They initially love his flamboyance and great ideas but eventually suggest that he become more like the rest of the staff. Perry struggles with the proposed changes and eventually leaves for a more accepting workplace where he is appreciated, flamboyance and all.

I have to admit I started thinking about penguins and peacocks. And I, like my colleague, considered landscape architects as peacocks: creative, fun and filled with ideas. But I also thought about peacocks and how they like to stand alone, displaying their finery, and not necessarily to the right peahen. And I thought about how a peacock's display could be greatly enhanced if a group of them raised their tail feathers together to really make an impact (maybe acting, to some degree, more like a waddle of penguins). This group effort would make a big audacious statement and put the peacocks in the spotlight, where they could really strut their stuff. So peacocks, rise up and raise your tail feathers together! Be part of the ostentation (i.e., a flock of peacocks). It will change how penguins see us. Remember, there is power in numbers, but some bright plumage never hurts either!

NOTE: A group of penguins on land is called a waddle. A group of penguins in the water is called a raft, and a large group of nesting penguins is called a colony.

carol.craig@aecom.com

STAND TOGETHER! Check out the CSLA standing paper on climate change at www.csla-aapc.ca/position-papers

CANADA'S LANDSCAPE CHARTER

JEAN LANDRY

FR_ > **LP+** LA CHARTE DU PAYSAGE
EN_

AN ADVENTURE LAUNCHED by the IFLA almost a decade ago is approaching completion here in Canada. In 2006, the IFLA began to develop a Global Landscape Convention, which would give "landscape its own identity". Landscapes would no longer be considered simply as those "empty areas between buildings, housing developments, highways and urban centres, or vague sectors capable of managing themselves". Instead, landscape would be viewed as "an integral part of the physical contexts within which those previous dynamic processes operate".

IFLA adjusted its strategy in 2010, when UNESCO representatives said they would support the development of national landscape charters (rather than a global

PHOTO JEAN LANDRY

charter), which international representatives could then bring to UNESCO. Indeed, numerous landscape charters were produced around the world, and in 2012 at its Halifax Congress, CSLA proposed to gather a taskforce to consider a charter for Canada. Two years later, after many reports, proposals, working documents, Website updates and constant support from the CSLA, the Canadian Landscape Charter Initiative (CLCI) is nearing completion, with some 15 participating CSLA members pinpointing essential content elements. What is critical, clearly, is that we identify where we stand as Canadian landscape architects when it comes to protecting, managing, promoting and creating livable landscapes. As LAs, we are constantly and continually shaping the landscapes around us. Canada's Charter could well become our calling card: a public statement of how we, as good stewards, create better places in which to live.

landryjean@videotron.ca

SERVICE-LEARNING PARTNERSHIPS:

WHERE ARE THE LAs?

BOB SCARFO

THE CONFERENCE OF the Canadian Alliance for Community Service-Learning (CACSL), held in Ottawa in May, displayed the breadth, depth and diversity of ongoing collaborative student-learning initiatives in Canadian communities. Presentations included the fields of nursing, physical therapy, teacher training, engineering, sociology, applied social sciences, dental hygiene, pharmacy and more. Sadly, faculty and students from the fields of environmental design and planning were absent. This was an important lost opportunity for landscape architects. LAs have valuable experience in the service-learning field. Every CACSL congress offers new opportunities to develop partnerships with service-learning organizations across the country.

Community-based service learning joins students with individual clients and client groups in collaborative teams working to study or solve particular local problems. Using this definition, it is clear that North American design and planning professional programs have employed forms of community engagement for over 100 years. In many other fields, service-learning is a newer endeavour, and university instructors are hesitant to initiate service-learning projects. I have often suggested they speak with their peers in the design and planning professional programs. I also noted that conference attendees had a limited understanding of the built environment's influences on their work. I sat in presentations where projects faltered because of poor environmental design and planning within the community.

Design problem solving is rapidly becoming a major component of K–12 education, and increasing numbers of young students are now reaching the post-secondary level. Landscape architecture can help extend and expand this learning approach. In return, CACSL members employ problem-solving approaches that would benefit landscape architecture studies. The next CACSL conference (Calgary 2015) could provide LAs with an excellent cross-fertilization of concepts. If you are interested, check the CACSL blog for updates on service- learning events across Canada.

http://communityservicelearning.ca/cacsl-blog/

BOB SCARFO, PhD., Emeritus, established Land and Life, LLC, as a diversified land planning consulting company that works with local interest groups in highly participatory problem-solving environments. Together, he and his participants deliver planning and design solutions that anticipate a changing future. **www.landandlife.com** **bscarfo@landandlife.com**

PHOTO SERVICE LEARNING IN THE COMMUNITY: YOU CAN'T TELL THE STUDENTS FROM CITY COUNCIL MEMBERS (PAST AND PRESENT), NEIGHBORHOOD BUSINESS OWNERS + RETIREES

PHOTO BOB SCARFO

ROADS FOR ALL SEASONS

DON HESTER + RONUK MODHA (EAST SIDE ROAD AUTHORITY)

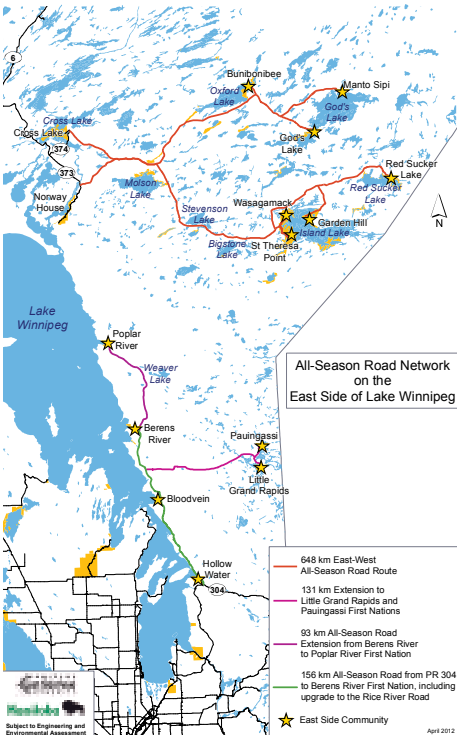


PHOTO BLOODVEIN RIVER BRIDGE

COURTESY OF EAST SIDE ROAD AUTHORITY AND AECOM

AS THE GOVERNMENT of Manitoba moves forward with an ambitious plan to replace winter roads with an all-season road network on the east side of Lake Winnipeg, the residents of Bloodvein First Nation are eagerly awaiting their opportunity to have year-round access to the rest of the province. Bloodvein, a community of 1800 residents, is one of twelve remote and isolated communities that rely on a short winter road season to bring in much-needed food, fuel and construction materials. With a continuing reduction in the length of the winter road season in northern Manitoba over the past two decades, there has been a growing demand to replace temporary winter ice roads with an all-weather solution.

SNC-Lavalin/AECOM were partners in the East Side Large Area Transportation Network Study, examining transportation infrastructure improvements to provide year-round access, and AECOM was the lead in the design and construction of the first leg of the network.

The East Side Transportation Initiative (ESTI), which is being managed by the East Side Road Authority (ESRA), will result in the replacement of winter roads with a 1000 kilometre all-season road network. It is a massive undertaking that will cost an estimated $3 billion and take approximately 30 years to complete. ESRA has thus far awarded over $100 million in construction tenders, including work related to new bridges. Along the 156 kilometre all-season road route from PR 304 to Berens River, 3 bridges and approximately 41 kilometres of new road have already been constructed. Further north in the Island Lake region, ESRA has installed three Acrow panel bridges to extend the length of time that local residents and commercial truckers can use the winter roads.

Because protection of the environment is a critically important focus of the project, the all-season roads follow current winter roads and existing corridors as much as possible, reducing the need for new right-of-ways or disturbance of habitat. To further minimize impacts, ESRA is also engaging local elders, trappers and hunters through traditional knowledge studies. The local economy has also improved: Community Benefits Agreements (CBAs) have provided over 300 jobs and 250 training opportunities for local residents and over $65 million has been invested into local communities.

See | Voir "Manitoba Moves Forward with all-season road project" Forestry and Mining, Fall 2013 http://bit.ly/1sRMON4

DON HESTER, FCSLA, MCIP, is an Associate Principal, and Senior Planner and Landscape Architect with AECOM's Design+ Planning/ Economics Practice; he led the public engagement program/socio-economic review for the Rice River Road Functional Design and Extension Study, the first phase of the East Side Road.
don.hester@aecom.com

RONUK MODHA is Communication Manager for the East Side Road Authority.
ronuk.modha@gov.mb.ca

VOICES FOR LANDSCAPE IFLA ARGENTINA, 2014

ANDREW ANDERSON,
OALA, CSLA, IFLA
RAQUEL PEÑALOSA,
AAPQ, CSLA,
IFLA AMERICAS PRESIDENT

FR_ > **LP+**
DES VOIX POUR LE PAYSAGE ARGENTIN, 2014

EN_

FOLLOWING IN THE footsteps of the landmark 50th anniversary IFLA World Congress last year, the 51st Congress held this past June 2014 in Buenos Aires, Argentina, included excellent speakers from around the world. While the impressive program focused on Latin American landscape architecture in general, and Argentine landscapes in particular, meetings held in the days prior to the conference dealt with global issues, producing a number of exciting outcomes.

The World Council meetings marked the conclusion of a dynamic two-year renewal of the Organization's structure, setting a new Constitution and By-Laws for the years to come. Key outcomes: the creation of a fifth region (the Middle-East Region), stronger autonomy for all IFLA Regions, a more defined strategic outreach role to IFLA Central, the engagement of an Executive Director and a more integrated IFLA World Executive Committee.

The third Latin American Landscape Initiative (LALI) Forum was again a success with more than 100 participants discussing the advancement of local Landscape Charters, the development of Landscape Observatories and a very sound initiative to develop the LALI Parliamentary Network to advance the idea of the Landscape Law. A joint IFLA| LALI declaration was then presented to the Congress audience, the "Declaration of Buenos Aires 'The Voice of Landscape' - IFLA / LALI 2014".

Raquel Peñalosa, Task Force Chair of the Canadian Landscape Charter Initiative, summarized Canada's progress since 2011. CSLA members representing all provinces have met at the CSLA Congress Workshops to develop the Canadian Charter with a view to completing the document for the 2015 CSLA Congress in Mexico City. Key elements are: to embrace the diversity of the Canadian Landscape, to make the Native landscape perspective an integral part of the Charter and to encourage the CSLA components to develop their Regional Charters.

As reported in the last issue of LP, the CSLA is privileged that our member, Raquel Peñalosa of Montreal, is now the new IFLA Americas President, serving with the new IFLA President Prof. Kathryn Moore from the United Kingdom. She particularly encourages employers to support the participation of young landscape architects and interns, and notes upcoming Congresses in Russia (2015), Italy (2016) and in 2017, in Montreal.

ANDREW ANDERSON first met Raquel Peñalosa at a tango show in Buenos Aires, while attending the 2014 Congress.
andrewburtonanderson@gmail.com
raquel.penalosa@bell.net

A TECHNICAL TOUR OF AN ARGENTINE SCULPTURE GARDEN: IFLA DELEGATES STANDING ON CHAIRS REPRESENT (L-R): ARGENTINA, INDONESIA, ITALY, INDIA, JAPAN + CANADA. | VISITE GUIDÉE D'UN JARDIN DE SCULPTURES ARGENTIN : LES DÉLÉGUÉS DEBOUT SUR DES CHAISES REPRÉSENTENT (DE G. À DR.) : L'ARGENTINE, L'INDONÉSIE, L'ITALIE, L'INDE, LE JAPON ET LE CANADA.

PHOTO ANDREW ANDERSON

1

MATTHEW DERKSEN

IS THIS THE NEW NORMAL?

"How deep is the water? Well, our boat got stuck when the prop hit a stop sign we couldn't see!"

...TIM MOORE, DISTRICT PARK SUPERVISOR, SPRUCE WOODS PROVINCIAL PARK.

FR_ **EST-CE LE NOUVEL ÉTAT DE CHOSES?**
LE RÉAMÉNAGEMENT DU camping Kiche Manitou dans le parc provincial de Spruce Woods peut signaler une tendance croissante à prévoir les conditions météorologiques extrêmes, même dans la conception de projets de moindre envergure.

EN_
FLOODING IN SOUTHERN Manitoba is a recurring problem. In the past, large investments have been made to protect against flood damage, most famously in the construction and subsequent expansions of the Red River Floodway. More recently, however, as concentrations of atmospheric carbon dioxide continue to climb, Manitoba is facing a new reality, and beginning to design sites and structures to endure more frequent and destructive weather events. The re-design of the lower Kiche Manitou campground in Spruce Woods Provincial Park, for example, may signal an increasing trend to anticipate extreme weather even in the design of smaller scale projects.

In the spring of 2011, the Assiniboine River just east of Brandon, Manitoba, swelled until it rose 7 metres higher than normal levels, and spread 20 to 30 metres beyond the typical river bank in some locations. The impacts were significant. According to Manitoba's Flood Review Task Force Report, flood water affected three million hectares of farmland, displaced 7,100 Manitobans from their homes and spurred government to spend over $1 billion on flood fighting, infrastructure repair and compensation.

The flood waters also spilled into Manitoba's Provincial Park network, causing severe damage to seven parks, including Spruce Woods. Under normal conditions, the access road from Provincial Highway 5 separates the Assiniboine River from the Kiche Manitou campground, acting as a dyke. In 2011, however, the height of the river exceeded that of the road, creating a breach in the road and leaving a large section of the campground under standing water for four months. Although seven camping bays and four washroom/shower buildings were destroyed, the remaining undamaged infrastructure was valuable enough to warrant rebuilding the campground.

McGowan Russell Group and Stantec Engineering designed facilities that balance user needs with flood resilience and protection. They raised washroom/shower building sites so that finish

2, 3

4

floor elevations are above the 2011 flood level, and to prevent damage to utilities, installed all electrical components at a freeboard level approximately one metre (three feet) above the finished floors. The buildings themselves are prefabricated pre-cast concrete which can withstand flood water and be easily cleaned of debris and silt using a pressure washer. The durable, easily maintained materials also help ensure user comfort and reduce operating costs. The raised sites are universally accessible; pathways with a maximum five-degree slope run through dry laid rock retaining walls and native vegetation, and connect the buildings with existing trails.

To help protect the buildings and park access road from future flooding in the short term, riverbank stabilization is underway, and options are under consideration for raising and reinforcing the access road as a primary dyke. The master plan for Kiche Manitou includes the expansion of the campground onto higher ground above 2011 flood levels and in the long term, the creation of a new park access road from the south side of Kiche Manitou Lake and the relocation of the park entrance and campground office.

A 330-YEAR FLOOD?

It has been estimated that a flood at 2011 levels occurs only once in 330 years. Although it could be argued that to invest in such a statistically rare event is overly cautious, the equally devastating floods of 2009, 2005 and 1997 have left an indelible impression in the minds of many Manitobans. Many wonder if a "new normal" is evolving. Although it is impossible to make a direct link between climate change and any one event, a causal relationship between climate change and flooding is increasingly plausible. In all probability, weather incidents will increasingly have profound effects on the natural environment, requiring commensurate adaptations of our built environments.

matthewderksen@gmail.com

1 CAMPGROUND EXIT WITH SANDBAG DYKE ALONG ACCESS ROAD **2** KICHE MANITOU CAMPGROUND OFFICE, MAY 2011 **3** SPRING 2011: WATER ROSE 7 M ABOVE NORMAL LEVELS **4** DECEMBER 2013: CRANING IN A SECTION OF WASHROOM/SHOWER BUILDING **5 + 6** SMALL PREFABRICATED WASHROOMS. NOTE TIERED DRY-LAID STONE RETAINING WALLS (2014)

PHOTOS MANITOBA CONSERVATION AND WATER STEWARDSHIP

5

6

PHOTO COURTESY WADE DAVIS

"...it is the nature of ice, the way it moves, recedes, dissolves, and reforms with the seasons, that gives such flexibility to the Inuit heart and spirit."

WADE DAVIS

THE POETRY OF DIVERSITY

FR_RÉSUMÉ

LA POÉSIE DE LA DIVERSITÉ

« IL Y A, en effet, un feu sur la terre, emportant avec lui les plantes et les animaux, les cultures, les langues, les arts anciens et la sagesse visionnaire. Étouffer cette flamme, et réinventer la poésie de la diversité est peut-être le défi le plus important de notre époque. »

Lorsque Wade Davis a prononcé sa série de conférences Massey 2009, « The Wayfinders », il a entraîné une nation d'auditeurs aux confins du globe, nous emmenant avec lui (comme la Société Radio-Canada a mis) dans une « exploration sauvage et passionnante de ce qui reste avec nous et très vivant ». Pour les architectes paysagistes – en fait pour tous ceux qui chérissent la « poésie de la diversité » – son message n'est pas moins essentiel aujourd'hui. Ici, nous revisitons la dernière conférence, Century of the Wind, où Davis raconte un voyage épique en partance d'Igloolik, où « la glace fond, et avec elle, très probablement un mode de vie ».

Dans ce numéro spécial de LP consacré au changement climatique, il est temps de découvrir, encore une fois, notre mission pour le prochain siècle.

EN_

"THERE IS, INDEED, a fire burning over the earth, taking with it plants and animals, cultures, languages, ancient skills and visionary wisdom. Quelling this flame, and re-inventing the poetry of diversity is perhaps the most important challenge of our times."

When Wade Davis delivered his 2009 Massey lecture series, "The Wayfinders," he carried a nation of listeners to the outer reaches of the globe, taking us with him (as the CBC put it) on a "wild and thrilling exploration of what remains with us and very much alive." For landscape architects – indeed for all who treasure the "poetry of diversity" – his message is no less essential today. Here, we revisit the final lecture, "Century of the Wind," in which Davis recounts an epic journey from Igloolik, where "the ice is melting, and with it, quite possibly a way of life."

In this, LP's special issue devoted to climate change, it is time to discover, yet again, our mission for the next century.

❄ ❄ ❄

When Wade Davis and Canadian filmmaker Andy Gregg first encountered Theo Ikummaq and John Arnatsiaq in Igloolik, they were setting out on to the sea ice in search of polar bear. In the course of this journey and others that followed, the men navigated the changing geography of a melting landscape, and the cultural survival of the people who live there.

REBIRTH

At the ages of six and eight, Theo and John were sent south 800 kilometres to a residential school at Chesterfield Inlet where, forbidden to speak their own language and, in the case of Theo, violated by a priest, they remained for seven years.

When finally they were allowed to return home, their families took them immediately onto the land in what Theo today describes as a rescue mission. Over a series of years, he recalls, "They turned us back into Inuit men."

The culmination of his rebirth was an epic journey by dogsled, 1,800 kilometres from Igloolik across Baffin Island, north along the shore of Ellesmere Island and across Smith Sound to Greenland. Theo

The ice is melting, and with it quite possibly a way of life...

PHOTO COURTESY WADE DAVIS

thought he might have relatives living in the small Inuit community of Qaanaaq, the most northern settlement in the world. As it turned out he did, all descendants of legendary shaman Qitdlarssuaq and a small band of six families who had migrated north in the 1850s, taking two full years to reach Greenland. Theo had done the journey in two months. Andy and I invited him to return with us, on a charter flight of a mere six hours. Almost immediately the plane crossed over the Baffin Island we could see from the expression on Theo's face that something was wrong. It was April and our flight path was taking us 12 degrees south of the North Pole. The sea ice was not there. Smith Sound, which Theo had crossed with his sled dogs, was open water. He stared out the plane window in disbelief. A tear grew in his eye as he said to no one in particular, "The ice should be frozen by October. This year it didn't come in until February. There were robins in Igloolik. We don't even have a word for them birds."

PEOPLE OF THE ICE

The Inuit are a people of the ice. As hunters they depend on it for their survival even as it inspires the very essence of their character and culture. Gretel Ehrlich, who lived eight years among the Polar Eskimo in Greenland, suggests that it is the nature of ice, the way it moves, recedes, dissolves, and reforms with the seasons, that gives such flexibility to the Inuit heart and spirit. "They have no illusions of permanence," she explains. "There is no time for regret. Despair is a sin against the imagination. Their grocery store is out there on the land and this creates an emotional life that's so much bigger than that of those who live in cities. They deal with death every day. To live they must kill the things they most love. Blood on ice is not a sign of death but an affirmation of life. Eating meat becomes a sacramental experience."

Gretel was waiting for us in Qaanaaq when we landed. With her was Jens Danielsen, her mentor in the north, a great bear of a man with an enormous heart and immense skills as a hunter. Like Theo, Jens had made an epic journey with dogs, in his case retracing the route of Rasmussen's Fifth Thule Expedition all the way from Greenland across the top of Canada to distant Alaska. In the company of these two remarkable individuals, Jens and Theo, our plan was to spend a fortnight on the ice, establishing a hunting camp beyond the western shore of Qeqertarsuaq Island, roughly two days from Qaanaaq. To get there we would travel by dogsleds. Qaanaaq alone among all Inuit communities in the Arctic had long ago banned the use of snowmobiles. In their wisdom the people had recognized that keeping sled dogs was the fulcrum of their culture. Dogs loosened the shackles binding the families to the cash economy. They made limitless the length of any journey. They honed the skills of the hunter, who had to provide a constant supply of meat. They brought security to the night. If you were a master of dogs, you were, as Jens said, a master of your life.

THEMSELVES NAVIGATORS

After pounding at high speed over hundreds of kilometres in *kamatiks*, with the constant high-pitched whine of engines, it was pure joy to head out over spring ice at the slow but steady pace of a dog team. It was movement as dream, the poetry of silence as steel runners ran over soft snow. The land seemed to rise out of the horizon... Theo and Jens were themselves navigators, not only of the geography of their lands but of their own cultural survival and that of their people. It was impossible to get lost in the Arctic, Theo had told me a week earlier, during a fierce blizzard that obliterated the sky and that forced eight of us to huddle for three days in a plywood shelter of less than three square metres. As Theo cooked Arctic char, Jens recalled each of the twenty-one polar bears he had killed, as well as a dozen others that had nearly killed him. All you had to do was read the snow. The prevailing winds caused all the drifts, large and small, to point to the northwest. In the dark,

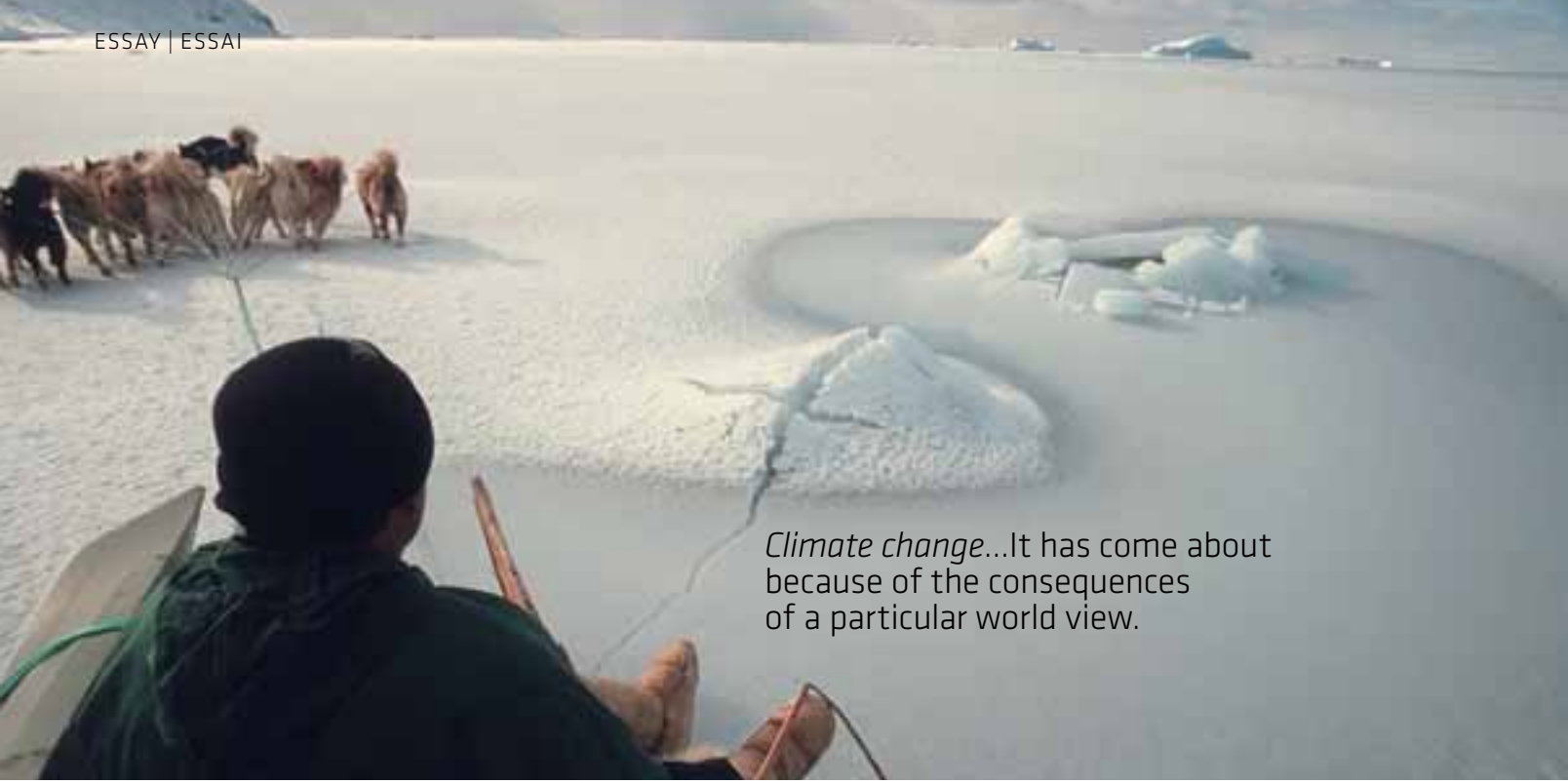


PHOTO COURTESY WADE DAVIS

even running at high speed, Theo simply dragged a foot on the ground to know where he was going.

As it turned out the dogs were of limited value once we reached the island of Qeqertarsuaq. There were great open leads in the ice, and we were obliged to hunt by boat. Jens was stunned. He had never seen open water in April. In his language the word *sila* means both weather and consciousness. Weather brings animals or leads them away, allowing people to survive or causing them to die. The ice, Jens explained, used to form in September and remain solid until July. Now it comes in November and is gone by March. The hunting season has been cut in half in a single generation. Gretel told me of a trip she and Jens had made the previous summer. They were hunting narwhal and it rained every day. They had stood one afternoon alone on a headland, looking out to sea. "This is not our weather," Jens had said. "Where does it come from? I don't understand."

This then is the tragedy and perhaps the inspiration of the Arctic. A people that have endured so much – epidemic disease, the humiliation and violence of the residential schools, the culture of poverty inherent in the welfare system, drug and alcohol exposure leading to suicide rates six times that of southern Canada – now on the very eve of their emergence as a culture reborn politically, socially, and psychologically – find themselves confronted by a force beyond their capacity to resist. The ice is melting, and with it quite possibly a way of life.

❄ ❄ ❄

THIS IS NOT OUR WEATHER

Nearly fifteen years ago I sat on the shore of Baffin Island with an Inuk elder, Ipeelie Koonoo, and watched as he carefully cleaned the carburetor of his Ski-doo engine with the feather of an ivory gull. He spoke no English, and I did not know Inuktitut. But with Olayuk translating, Ipeelie told me then that the weather throughout the Arctic had become wilder, the sun hotter each year, and that for the first time Inuit were suffering from skin ailments, as he put it, caused by the sky.

❄ ❄ ❄

WHY ANCIENT WISDOM MATTERS

These lectures set out to ask "why ancient wisdom matters in the modern world". The phrase is somewhat flawed, implying if it does that these many remarkable peoples we have encountered are somehow vestigial, archaic voices stranded in time, having at best a vague advisory role to play in contemporary life. In truth, all the cultures I have referenced in these lectures – the Tibetans and the San, the Arhuacos, Wiwas and Kogi, the Kiowa, Barasana, Makuna, Penan, Rendille, Tahltan, Gitxsan, Wet'suwet'en, Haida, Inuit, and all the peoples of Polynesia – are very much alive and fighting not only for their cultural survival but also to take part in a global dialogue that will define the future of life on earth. There are currently 1,500 languages gathered around the campfire of the Internet and the number is increasing by the week. Why should their voices be heard? There are scores of reasons, many of which I have alluded to at least implicitly in these lectures. But to sum up, two words will do. *Climate change*. There is no serious scientist alive who questions the severity and implications of this crisis, or the factors, decisions, and priorities that caused it to occur. It has come about because of the consequences of a particular world view. We have for three centuries now, as Thom Hartmann has written, consumed the ancient sunlight of the world. Our economic models are projections and arrows when they should be circles. To define perpetual growth on a finite planet as the sole measure of economic well-being is to engage in a form of slow collective suicide. To deny or exclude from the calculus of

PHOTO COURTESY WADE DAVIS

governance and economy the costs of violating the biological support systems of life is the logic of delusion.

These voices matter because they can still be heard to remind us that there are indeed alternatives, other ways of orienting human beings in social, spiritual, and ecological space. This is not to suggest naively that we abandon everything and attempt to mimic the ways of non-industrial societies, or that any culture be asked to forfeit its right to benefit from the genius of technology. It is rather to draw inspiration and comfort from the fact that the path we have taken is not the only one available, that our destiny therefore is not indelibly written in a set of choices that demonstrably and scientifically have proven not to be wise. By their very existence the diverse cultures of the world bear witness to the folly of those who say that we cannot change, as we all know we must, the fundamental manner in which we inhabit this planet. A climbing friend of mine once told me that the most amazing thing about summiting Everest was the realization that there was a place on earth where you could get up in the morning, tie on your boots, and under your own power walk in a single day into a zone where the air was so thin that humans could not survive. It was for him a revelation, a completely new perspective on the delicacy of this thin veil of atmosphere that allows life to exist on earth.

The Massey Lectures 2009 podcast:
http://bit.ly/1pfd7Y
View the Sacred Headwaters TED talk online at **http://bit.ly/1uKwvzC**

PHOTO COURTESY WADE DAVIS

Excerpted from:

The Wayfinders: Why Ancient Wisdom Matters in the Modern World
By Wade Davis
House of Anansi Press Inc., 2008.
www.anansi.ca
Distributed in Canada by
HarperCollins Canada Ltd.
ISBN 978-0-88784-766-0

FR_
Pour ne pas disparaitre : Pourquoi nous avons besoin de la sagesse ancestrale
Albin Michel, 2011, 229 p.
ISBN 978-2226221421

KEITH KRUMWIEDE + THOMAS G. DALLESSIO

RETHINKING WHERE, WHY AND HOW WE BUILD

1 2 3

FR_ > **LP+**

SANDY A TOUT CHANGÉ : REPENSER LE OÙ, LE POURQUOI ET LE COMMENT

Dans la foulée de l'ouragan Sandy, un Centre pour la conception résiliente a été créé à l'Institut de technologie du New Jersey pour repenser la façon de reconstruire des paysages côtiers sous un climat radicalement changé.

EN_

SANDY CHANGED EVERYTHING

On October 29, 2012, Hurricane Sandy made landfall near Atlantic City, New Jersey. The second-costliest storm in U.S. history, Sandy arrived just one year after Hurricane Irene, another "100-year" storm. It slammed ashore with unprecedented force, wreaking havoc across the most densely populated region in the country. Quickly upgraded by the media from Hurricane to Superstorm, a classification not recognized by the National Hurricane Center, Sandy lived up to its new, if not official, designation.

The storm's effects were staggering: at least 125 people were killed, tens of thousands were left homeless, and millions lost power and other essential services. A record-breaking storm surge of over three metres in some areas cut new inlets across barrier islands in New Jersey, flooded subway tunnels in New York, and left over 50 per cent of Hoboken underwater. The entire state of New Jersey was declared a disaster area with initial estimates from the governor's office pegging the costs of repair and recovery at over $30 billion.

As the waters receded and the damage was surveyed, it was evident that Sandy changed everything. The storm demonstrated in no uncertain terms that the rewards reaped from our current development patterns do not outweigh the risks we face from climate change. To rebuild, or to build anew, without rethinking how and where and why we build,

could only be seen as courting disaster, blind to the now patently obvious effects of a radically altered climate.

THE CENTER FOR RESILIENT DESIGN

If we cannot (re)build the same things in the same place with the same methods, then what can we do? This is the question that the Center for Resilient Design, established at the New Jersey Institute of Technology in the immediate aftermath of the storm, seeks to answer.

Located at the heart of the impacted region, the Center draws upon the resources of NJIT's College of Architecture and Design. With three focus areas – Research, Design, and Outreach – the Center has coordinated with CoAD faculty at both the undergraduate and graduate level to leverage the creative capacity and brainpower of the school's design studios and seminars. In this setting, current and future conditions are assessed; federal, state and local regulations and policies are tested; new prototypes for housing, mixed-use developments and public facilities are designed; and new materials and technologies are explored.

FOCUS ON MATERIALS

In a Spring 2013 Undergraduate Option Studio on Emergent Materials and Reactive Environments, Professor Martina Decker brought her architecture students to Sea Bright, New Jersey, to witness the devastation first-hand and help local officials redesign and rebuild in a more resilient manner. The students were charged with redesigning the sea wall in a manner that could accommodate other uses while incorporating nanotechnology that would address the challenges. Adam Morgan researched the use of photo-luminescent polymers that could be used as a durable coating to both protect the wall and illuminate the public walkway. In a more futuristic vein, Anton Mazryko reviewed the rising sea level maps that predict Sea Bright could be under water in less than 50 years and designed a new floating community. With careful research into advanced hydraulic systems, he developed a proposal in which wave energy was both dampened and captured, thereby protecting and powering the community. Designs such as these provide much for officials to consider when tackling the long-term challenges of increasing devastation.

Two studios sponsored by the Precast Concrete Industry (PCI) and led by Professor Matt Burgermaster encouraged the students to utilize the inherent strength and durability of concrete to develop resilient coastal design typologies. Recognizing that retreat is not an option for many communities along the Jersey shore, the studios focused on the development of infrastructure-like buildings that would serve as disaster recovery centers during storm events. In the first studio, which linked the shore to the urban core of Long Branch, NJ, one design promoted an elevated pedestrian corridor that could house an office of emergency management and a disaster recovery center, while otherwise serving as an infrastructure catalyst for development. In the second studio, students used precast concrete that would

4

5

1 FELIPE RODRIQUES, CHRISTINE BERRY + LUIZA WYSOCKA, RESILIENT TIMBER, STREET VIEW, RED HOOK BROOKLYN NY (MICHAEL MOSTOLLER + KEITH KRUMWIEDE INSTRUCTORS) **2** VICKY TRAN, ELEVATED COURTYARD HOUSE, SEA BRIGHT NJ (KRUMWIEDE INSTRUCTOR) **3** ESPERANZA HUERTA, MANTELLA HOMES, SEA BRIGHT (KRUMWIEDE INSTRUCTOR) **4** ANTON MAZYRKO, SEA BRIGHT WATER CITY (MARTINA DECKER INSTRUCTOR) **5** JEFF SENATORE, RECREATION AND RESILIENCE, BOARDWALK VIEW, ASBURY PARK NJ (MATT BURGERMASTER INSTRUCTOR)

withstand future disasters to design a new boating facility, which would boost economic development.

FOCUS ON HOUSING TYPOLOGIES

To tackle the development of resilient housing typologies for Sea Bright and Union Beach, New Jersey, two communities that were severely impacted by Sandy, Keith Krumwiede taught a studio that encouraged students to think beyond the scale of any individual house. The new Federal Emergency Management Agency (FEMA) regulations required that houses be raised as much as four metres above the existing grade. When this is done on a house-by-house basis, the effects on the neighborhood can be detrimental. The students paid particular attention to the aggregate effects, considering each house as part of a larger resilient system. Many developed designs in which each house acted as a link in a larger chain of houses, sharing connections between the elevated structures and desirable spaces beneath the dwellings to form a more robust community network.

6

7

FOCUS ON NEW FORMS OF COMMUNITY

One of the biggest challenges following Sandy was a consideration of the new forms that communities might need to take in adapting to the challenges posed by climate change. In a joint undergraduate/graduate studio entitled "Low Rise/Hi Res" that was taught by Keith Krumwiede and Martina Decker, the students developed new settlement models as alternatives to our current sprawling settlement patterns. Working in Union Beach, they explored the benefits of denser, more clearly defined development clusters. The students carefully considered the external relationship of the development to its environment, and the internal relationship between individual dwellings and the shared collective space of the whole community. They followed an approach that allowed the production of more relevant and resonant cultural forms, and thus more resilient communities. For example, in the micro-levee communities proposed by Taryn Wefer and Naomi Patel, the development clusters offer both environmental and social benefits. Environmentally, the scheme carefully restructures the distribution and density of housing to make room for wildlife habitats and storm-buffering wetlands, and allow more sustainable, decentralized infrastructure systems for both energy and water. Socially, the clear relationship between individual dwellings and the shared collective space of the whole, encourages a strong sense of interconnectedness and place attachment. Strong social networks are critical to the well being of the individual and the resilience of a community.

Other studios looked at the role that civic and municipal structures play in offering a model of resilient design for their community and a centre for recovery following natural disasters. A studio by Professor Susan Bristol investigated the design of a new municipal building in the severely damaged shoreline community of Bay Head, New Jersey. Students focused on developing new narratives of the shore for a post-Sandy world. Rather than proposing defensive, bunker-like buildings, the student designs described new, desirable relationships to water and community: beacons for recovery in the town.

BEACONS OF RECOVERY

In Hoboken, a dense city that suffered extreme flooding, Keith Krumwiede's Fall 2013 studio responded to a request from the City to explore options for the design of a new community center that would replace an aging center severely damaged during Hurricane Sandy. The studio focused on both the operational and representational functions of civic buildings, developing designs to serve the day-to-day needs of a diverse constituency while functioning as a storm refuge and crisis center during

extreme weather events. The underlying assumption: resiliency is not only about physical robustness but also about social cohesiveness.

As part of HUD's Rebuild by Design competition, Georgeen Theodore led a group of NJIT students in the Master of Infrastructure Planning program to work with her colleagues at Interboro Partners to design landscape solutions for Nassau County, New York. In addition to better understanding green infrastructure applications, they also explored governance challenges.

Reminding students that proper land use planning can be an effective resilient design tool, Tom Dallessio's planning seminars charge participants with considering ways to anticipate rising sea levels and potential storm surges when planning development along major infrastructure such as a passenger rail line. Redesigning land uses within a quarter-mile of railroad stations, students reviewed FEMA flood maps and considered streetscape improvements and redevelopment methods that incorporated materials and designs that anticipate future storms.

Through the work and outreach of the Center, Post-Sandy lessons from New Jersey are being shared around the world. Last fall, Tom Dallessio and other representatives from the Center participated in three major conferences devoted to resilient design. At the H209 Forum, experts from the Netherlands and New Jersey compared information and advice. An international conference on resilient design at the United Nations enabled planners from Southeast Asia and South America to explore hard and soft infrastructure. In Calgary, ideas on designing for changing climates were shared with faculty and students at the University of Calgary. The best designs were presented at the World Urban Forum 7 in April in Medellin, Colombia, in preparation for Habitat III. Internationally, faculty and students were encouraged to think about how communities were affected by Sandy, and ask three questions to sharpen resilient design solutions: What went right? What went wrong? And, what almost went wrong?

8 9

Resiliency is not only about physical robustness but also about social cohesiveness.

EXPERIENTIAL LEARNING AND OUTREACH

As well as conducting studies and seminars, the Center has incorporated experiential learning to ensure that design visions are grounded in reality. NJIT initiated its Alternative Spring Break 2013, which involved approximately 650 volunteers over a week in March. NJIT brought brains and brawn to devastated communities such as Newark, Asbury Park and Beach Haven, providing over 3,500 hours of community service to 22 organizations. This past March, NJIT organized another 340 students to help rebuild homes and businesses, plant dune grass and survey areas for greater accessibility and disaster preparedness.

Their analysis leads us to conclude that we must focus on one key point: living with water. This is perhaps the most important Post-Sandy lesson.

keith.a.krumwiede@njit.edu
thomas.g.dallessio@njit.edu

6 + 7 ADAM MORGAN, SEA BRIGHT SEA WALL (MARTINA DECKER INSTRUCTOR)
8 DONG BANG, NECKLACE HOUSES, UNION BEACH NJ (KRUMWIEDE INSTRUCTOR)
9 PABLO LOPEZ, BOROUGH HALL, BAY HEAD NJ (SUSAN BRISTOL INSTRUCTOR)

1

JEFFREY STAATES

GREAT STREETS IN THE MAKING

FR_ RÉSUMÉ

DES RUES INVITANTES EN CONSTRUCTION

À L'EXTRÉMITÉ NORD de la transformation de friches industrielles extraordinaire qui se produit dans le secteur riverain de Toronto se trouve le projet de West Don Lands, qui va bientôt devenir le nouveau quartier de la ville. Ce projet a été conçu en fonction du paysage tant dans le choix de consultants principaux que dans sa philosophie et sa conception. Une grand-rue asymétrique ornée de trois parcs traverse 40 quadrilatères de projets publics entrelacés. Le mode de vie des 20 000 habitants à venir a reçu la priorité. L'espace public actif est conçu pour être à la fois attachant, résistant et durable, avec des éléments tels que des arbres choisis pour résister au changement climatique et au mauvais temps.

FOR MORE IMAGES | AUTRES IMAGES :
> LP+ GREAT STREETS | DES RUES INVITANT

1 FRONT STREET PROMENADE PLAN **2** FRONT STREET CROSS SECTION COMPARISON STUDY (CENTRAL MEDIAN, 50/50, BALANCED 1/3 – 2/3, ASYMMETRICAL) | **1** PLAN DE LA PROMENADE DE LA RUE FRONT. **2** ÉTUDE COMPARATIVE DES VUES EN COUPE DE LA RUE FRONT (MÉDIANE, 50/50, ÉQUILIBRÉE 1/3 – 2/3, ASYMÉTRIQUE).

IMAGES COURTESY PFS STUDIO

EN_

AT THE NORTHEASTERN edge of the extraordinary brownfield transformation occurring across Toronto's waterfront lies the West Don Lands project, which will soon become the city's newest neighbourhood. Now dubbed the "Canary District" for the historic restaurant building preserved at its centre, the precinct will emerge when Toronto hosts the Pan American games in 2015, and will become home to 20,000 new residents. The Canary District is bounded by Eastern Avenue and Queen Street on the north, Bayview Avenue and Corktown Common on the east, the rail lines to the south, and the Distillery District on the west. It is connected to the larger waterfront fabric by both Cherry and Front Streets.

Working for Waterfront Toronto, PFS Studio is the lead design consultant within a multi-disciplinary design team led by The Planning Partnership. The public realm is currently in the final stages of completion under the direction of Infrastructure Ontario.

A DESIGN-DRIVEN APPROACH

Waterfront Toronto is unique in that the public realm has been developed first and foremost, driving the form and character of new neighbourhoods. This project was led by landscape, in terms of its prime consultants, its philosophy and its design. Carefully considered networks of streets and public spaces were created in advance of the surrounding development parcels. The lifestyles of future residents were given priority; the active public realm is designed to be at once engaging, resilient and enduring, with elements such as street trees chosen to aid the neighbourhood's response to both evolving and severe weather.

Another driver of the project was the city itself. Toronto is a city of vibrant main streets that anchor dozens of diverse and well-loved neighbourhoods. If the West Don Lands were to succeed and feel like a modern Toronto neighbourhood, it would need to be made of great streets.

The design team established principles consistent with Waterfront Toronto's overall development objectives. The parameters will resonate with landscape architects immersed in community design: lead with public sector investment in the public realm. Interpret natural and cultural heritage and integrate public art, infusing the public realm with beauty. Integrate sustainable landscape principles including stormwater management. Create a walkable community with a network of diverse and identifiable streets – and line those streets with mature trees. Prepare spaces and settings for a wide range of community activities to occur, embedding a variety of park spaces to accommodate

the widest range of uses and users. Create an environment that is safe, secure and comfortable.

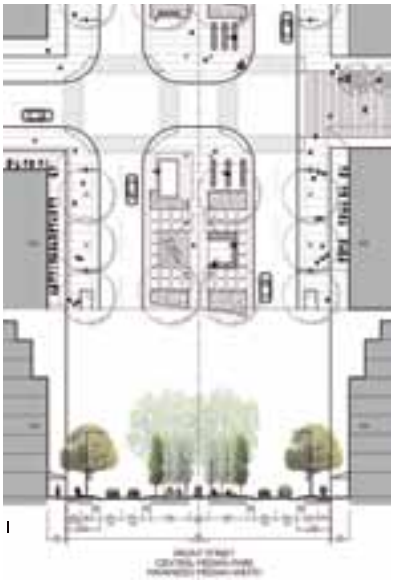
A district greening strategy, public art strategy, heritage strategy, coordinated lighting and site furnishings plan, traffic and transit planning overlays, and a district energy and utilities plan were simultaneously developed to guide the team's work in achieving these objectives.

40 BLOCKS OF NEW STREETS

The West Don Lands is a complex of projects interwoven within 40 blocks of new streets. Cherry Street provides the major north-south commercial arterial, connecting the neighbourhood into the city's transportation network via a dedicated streetcar right-of-way, which in future will also connect to the Lower Don Lands neighbourhood to the south. Mill Street integrates major bus transit routes and connects directly with the historic Distillery District. Here, a provocative public art work peels the sidewalk back to reveal glimpses of the industrial past. Completing the network are numerous smaller scale residential streets and a series of pilot "living streets" adapted to Toronto from the European *woonerf*, where design elements slow traffic to give priority to pedestrians.

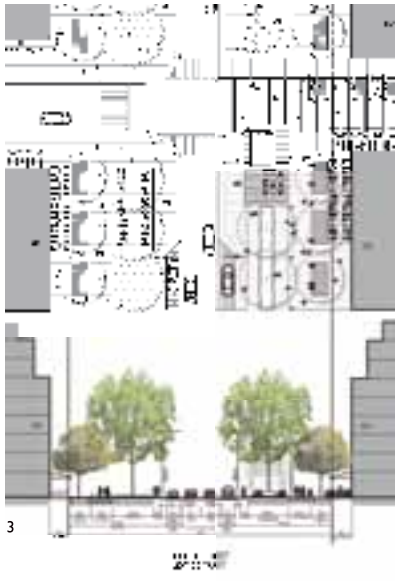
Under an overpass, the aptly named Underpass Park is an ultra-urban park featuring a broad array of active play elements and sport zones, with extensive seating and dynamic lighting of the overhead viaduct undercrofts. Existing graffiti has been retained as a design element, and a major public art piece provides further enrichment. (See LP Winter 2013, Ontario Lights Up.)

Adjoining projects (completed by Michael Van Valkenburgh Associates, Inc.) include River Square, which provides an outdoor farmers' market venue and urban park space, and Corktown Common, a significant new urban park intensively planted with native Carolinian species. The park also encompasses a new flood protection berm along the east side of the Don River to protect the Canary District as well as downtown Toronto from major storm event flooding.



1

2



3

4

2

3

4

...the street possesses an innate habitability and resilience... | ...la rue possède une habitabilité et une résilience intrinsèques...

THE GREAT STREET

At the heart of the district is a great street in-the-making. The easternmost end of Front Street is 270 metres long, with a fourth block connecting to Cherry, adding an additional 80 metres. With its generous 46 metre right-of-way, it was quickly identified as possessing the potential to become a world-class "great street". Through study of numerous great streets around the world, the design team sought to develop Front Street as an orderly, robust and resilient street, at once attractive and comfortable...a street that would comprehensively express the neighborhood's character. In fact, the street possesses an innate habitability and resilience. It is enriched with program, defined by coordinated materiality, and perhaps most important of all, it is a street distinguished by great trees.

TREES AS A UTILITY

The Front Street Promenade was built from the ground up, utilizing made-in-Toronto solutions. The team was determined to craft a Toronto street *in situ*. We would not simply "transplant" a successful street design from elsewhere, but would instead begin by considering climate, history and culture in the here and now. The team worked toward environmental and social sustainability, to create a street that would both evolve and endure extremes of weather. Clearly, the trees would be of utmost importance. Instead of struggling with the customary tangle of trees and utilities, a practice that often results in missing trees and limited soil volumes, tree planting was treated as a coordinated utility. Well-defined tree planting blocks were defined first and district services were directed around them. **(See *Tree Planting Solutions* in LP+.)** Local service connections and parking entries were all directed into the side streets to allow the main street of the promenade to remain as uncluttered and as transparent as possible.

Toronto's admirable initiative to re-establish substantial urban tree canopy is integral to the streets of the West Don Lands, and in particular Front Street. At maturity, it is projected that the trees will provide 50 to 70 per cent canopy coverage for the street. A triple layer of soil cells beneath the street provides more than 30 cubic metres of growing medium per tree, doubling the city's requirement of 15 cubic metres. The soil cells also offer an added benefit: substantial stormwater storage capacity – enough capacity, in fact, to accommodate all street and park surface runoff, plus the runoff from rooftops of the six flanking development blocks.

Careful selection of tree species to respond to specifics of context, ecology, urban environment, and, in particular, the high water table, led to the selection of newly developed disease-resistant cultivars, which allowed the team to reintroduce elms to Toronto streets. Elms will thrive in wetter soils and contribute strongly to the character of the streetscape. (See *Urban Tree Species Selection,* page 34.)

THE SHIFT TO ASYMMETRY

During the initial design process, an unusual shift took place when designers opted to reposition the central median originally planned for the street, to the north side. The move effectively integrated and expanded the north sidewalk into a park-width block, with the majority of the trees growing on the sunny north side. This shift defined and strengthened the public nature of the Front Street Promenade as an asymmetrical high street embellished by three block-long parks.

THE CREATION OF "LIVING ROOMS"

To make the street as livable as possible, the park blocks are populated by a series

of park "living rooms," each defined by trees and furnished with diverse arrangements of seating, lighting and plantings. The smaller living rooms offer a variety of spaces to sit and read, to meet and talk, to play and eat. The larger rooms accommodate public art and larger scale programming, ranging from block parties to festival events like street theatre or Illuminato. Integrated water and electrical services maximize the plug-and-play capabilities.

The west block includes an art exhibition space; the middle block holds a public art designed children's play space and location for a future pavilion; the eastern block holds a user-activated water play pad as well as a plaza-like programmable event space, culminating in a major public art installation at the eastern entry to the street. The park blocks also mark the conclusion of the eastward progression of Front Street from the central business district to the Don River, spatially linking the promenade parks and Corktown Common with each other.

EXPRESSING A DISTINCT CHARACTER

On the Front Street Promenade, interlocking pavers cross the roadbed and custom-coloured, large-format pavers extend like a piazza under the entire street and into the thresholds of the side streets. All paving is bound by wide low granite curbs, and further articulated by granite cobble, featured paving areas and tree surrounds. Together, this detailing lends a richer material palette to this special street, promoting its identity as a pedestrian-oriented public realm in which cars enter as guests. Designers employed several strategies to civilize the automobile presence. Parallel parking lay-bys along the street, which are equipped with electrical charging stations, are slightly raised to reduce the expressed width of the street and keep pedestrian crossings as short as possible.

The Promenade offers diverse opportunities for seating and programming, and provisions for bicycle parking are generous. Plantings and public art are strategically coordinated with site amenities such as information kiosks, recycling containers and lighting controls, located in the thresholds of the adjoining streets. To recall the industrial heritage of the site, several segments of the district's original railroad track are embedded in original alignments.

It is the public realm which ultimately defines a neighbourhood, and whose qualities we instinctively relate to on a daily basis. The creation of the West Don Lands streets is intrinsically a city-building endeavour – a determined commitment to craft great streets to anchor another great Toronto neighbourhood, with streets to fall in love with.

jstaates@pfs.bc.ca

FOR MORE IMAGES: > LP+

3 CHERRY STREET RENDERING **4** FRONT STREET PROMENADE RENDERING | **3** CROQUIS DE LA RUE CHERRY **4** CROQUIS DE LA PROMENADE DE LA RUE FRONT

IMAGES COURTESY PFS STUDIO

DAYNA A. GILBERT, CECELIA PAINE + ROBERT C. CORRY

SURVIVORS?
URBAN TREE SPECIES SELECTION

1

FR_RESUMÉ

LA SÉLECTION DES ESSENCES D'ARBRE À TORONTO

Les architectes paysagistes ont longtemps encouragé la conception durable en sélectionnant des plantes indigènes, mais la survie de l'espèce pourrait être plus importante que son origine. La liste des espèces d'arbres recommandées de Toronto est basée sur les conditions climatiques passées. Pour améliorer la sélection des espèces, les auteurs ont examiné cette liste, en tenant compte de la modélisation prédictive des climats futurs de la tolérance d'un éventail d'espèces. Leurs méthodes sont applicables à d'autres villes.

1 JOEL WEEKS PARK (CSLA AWARD OF EXCELLENCE 2013, REGIONAL MERIT, JANET ROSENBERG & STUDIO). AWARE OF THE VULNERABILITIES OF WHITE BIRCH (*BETULA PAPYRIFERA*) TO CLIMATE CHANGE, LANDSCAPE ARCHITECTS IN TORONTO INCREASINGLY SPECIFY RIVER BIRCH (*BETULA NIGRA*), THOUGH ITS RESILIENCE TO FUTURE CLIMATE HAS NOT BEEN ESTIMATED. | **1** LE PARC JOEL WEEKS (PRIX D'EXCELLENCE 2013 DE L'AAPC, MÉRITE RÉGIONAL). CONSCIENTS DE LA VULNÉRABILITÉ AU CHANGEMENT CLIMATIQUE DU BOULEAU GRIS (*BETULA PAPYRIFERA*), LES ARCHITECTES PAYSAGISTES DE TORONTO PRESCRIVENT DE PLUS EN PLUS LE BOULEAU NOIR (*BETULA NIGRA*), BIEN QUE SA RÉSILIENCE N'AIT PAS ÉTÉ ÉTABLIE.

PHOTO COURTESY | GRACIEUSEMENT JANET ROSENBERG & STUDIO

EN_

IN A CHANGING CLIMATE, strategies for adaptation should include landscape practices, particularly those for selecting long-lived plants to survive future conditions. Landscape architects have long promoted sustainable design by selecting plantings that are primarily native, yet species *survivability* might be more critical than plant origin.

ADAPTING TO A CHANGING CLIMATE

Canadian cities such as Toronto have prepared native tree species lists to assist individuals, developers and professionals in making informed choices. These lists, however, are based on past climate conditions; future climates may differ significantly, and plants selected based on historic climates may be increasingly vulnerable. To improve species selection, these lists will need to take into account predictive modelling of future climates, and the specific life-limiting ecological criteria and tolerances of a range of species.

The research (Gilbert, 2013: see LP+ Reading List) set out to identify the potential impacts of climate change on urban tree species in Toronto. Although many factors affect tree survival, the extremes of temperature and precipitation bound the extent of a species' range. By understanding how trees adapt to different moisture and/or temperature regimes, species can be identified that have a greater "plasticity": they are likely to persist under more variable rainfall and temperatures. The methodology identified two approaches for plant species selection: the


ACER RUBRUM


CELTIS OCCIDENTALIS


PINUS STROBUS


PRUNUS PENSYLVANICA


PRUNUS SEROTINA


QUERCUS MACROCARPA


TILIA AMERICANA

confines of detailed ecological criteria of individual species; and using Global Climate Models (GCMs) and best and worst case emission scenarios to generate climate predictions. The research required modest understanding of each of these approaches.

SPECIES PLASTICITY

Toronto's recommended tree list includes 19 trees – 15 deciduous and 4 coniferous, 2 of which are water-efficient. Each species' character traits, such as hardiness zone range, soil type, light type and moisture preference, were coded for emergent plasticity traits under current climate conditions (Hunter, 2011). Using each tree species' bioclimatic profile – the tolerance extents of the climate conditions that a species is currently surviving – we assessed each species' plasticity and survivability, considering predicted temperature and rainfall patterns from two greenhouse gas (GHG) emissions scenarios (optimistic and pessimistic), in Toronto's geographic area (McKenney *et al.,* 2007).

It is worth noting that since the time of this research, finer resolution climate projection models (approximately 2 kilometres by 2 kilometres) have been developed for cities such as Toronto. These projections represent key small-scale processes such as rainfall events, variability and topography regarding the magnitude of climate-changed weather parameters including snowfall, temperature, wind speed and rainfall (SENES, 2011).

By understanding species tolerances, it becomes possible to identify tree species that can persist under a greater diversity of environmental conditions, and also to select the most fitting plasticity (direction and amplitude of tolerance) for each situation. A species' tolerance extents are its *full climatic survivability range*. A subset of that is the *core range*, the area where the species can maintain high rates of growth, reproductive success and survival (McKenney *et al*., 2010). Both the full climatic survivability range and the core range of a species' tolerance extents were compared to the predicted climate projections for Toronto by recording the variables: those in the core range, those within the lower and/or upper areas of the full range, and those that shifted outside the full range. Of the 19 species, 11 showed a reduced tolerance to the predicted climate of Toronto (Table 1).

The research indicates that recommended water-efficient trees were tolerant while the four coniferous trees face difficulties with projected increasing temperatures. The white pine (*P. strobus*) was the only coniferous tree to continue thriving whereas the white spruce (*P. glauca*) was the poorest-rated tree: it is unable to thrive because the projected climate is too warm for its limited plasticity. A number of deciduous trees were unable to tolerate the predicted range of environmental fluctuations to thrive in both approaches: red oak (*Q. rubra*), hornbeam (*O. virginiana*), black oak (*Q. velutina*), black walnut (*J. nigra*), shagbark hickory (*C. ovata*), sugar maple (*A. saccharum*), and the large-tooth aspen (*P. grandidentata*). The poorest rated tree was the white birch (*B. papyrifera*); the projected temperature is too warm for it to thrive, and it has narrow moisture and temperature plasticity.

URBAN FORESTS FOR THE FUTURE

These methods are applicable to other cities. By creating tolerance parameters for each species, it becomes possible to assess its vulnerability in specific cities. Information on each species must be coded (such as how much more/less precipitation a species would need to thrive), and then compared to emissions models for the cities.

Such data provides landscape architects with an important adaptation tool since it provides the evidence which informs sound species selection (Brown and Corry, 2011). Landscape architects are expected to recommend urban tree species that are functional, have longevity, and most importantly, will survive. They are also expected to have a working knowledge of climate change, and to communicate the inherent risks, as cities strive to build more sustainable future urban forests. We have an obligation as professionals to respect the needs of future generations through anticipatory design – implementing adaptable and flexible responses in the face of uncertainty – and to make informed decisions about how landscapes are likely to function in the future.

AUTHOR'S NOTE: *Bioclimatic profiles are uniquely available for North America through ANUCLIM maps and data. Species limits can be identified at http://www.planthardiness.gc.ca/?m=2b. (The ANUCLIM model is described in detail in Xu and Hutchison, 2013.)*

cpaine@uoguelph.ca
dgilbert@planningalliance.ca
rcorry@uoguelph.ca
> LP+_ Readings

2 JOEL WEEKS PARK | **2** PARC JOEL WEEKS
PHOTO COURTESY CITY OF TORONTO | GRACIEUSEMENT FOURNIE PAR LA VILLE DE TORONTO

TREE SPECIES	BEST-RATED SPECIES: THRIVE IN BOTH APPROACHES	POOREST-RATED SPECIES: DO NOT THRIVE IN EITHER APPROACH
Acer rubrum		
Acer saccharum		
Betula papyrifera		
Carya ovata		
Celtis occidentalis		
Gleditsia triacanthos inermis		
Juglans nigra		
Ostrya virginiana		
Picea glauca		
Pinus resinosa		
Pinus strobus		
Populus grandidentata		
Prunus pensylvanica		
Prunus serotina		
Quercus macrocarpa		
Quercus rubra		
Quercus velutina		
Thuja occidentalis		
Tilia americana		

TABLE 1: CITY OF TORONTO'S RECOMMENDED TREES THAT MEET THE CRITERIA FOR BOTH APPROACHES: ECOLOGICAL CRITERIA AND PREDICTIVE MODELING.

1

BEVERLY A. SANDALACK + FRANCISCO ALANIZ URIBE

WHOSE WATER IS IT?
CLIMATE CHANGE AND POLITICS IN SOUTHERN ALBERTA

FR_ RÉSUMÉ

À QUI CETTE EAU? LE CHANGEMENT CLIMATIQUE ET LA POLITIQUE DU SUD DE L'ALBERTA

La campagne aride du sud de l'Alberta autorise des utilisations parfois contradictoires, y compris les cultures irriguées et les loisirs aquatiques rendus possibles par des projets d'irrigation ambitieux réalisés au XXe siècle. Quel sera l'avenir de cette région, maintenant que le changement climatique menace son approvisionnement en eau ? Les loisirs aquatiques – et même l'agriculture – resteront il viables ?

EN_

ARID RURAL SOUTHERN Alberta has historically supported a series of sometimes conflicting land uses including aboriginal occupation, ranching and dryland farming. More recently (and paradoxically), the landscape has supported irrigated cropping, water-based recreation and sportfishing, made possible by the initiation of several ambitious irrigation projects constructed during the 20th century. With the water supply decreasing due to climate change, what will the future of this region be? Is there a future for water-based recreation in Southern Alberta? Will even agriculture be viable? More to the point: whose water is it?

VULCAN COUNTY RESERVOIRS: WHAT CAN THEY SUPPORT?

In 2006, Vulcan County engaged our interdisciplinary Calgary-based firm, Sandalack + Associates Inc., to update the Area Structure Plan for Travers, McGregor and Little Bow Reservoirs. The firm was to provide guidance regarding land uses that would respond to issues of sustainability and water supply, and at the same time, prepare design and development guidelines for new projects to reflect current expectations of recreation developments.

Travers and McGregor Reservoirs are the source of drinking and irrigation water for developments around the reservoirs and for several towns in the Bow River Irrigation District. Since the reservoirs are easy to reach from Calgary and Lethbridge, the landscapes are a desirable water-based recreation destination for land-locked Albertans (Figure 1). However, irrigation and recreation are not entirely compatible. Reservoirs have unique operational and maintenance characteristics. Unlike natural lakes, they may have extreme water level fluctuations and therefore a high potential for shoreline erosion and instability. Due to seasonal demands, water levels are not always visually appealing or suitable for recreation. Nonetheless, development pressures are high. At the time of the project, a development of 1,000 cottage units was being proposed. To further complicate the situation, in 2006, Alberta Environment stopped accepting applications for new water licenses in the Bow River sub-basin.

Through the townscape analysis process, which was developed (Sandalack and Nicolai 2006) as a systematic pre-design approach to understanding a place, we analyzed the historic evolution of the study area. It was clear that with no new water licenses, the functions of the reservoir (irrigation, drinking water and recreation) were in greater conflict. It was critical to understand the multiple factors.

4 MCGREGOR LAKE + TRAVERS RESERVOIR OCCUPY ERODED GLACIAL MELTWATER CHANNELS WITHIN THE OLDMAN RIVER DRAINAGE BASIN
5 MILO, THE CLOSEST PERMANENT SETTLEMENT TO THE RESERVOIRS | **4** LE LAC MCGREGOR ET LE RÉSERVOIR TRAVERS OCCUPENT DES CHENAUX D'ÉCOULEMENT D'EAU GLACIAIRE DANS LE BASSIN VERSANT DE LA RIVIÈRE OLDMAN **5** MILO, VILLAGE LE PLUS PROCHE DES RÉSERVOIRS

PHOTOS 4 F. ALANIZ URIBE **5** B. SANDALACK

2 3

1 TRAVERS, MCGREGOR + LITTLE BOW RESERVOIRS ARE WITHIN EASY DRIVING DISTANCE OF LARGER CENTRES **2** THE SNAKE VALLEY, THE SITE OF MCGREGOR LAKE **3** TOWNS LAID OUT ALONG MULTIPLE RAIL LINES | **1** LES RÉSERVOIRS TRAVERS, MCGREGOR ET LITTLE BOW SE TROUVENT À QUELQUES MINUTES DE VOITURE DES GRANDS CENTRES. **2** SNAKE VALLEY, SITE ACTUEL DU LAC MCGREGOR **3** VILLAGES ÉTALÉS LE LONG DE VOIES FERRÉES MULTIPLES

PHOTOS 2 BOW + BELLY RIVERS GEOLOGICAL MAP 1884, GEORGE M. DAWSON **3** ALBERTA RAILWAY NETWORK 1978, ALBERTA TRANSPORTATION

WATER FLOW ON THE ARID PRAIRIE: WHAT ARE THE SOURCES?

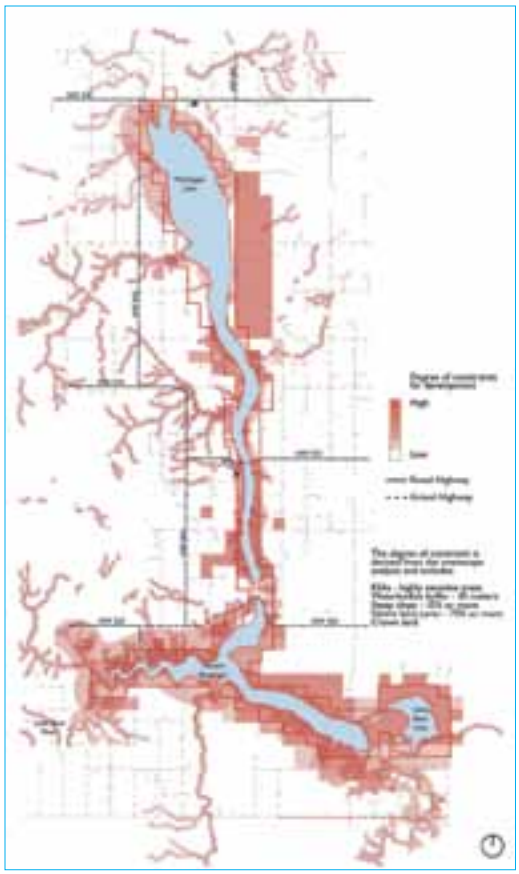
Southern Alberta in its natural state is arid prairie. For centuries, the Snake Valley (the current site of McGregor Lake) was a major thoroughfare for members of the Blackfoot Confederacy, and important for buffalo hunting (Figure 2). The entire McGregor/Travers area lies within the Mixed Grass Ecoregion, although today, much of the natural vegetation has been replaced by cereal crops. The reservoirs occupy eroded glacial meltwater channels within the Oldman River drainage basin. Although the Area Structure Plan consists of an area of 188 square kilometres, the natural watershed of the reservoirs extends over a significantly larger area of 5,223 square kilometres. Despite the large area, very little of the water in the reservoirs is derived from the natural drainage; most is diverted from the Bow River (Figure 4 McGregor Lake).

PEOPLE ON THE PRAIRIE: HOW DID THE DEMAND DEVELOP?

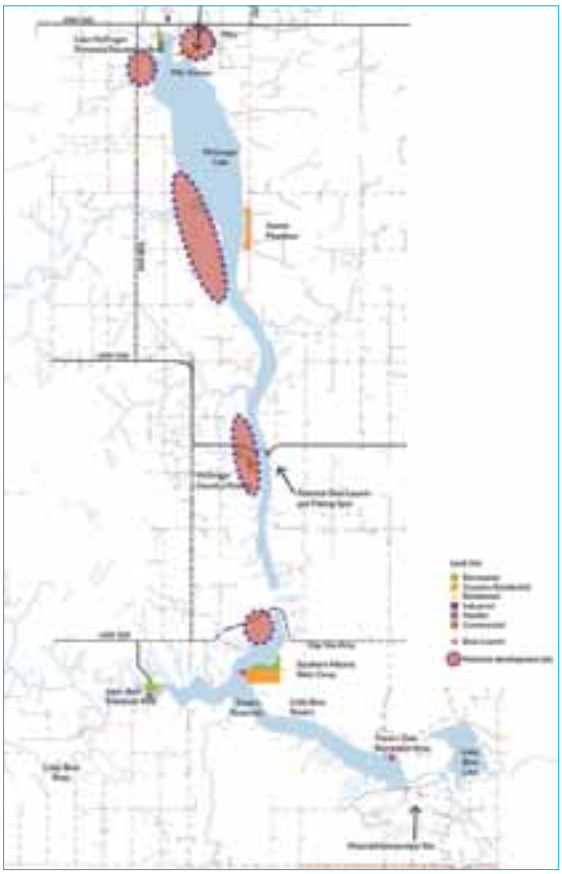
In the latter part of the 19th century, the federal government launched an ambitious project to settle the west, surveying the land and building rail lines to bring in settlers (Figure 3). The combination of good agricultural soil and dry climate soon led to an interest in irrigation, and between 1909 and 1920, the Canada Land and Irrigation Company built the McGregor dams and a canal to bring water from the Bow River near Carseland. By 1924, the CPR was extended through the Milo area, connecting sidings along the Lomond line. These towns enjoyed a period of prosperity, but with later rationalization of the railways and changes in grain handling, the towns eventually declined (Figure 5).

The success of irrigation and the drought years of the 1930s prompted requests for more irrigation projects, and in 1951, the Prairie Farm Rehabilitation Administration began construction of Travers Reservoir. Eventually, as the road infrastructure improved, the area became more accessible and desirable.

4 5



6



7

There are currently several campgrounds, grouped country residential and cottage clusters, and year-round residential complexes around the reservoirs, with pressures to develop many more (Figures 8 + 9). Part of the landscape has become environmentally significant, with wildfowl staging and nesting areas, and non-breeding habitat for species such as pelicans, double-crested cormorants, eagles, hawks and falcons.

8

WHAT CAN THE LANDSCAPE SUSTAIN?

The townscape analysis revealed many constraints to development. Alberta Environment Guidelines specify a riparian buffer of at least 30 metres from water bodies**;** other areas were steeply sloped, and some were environmentally significant (Figure 7 Constraints). We determined that five sites without significant environmental constraints, and with contiguous land areas and existing or potential road access, had development potential, and calculated the developable shoreline area (Figure 8).

To estimate acceptable levels of resource use, we calculated recreation carrying capacity, which considers the surface area and some commonly assumed boating standards, and also the sites' environmental carrying capacity. We based the environmental calculation on the 2003 Woodford and Meyer study of the maximum shoreline density that would sustain populations of green frogs, an indicator species. The two calculations produced very different scenarios. The recreation carrying capacity suggests an extraordinarily high total of 40,898 units (4,088 cottage and 36,810 other types) would be permissible around the reservoirs. The environmental carrying capacity, however, ranged from 2,498 units (at a low shoreline density of 11 units/kilometre) to 4,368 units (for high shoreline density of 33 units/kilometre.)

Based on these findings, Vulcan County Council decided that a maximum of 1,000 additional units would be acceptable for the entire plan area, subject to developers acquiring a water license, making provisions for wastewater and stormwater management, and demonstrating that no negative conditions would be created. The proposed plan included policies and design guidelines (at various scales) to maximize ecological sustainability and minimize demand on water resources.

County Council believed they now had the means to regulate development and to protect the source of irrigation and drinking water. However, changes in County Administration and Council reduced the influence of the plan, which was never formally adopted. Recently, Council approved a residential subdivision that exceeded in size and impact what

the plan had argued for, and the Alberta Government approved a water license transfer that would divert irrigation water to municipal uses.

AND WHAT OF CLIMATE CHANGE?

Climate change impacts expected for the region (Shindler and Donahue, 2014) include a decrease in precipitation, an increase in evaporation, continued shrinking of glaciers and a drop in the flow of rivers. The increasing scarcity of water in the region therefore makes the recent decisions dubious. With climate change, the water supply itself is in question. What is the future for water-based recreation in Southern Alberta and even for agriculture? Indeed, are human settlements still sustainable in Southern Alberta?

We do not know the answers to these value-laden questions. However, landscape architecture can provide an approach to consider landscape problems at the regional scale. Since most of the reservoirs' water comes from the Bow River, it may be desirable to define the plan area by the watershed rather than the survey grid. This could help ensure that all land uses that can potentially impact water quality will be considered.

THE SENSE OF OWNERSHIP: WHOSE WATER IS IT?

Water runs over and through a landscape; it is not a static resource. Nonetheless, there is a sense of ownership of water that is contained, however temporarily, on a land parcel. When we divert water from one location to another, our decisions are predicated on a set of values that privileges one place, or population, or land use, over another. The values that privilege water use for irrigation are rooted in a time when land was seen primarily as a developable resource, and when the specter of climate change had not appeared. Indeed, despite warnings that the "Palliser triangle" should not be cultivated, the availability of water for irrigation encouraged what now seems to be a situation of over-development.

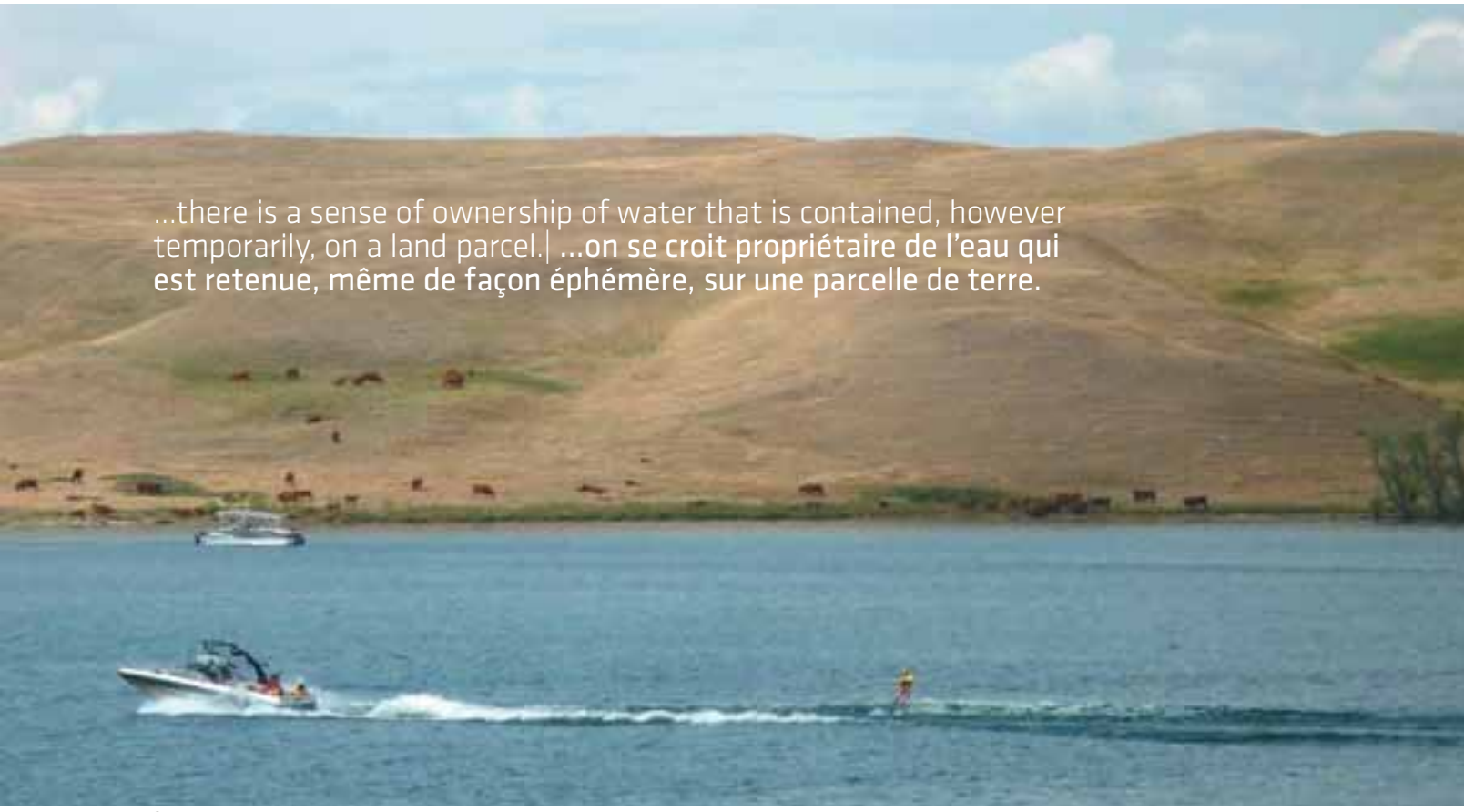
"Business as usual" will only exacerbate the problems. With dwindling and threatened resources, it is clear that our current culture of misuse of water needs radical re-thinking.

falanizu@ucalgary.ca
sandalack@ucalgary.ca

> LP+_ Readings

6 CONSTRAINTS INCLUDE ENVIRONMENTALLY SIGNIFICANT AREAS, STEEP SLOPES, AND A RIPARIAN BUFFER **7** FIVE SITES WITH POTENTIAL FOR DEVELOPMENT **8 + 9** RECREATION DEVELOPMENT AROUND THE RESERVOIRS | **6** LA CARTE COMPREND LES ZONES SENSIBLES, DES PENTES RAIDES ET UNE ZONE TAMPON RIVERAINE **7** CINQ SITES AVEC UN POTENTIEL DE DÉVELOPPEMENT **8 + 9** AMÉNAGEMENTS RÉCRÉATIFS AUX ABORDS DES RÉSERVOIRS

PHOTOS 6 + 7 MAPS BY SANDALACK + ASSOCIATES INC. **8** F. ALANIZ URIBE **9** B. SANDALACK



9

1

2

JILL ROBERTSON + HOPE PARNHAM

CHOPPY WATERS:
CHARLOTTETOWN TAKES HEED

In September, climate change resilience fell into the "nice to have, but not necessary" category…In Sandy's aftermath, everything changed…

FR_RÉSUMÉ

EAUX AGITÉES : CHARLOTTETOWN PREND ACTE

Quand Charlottetown a ouvert des consultations publiques portant sur la mise à jour de son plan de front de mer, la plupart des participants ont souligné la nécessité de préserver le patrimoine, l'intérêt public et l'investissement dans le front de mer, par un développement privé lent et mesuré. Puis vint l'ouragan Sandy, et le ton du projet a changé. La nécessité de tenir compte de la fréquence et de l'intensité des inondations côtières dues au changement climatique est devenu l'un des enjeux publics les plus critiques dans le processus de planification…

3

EN_

WHEN HURRICANE SANDY made landfall in Brigantine, New Jersey, on October 29th, 2012, it had already left a swath of destruction in its wake. From its origins in the tropical waters of the Caribbean Sea south of Kingston, Jamaica, to its eventual dissipation over Western Pennsylvania on October 31st, 2012, Sandy was the deadliest and most destructive storm that year, and its impacts were felt across the entire eastern seaboard.

COASTAL ASSAULT

As Sandy was simmering off the coast of Jamaica, another coastal city was in the midst of choppy urban planning waters. Charlottetown, one of Canada`s great waterfront cities, was undergoing its own coastal assault. The combination of an historic urban context, rapid waterfront development, outdated planning policies, and inconsistent coastal adaptation strategies was creating an ideal breeding ground for conflict. The need to balance public interest, tourism, industry and heritage preservation was becoming critical.

Charlottetown is a small historic city, one where change comes slowly over time. The need for an updated waterfront master plan had been percolating for some time when Charlottetown City Planners commissioned Ekistics Planning and Design, of Dartmouth, Nova Scotia, in August 2012, to outline a twenty-year vision for the waterfront: a future-focused plan grounded by public input and responsive to changing coastal conditions.

During public consultations held in September, discussion focused primarily on the need for an updated plan and the

importance of maintaining the existing historic context. For most participants, the notion of planning for climate change resiliency generally fell into the "nice to have, but not necessary" category, in spite of episodes of coastal and inland flooding in recent years. The major themes that emerged emphasized the need for heritage preservation, public interest and investment in the waterfront, and slow and measured private development.

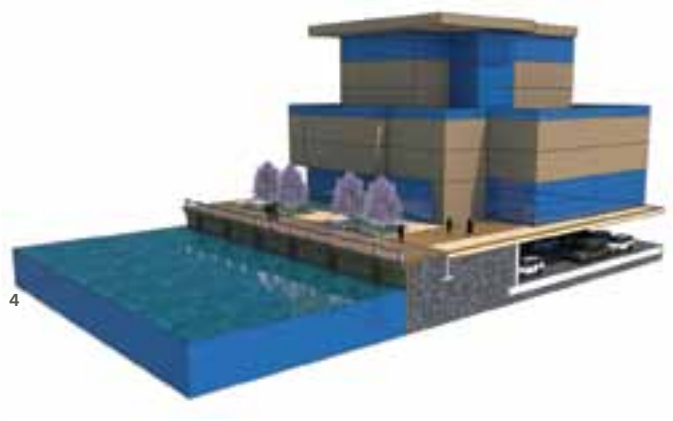
THEN CAME SUPERSTORM SANDY...

Sandy blew across the eastern seaboard with a force that surprised many, including the residents of Charlottetown and the waterfront master plan team. With team members stranded in Manhattan and Ottawa during the storm, the widespread impacts of extreme storm events on the coast were made abundantly clear. In many areas, the most basic urban services – food, transportation and telecommunications – were completely shut down for the better part of a week; some continued to be impacted over a year later.

When the team reassembled in Charlottetown, the project tone had changed. Yes, heritage, the public interest and measured private development were still important, but so too was the need to consider the increasing frequency and intensity of coastal flooding events due to climate change. In fact, this had become one of the most critical public issues in the planning process, with good reason. Planning for heritage conservation without considering the implications of coastal change was not only short-sighted but potentially dangerous, as Sandy had clearly demonstrated.

The team benefitted from a long history of research on Charlottetown's coastline. As well, City staff had an ongoing relationship with academic researchers who could provide up-to-date localized data on the ongoing threat of sea level rise and projections of future storm surge events.

Due to the range of issues raised throughout the public process, the team focussed on planning and policy, utilizing form-based zoning to write land use policy that focused less on the type of land use, and more on form: shape, size, height and structure. This form-based code approach was the most responsive and appropriate for the Charlottetown waterfront context, as it maximized adaptability for both the City and the development communities, while maintaining emphasis on the public interest. Developers were given direction on the types of buildings they could construct in terms of heights, setbacks and stepbacks, parking requirements and architectural character. Land use, which was the backbone of the previous zoning bylaw, was de-emphasized, allowing for improved responsiveness to market conditions and the changing climate between rental and ownership development models. Mixed-use development with a pedestrian-friendly, active street front was encouraged, and residential development was moved off the ground floor. Underlying these urban design policies were flood adaptation strategies which were integrated into the code: minimum finished floor elevations for new construction, a requirement to raise the coastal boardwalk and reinforce the shoreline over time, the retention of public open space in high risk coastal areas, and density bonusing for public benefit practices such as LEED-equivalent construction and the integration of green-roofs.



4

When a draft plan was presented to the public in late November, 2012, close to 250 people attended the meeting. Questions touched on many aspects of the plan, but most notably the integration of climate change adaptation. The impacts of Sandy were still fresh in everyone's mind, reinforcing the public demand for responsive and resilient urban planning.

Since then, much has changed. The impacted shorelines are being rebuilt, and coastal communities are becoming more proactive at planning for climate change. Charlottetown Council adopted the new waterfront planning policy, and by writing it into the land use and zoning bylaws, provided City staff with an expanded toolkit for evaluating future development.

Planning for climate change in isolation does not provide balance for other critical community issues such as heritage conservation, tourism and public interest. By working across disciplines to advocate for a responsive and resilient public realm, we can learn from the past and anticipate the future.

hope.parnham@wspgroup.com
jrobertson@dialogdesign.ca

1 CHARLOTTETOWN'S WATERFRONT IN 20 YEARS **2** YACHT CLUB: PROPOSED REDEVELOPMENT INCLUDES A NEW PUBLIC BEACH + IMPROVED PROTECTION AGAINST STORM SURGES **3** WALKABOUT **4** RAISING THE BOARDWALK + SEAWALL TO PROVIDE PROTECTION + PARKING **5** ARMORY SITE: UNPARALLELED VIEWS, OPEN SPACE + MIXED USE DEVELOPMENT

IMAGES EKISTICS PLANNING AND DESIGN

5

ROBERT D. BROWN

IS GLOBAL CLIMATE CHANGE MAKING YOU FEEL POWERLESS?

THINK AGAIN!

EN_FR_**LP+**
4 STUDENT RESEARCHERS POINT THE WAY
QUATRE ÉTUDIANTS CHERCHEURS MONTRENT LA VOIE

FR_ > **LP+**

DÉSARMÉ DEVANT LES CHANGEMENTS CLIMATIQUES? PAS DU TOUT!

Individuellement, il y a peu de choses qu'un citoyen peut faire pour lutter contre les changements climatiques, mais l'architecte-paysagiste, lui, peut faire beaucoup. Les étés deviendront plus chauds; les hivers plus froids. Or, la conception d'une ville influence beaucoup son climat. On peut concevoir la ville pour qu'elle procure fraîcheur en été et chaleur en hiver, aujourd'hui et demain. Et sans conception adaptée au climat, la ville peut amplifier la canicule estivale et la rigueur des hivers.

EN_

THE FAR NORTH of Canada was once home to a lush deciduous forest, and not long ago, Toronto was covered with a sheet of ice so thick that it would make the CN Tower look small. The global climate has changed massively in the past and all indications are that it will continue to change in the future. The only thing consistent about climate is that it is inconsistent. And now there's compelling evidence that human actions are causing even more inconsistency. Given this situation, we should be designing human environments to be adaptable to a range of possible climate futures.

HOTTER SUMMERS | COLDER WINTERS

On cold winter days we've all heard people say, "Where's the global warming that we were promised?" as if it's going to be a good thing for Canada. Unfortunately, it looks like we're not going to get a gentle overall warming as some people imagine, but in fact global climate change is probably going to mean the worst of both worlds: hotter summers and colder winters. These climate changes are likely to have a devastating effect on our health and well-being. The death toll of the 2003 European heat wave was more than 70,000.

As individuals we can feel powerless to do anything about global climate change. Even if every landscape architect in Canada designed greenhouse gas sinks, it would have no significant effect on curbing global climate change. With over seven billion people on the planet, the effect of one individual or even one profession is miniscule. Reducing the greenhouse gases in the atmosphere is the responsibility of national and international governments, not individuals.

Does this mean that we should just sit back and say, "There's nothing I can do?" This kind of thinking is discouraging. While it is true that our individual actions won't affect the *global* climate, as landscape architects, our designs can have a huge effect on *local* climate.

The asphalt was…hot enough to cook an egg… the artificial turf beside it was even hotter.

1

1 + 2 COMPARE THE VISIBLE IMAGE OF ARTIFICIAL TURF WITH THE THERMAL IMAGE. THE ARTIFICIAL TURF (THE PINK AREA) IS NEARLY 50°C WHILE THE REAL GRASS (FOREGROUND) AND THE TREES (BACKGROUND) ARE JUST OVER 20°C.

PHOTOS 1 ROBERT BROWN **2** CHRISTINE LEE (IMAGE RE-CREATION ERIKA DUECK)

3 WAYS TO CHANGE LOCAL CLIMATES FOR THE BETTER

Landscape architects can counteract the effects of climate change through smart design: by practicing evidence-based landscape architecture, by setting climate goals appropriate to the scale of the project and to the season in which the landscape will be most used, and by designing places that feel cool during heat waves, and feel warm in early spring and late fall.

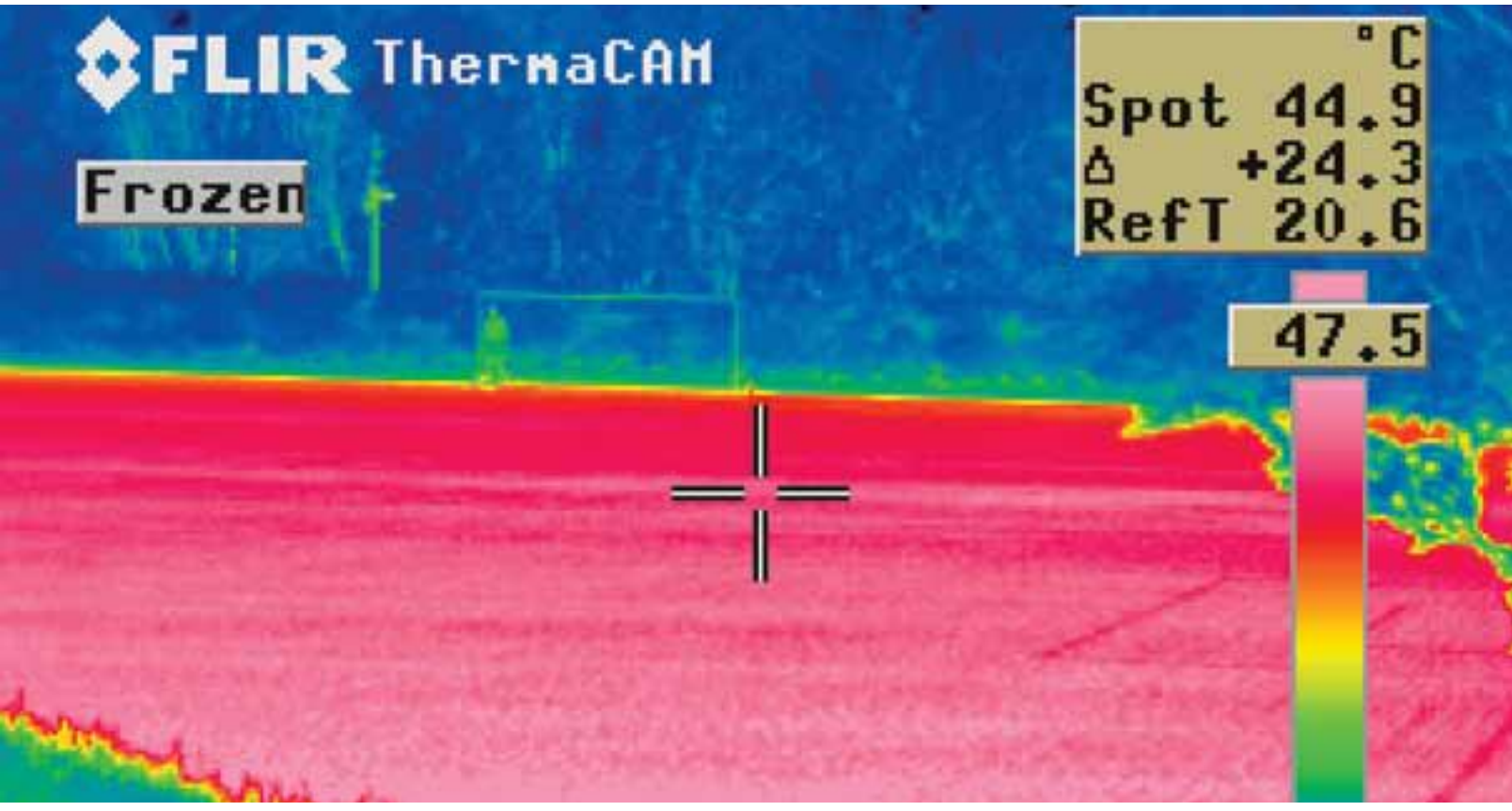
1 PRACTICE EVIDENCE-BASED LANDSCAPE ARCHITECTURE.

Many Canadians think they're weather experts, but it is folly to rely on intuition. Much of what people think they know is simply wrong. Consider air temperature, for example. On a hot summer day, people standing in the full sun may walk into the shade of a leafy tree and say, "It's about 10 degrees cooler in the shade". It's not. The air temperature is virtually identical in the shade and in the full sun.

Designers, too, can be thoroughly wrong. An interesting example is the LA who is designing an elephant habitat at a zoo. It would seem logical that in a northern climate like Canada, African elephants should be taken indoors at night to keep them warm. But elephants have adapted to the sunny climate of Africa by allowing their bodies to absorb heat during the day and then cool down under clear skies at night. If elephants are taken indoors at night and kept warm, their bodies have no opportunity to cool and they can become chronically overheated. This might be one reason why elephants in zoos don't live as long as those in the wild.

It is critical to use scholarly information rather than relying on intuition, if we are to achieve climate-responsive urban design.

2



3

We can evaluate…how thermally comfortable people will be, and design places where autumn lasts a bit longer.

2 SET GOALS APPROPRIATE TO THE SCALE OF THE PROJECT.
At the *local* scale, aim to modify the amount of sun and wind in a site. At the *neighbourhood* scale add air temperature and humidity to the list of elements to modify.

At a *local* scale (metres to tens of metres), landscape architects can substantially affect the amount of sun and wind a site can receive. They cannot modify either the air temperature or the humidity, but they can definitely make people *feel* more comfortable. However, at a broader scale, say that of a neighbourhood park, the cumulative effects of many trees close together *can* lower air temperature, a phenomenon known as a "park cool island". One of my graduate advisees, Graham Slater, carefully measured air temperatures along transects through neighbourhoods and parks in Toronto. In some cases the air temperature in the park was as much as 6°C cooler than in the adjacent neighbourhood. **(See >LP+.)** In another study, my Japanese colleague Makoto Yokohari and I found that the cooling effect of parks can extend up to 200 metres into downwind neighbourhoods in Tokyo.

So when you are designing smaller spaces, focus on modifying the amount of solar radiation and wind that the site will receive and consider the thermal comfort of people that will use the place. When working on larger projects consider the effects that your design will have on the air temperature and on the overall urban climate.

3 CONSIDER CANADA'S SEASONS.
The time of year that an area will primarily be used determines the components of the microclimate that need to be modified. When designing for wintertime conditions, slowing the wind is top priority: convective cooling is typically much greater than the amount of heat that can be added by the winter sun. The reverse is true in summer, when the heat from solar radiation can be extremely powerful. One way to remember priorities is, *Summer Sun : Winter Wind.*

DESIGN PLACES THAT *FEEL* COOL DURING HEAT WAVES.
All surfaces emit terrestrial radiation based on their temperature: the hotter the surface, the more radiation it emits. You've probably experienced the radiant heat emitted from an asphalt parking lot on a sunny summer day. But were you aware that an artificial turf playing field can be just as hot, emitting large amounts of radiation onto people using the field?

In the photos on the previous page, a thermal camera was used to record the temperatures of surfaces in a parking lot on a pleasant summer day. The asphalt was around 46°Celsius – hot enough to cook an egg. On that same day the artificial turf playing field right beside it was even hotter at 48°Celsius, but real grass next to the soccer field (foreground) was a cool 22°C. Water transpiring from the grass evaporates and cools the grass, while all the solar radiation falling on the dry artificial turf goes directly into heating the turf.

Think of young kids playing soccer on a hot summer day. Their parents might be sitting on real grass in the shade at the edge of the field and feeling comfortably cool. The overheated kids are not only generating extra internal energy by running, but are also receiving high levels of terrestrial radiation emitted by the field. This might have something to do with the fact that during mid-summer, heat stroke kills a young athlete in the United States every other day on average.

Summers in Canada are getting hotter, particularly during heat-waves. Another of my graduate students, Drew Graham, found unsurprisingly that the number of heat-related emergency response calls in Toronto was significantly higher during heat waves, but he also found that areas of the city with a higher percentage canopy cover had fewer response calls than those with lower canopy cover. **(See >LP+.)** Trees are clearly valuable local climate modifiers. That said, it is important to choose trees carefully, if we are to achieve climate responsive urban design (principle 1). First, use appropriate species. Some species, such as *Salix* and *Populus,* contribute to smog production in cities and should be avoided in areas of high vehicular traffic. Better choices are *Acer* and *Gleditsia*, which are very low polluters. A more complete list can be found in *Landscape Architectural Graphic Standards.* Second, plant trees in places where you expect or want people to gather. Third, plant trees in locations where they will shade west-facing walls and even parking lots. These are typical hot spots in cities and cooling them will help reduce the urban heat island. (For other planting considerations, see Urban Tree Species Selection, p 34.)

DESIGN PLACES THAT *FEEL* WARM IN EARLY SPRING AND LATE FALL.
The long cold winter that we had in much of Canada last year reminded designers to focus squarely on making urban environments more thermally comfortable during cold spells. We shouldn't allow half the year to go to waste because it's too

cold to be outside. Clothing science has advanced – it's fairly easy to keep our bodies warm even on cold days – but our faces are often exposed to the elements. This past winter another of my graduate advisees, Andrew Briggs, used a thermal camera to record how people's faces cooled over time. At what point were they uncomfortably cold, and ready to go indoors? **(See >LP+)** With this information, we can evaluate designed spaces to estimate how thermally comfortable people will be, but more importantly, we can design places where spring arrives a bit earlier, and autumn lasts a bit longer, effectively shortening the length and severity of winter.

The climate across Canada varies considerably, so designs to make places thermally comfortable in winter will also vary. However, on sunny but cool spring and fall days in most Canadian locations, the wind often blows from a westerly direction. Create a season-extending sun-catch with a windbreak to the west. Whatever is used to slow the wind – anything from a cedar hedge to an abstract sculpture – must be somewhere between 40 and 60 per cent porous, and its size will determine the size of the area affected, so why not make it as tall and as wide as possible? Next make sure that there's no obstruction to the south of the site so that the sun can shine in. If possible put a wall to the north of the site and place seating against it. If the wall is dark coloured it will absorb solar radiation, warm up, and emit terrestrial radiation, further warming people in the space. Just get the basic physics correct and any design style is possible.

The Canadian climate has changed dramatically and will continue to change. Regardless, landscape architects can design outdoor spaces that modify local conditions to ameliorate the negative effects. A 2°Celsius rise in global temperature is considered by many scientists to be a critical point beyond which risks grow substantially, but consider this: a city park can cool the air by up to 6°Celsius. A city that's been designed by landscape architects in a climate-responsive manner might well change an urban heat island into an urban cool island.

rbrown@uoguelph.ca

> LP+_ Readings

4, 5, 6

3 RATES OF COOLING ON A WINDY WINTER DAY: THE NECK AND THE EYE AREA STAY QUITE WARM (AROUND 27°C) WHILE THE NOSE HAS COOLED TO ABOUT 9°C. **4** ADELAIDE, AUSTRALIA: PEOPLE LISTENING TO GERMAINE GREER ON A HOT DAY STAY SOME DISTANCE AWAY, IN THE SHADE. **5** AN 8,500 FT² ROOF TERRACE FOR A 720-UNIT NEW YORK CITY APARTMENT BUILDING: TALL TREES PROVIDE MID-SUMMER SHADE AND REDUCE WIND EXPOSURE IN EARLY SPRING AND LATE FALL, ENHANCING SOLAR ACCESS. **6** VANCOUVER'S EMERY BARNES PARK: SHADE AND WATER PROVIDE A COOL SUMMERTIME ENVIRONMENT

PHOTOS 3 THERMAL IMAGE ANDREW BRIGGS (PHOTO CORRECTION ERIKA DUECK) **4** BOB BROWN **5** HMWHITE SITE ARCHITECTURE, NYC **6** BRETT HITCHENS

VIDEO

Features and Savings

- Filtered Water
- One Water Source
- Hidden Spigot

10135 SMSS

One Fountain Source

Bottle Fillers,

ADA Drinking Fountains,

Pet Fountains and more...

www.mostdependable.com

MOST DEPENDABLE FOUNTAINS,™

Contact:

Crozier Enterprises Ltd.
Landmark by Crozier
866-624-9722
sales@crozier.ca

Tessier Recreo Parc
(Quebec)
800-838-8591
recreo-parc@tessier-rp.com

no last word…

There is no last word on climate change. As the climate changes, everything is in flux. This includes the role of landscape architects and related design and planning professionals who will help communities to build differently. We have much to do to adapt to the inevitable challenges of a changing climate.

pas de dernier mot…

Il n'y a pas de mot de la fin sur les changements climatiques. Tout est en constante évolution, y compris le rôle des architectes-paysagistes et des autres concepteurs et urbanistes qui aideront les collectivités à construire autrement. Il reste beaucoup à faire pour s'adapter aux défis inévitables qu'engendrent ces changements.

"WINNIPEG - EARLY SPRING." PETER GRAHAM.

NANCY POLLOCK-ELLWAND
GUEST EDITOR | REDACTEUR INVITÉE

SCREEN PRINT SPOTTED IN *FROST-BITTEN MOSQUITO-SLAPPING TROLLEY-TIPPERS: CONTEMPORARY ART FROM MANITOBA*: A FALL SHOWING AT GENERAL FINE CRAFT, ART & DESIGN IN ALMONTE, ON.
www.generalfinecraft.com

UNIQUE *...and current !*

WP-2

B-10 LED

F-10

TF-3

FAIRWEATHER*sf*.com

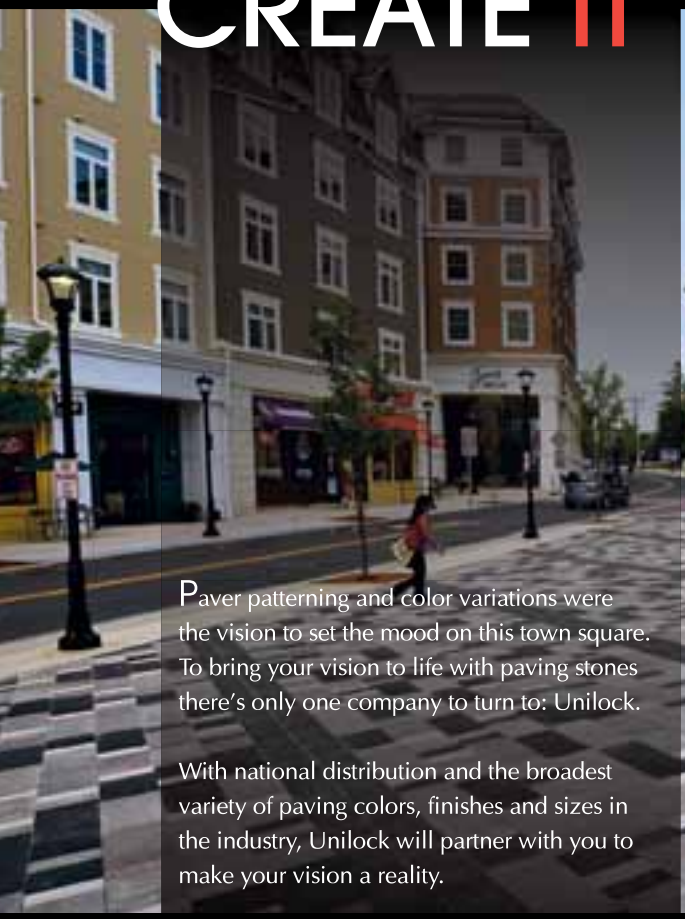
Call Today 1-800-323-1798

FAIRWEATHER SITE FURNISHINGS, a Leader International company

1540 Leader International Drive, Port Orchard, WA 98367-6437, 360-895-2626

#wowfairweathersf

CREATE IT



Project: Storrs Center, Mansfield, CT
Designers: Kent + Frost Landscape Architects
Product: Series 3000®

Paver patterning and color variations were the vision to set the mood on this town square. To bring your vision to life with paving stones there's only one company to turn to: Unilock.

With national distribution and the broadest variety of paving colors, finishes and sizes in the industry, Unilock will partner with you to make your vision a reality.

With colors and textures that can be customized using different aggregates and pigments, the Unilock Series 3000® owes its beauty to the exposed granite and quartz, creating a striking surface that has the most remarkable durability.

Unilock, helping bring your architectural vision to life.

UNILOCK®
DESIGNED TO CONNECT™

Contact us to learn more and arrange a "Lunch & Learn". Call 1-800-UNILOCK (864-5625)

COMMERCIAL.UNILOCK.COM