December 2010

SITELINES

Landscape Architecture in British Columbia

DRAWING ON THE LAND

BCSLA Members Abroad | Embracing Winter | Contemporary Landscape Architecture Exhibition | Celebration of the Inlet

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Editor's Note

By Brett Hitchins

The holiday season is now here, and yet another year of landscape architecture in British Columbia has passed. Looking back, there are certainly many accomplishments of which to be proud. The successes of 2010 began early, when members saw their designs in Vancouver and Whistler broadcast across the world as part of the Olympic and Paralympic Winter Games. Soon after, many of those members (and others too) earned honours at the national and regional levels for their efforts, which included a strong showing in this year's CSLA awards program. But more important than awards, BCSLA members collectively contributed to a multitude of successful projects, making places people love and engaging with neighbourhoods and communities across the province and country.

In addition, Katy Amon, BCSLA Intern, profiles (page 5), landscape architects in British Columbia who have in no way limited themselves to work here in Canada. A small but passionate contingent continues to grow and expand the BCSLA reputation outside our region by living and working internationally. In exporting design and construction expertise, these individuals play leading roles as part of prominent design teams, creating multi-faceted projects that tie together modern design aesthetics with local vernaculars.

Also accustom to working in the profession's international spot light, Cornelia Hahn Oberlander, LMBCSLA #029, has thoughtfully contributed to the issue with a feature profile on the completion of the reflection pond at the Museum of Anthropology at the University of British Columbia in Vancouver (page 13). The article discusses the pond as a final addition to the Haida Gwaii inspired landscape, and as a realization of an Arthur Erickson dream.

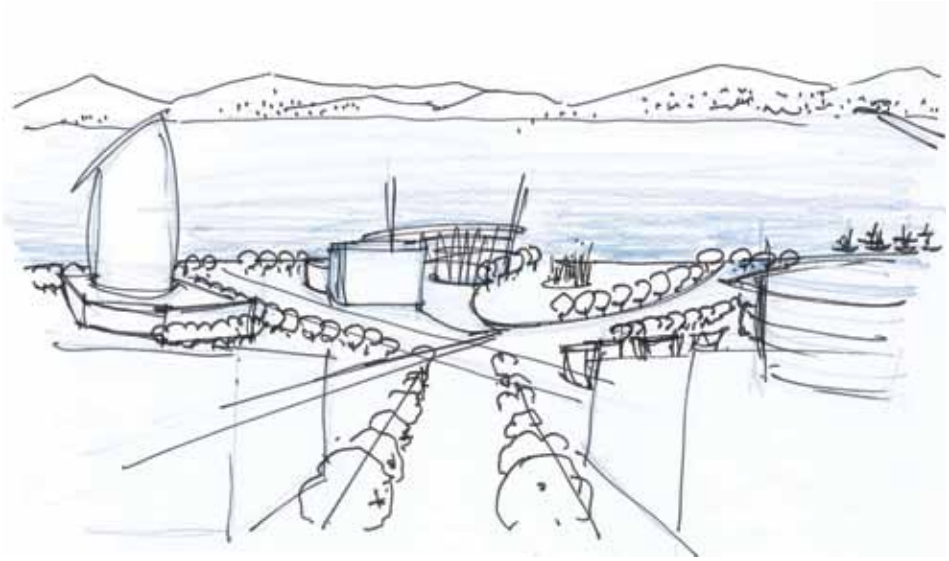
Now as we move toward 2011, there is no doubt that a new year will see BCSLA members continue to reach new heights, find new talents, and achieve exciting goals. In closing, I'd like to say this will be my last issue as Editor. Thank you kindly to all of you who have generously contributed to and supported Sitelines, especially Tara Culham , Jessica Tan, and our graphic designer Odette Hidalgo. SL

Cover Image: Concept Master Plan, Sanya, Hainan, China
Credit: Jason Chan, MBCSLA

In this Issue:

BCSLA Members Abroad

By Katy Amon, BCSLA Intern



Town Centre Concept Sketch, Heshan, Guangdong, China
Credit: Jason Chan, MBCSLA

When first confronted with the thought of BCSLA projects overseas one might think of BC firms working on international projects out of their BC offices. In addition, there are a number of BCSLA members who are both living and working abroad in countries across Asia and the Middle East, including the United Arab Emirates, Syria, China, Korea, Singapore, and Hong Kong. In contacting a few BCSLA members who are working abroad, they spoke of a wide breadth of design processes and projects ranging from man-made lakes, wetland parks, cultural villages, factories, theme parks, streetscape design, stormwater management, mixed development, and master planning.

Working as project managers, chief landscape architects, art directors, and design leads, landscape architects face challenges including language barriers, exposure to sun and tropical diseases, working in high security environments without access to internet or laptops, adjusting to a variety of cultural norms and design approaches, and ensuring that local contractors are able to supply the right materials and build to standard.

Members noted that from their experience, the degree of public consultation in their projects varies greatly from country to country. Some, such as Singapore, relate closely to the Western model, while projects in Hong Kong follow a very rigorous consultation framework – with upward of 12 public presentations in a project. In Korea, public involvement is done primarily through internet surveys with a lottery-like prize to encourage participation. "New markets", including China, Vietnam, India, and the Middle East, rarely require public consultation, although a number of these have government requirements (China has design institutes that approve landscape projects and monitor works, and the United Arab Emirates have landscape requirements for large projects).

Landscape architects incorporate local aesthetics and values to different extents. Jason Chan, MBCSLA #348, says that it can be difficult to interpret and represent local meanings in many projects, as many "new market" clients want contemporary design, rather than design reflective of local vernacular. Sung Ae Sim, MBCSLA #343, spoke of the process as involving a, "localized solution with global standard." She believes that working in nations with a long history provides significant inspiration and involvement from outside designers can highlight elements of local culture that may go unnoticed by locals. ►

Below are highlights from a few recent projects by BCSLA members:

BCSLA Member: Yong Xu Yu, MBCSLA #441

Role: Senior Landscape Architect

Project: Doha Cultural Village

Date: 2007 to 2010

Team: GHD, with 11 sub-consulting companies from Mainland China, Hong Kong, Sri Lanka, India, Vietnam, Egypt, Philippines, and Malaysia.

Location: Doha, Qatar

Client: Aspire Zone Foundation

Managed by the government, this 99 hectare cultural village includes 234 villas on artificial hills, overlooking the coastline. It incorporates the design of parks, streetscapes, way finding, lighting, shade structures, and the development of desert guidelines.

Challenges:

Yong wrote that working with a multidisciplinary team located in eight different countries was both a challenge and a reward. Working on steep, artificially created terrain, while attempting to limit the extent of retaining walls, was also challenging.

Research:

This project required several unique research and design topics including intensive studies of the structural and geological stability of artificial hills, the establishment of desert environment design guidelines, and designing for the privacy of families, especially women – which is very different from North American design principles.

BCSLA Member: Sung Ae Sim, MBCSLA #343

Project: Detailed Cityscape Plan for Woonbook Leisure City

Date: 2008

Firm: AECOM (previously EDAW)

Location: Woonbook-Dong, Jung-Gu, Incheon Metropolitan City, Korea

Client: Lippo Incheon Development Corporation

An open space master plan for a leisure-city development, a city focused on "lifestyle" or "leisure" activities, including housing, an international hospital and school, a casino hotel, and a fisherman's village.

Challenges:

In this project, the design team proposed the integration of natural stormwater treatment through ponds, bioswales and constructed wetlands in streets, a botanical park, and open spaces. The government would not approve it – pursuing ecological design was very challenging without client or governmental support.

Research:

Local vernacular is still somewhat underappreciated in Korea, so the design team attempted to identify and promote local character. As a Korean, Sung Ae Sim worked with her coworkers to help them understand local culture. She wrote, "It is amazing how foreign interpretation on Korean culture actually helps Koreans to see real value of their culture and environment."

BCSLA Member: Lindsay Gowler, MBCSLA #230

Role: Lead Designer and Project Manager

Project: Eighth Gate, Damascus, Syria

Date: 2009 to 2010

Firm: Silk Tree International

Location: Damascus, Syria

Client: Emaar IGO

A 35 hectare development with mixed business, commercial, resort, residential, and institutional use, from conceptual design of a master plan, through a government approval process, to finished construction drawings and site supervision services.

Challenges:

Although allowed a great deal of freedom in design, significant work had already been completed on infrastructure, without consulting the team. This caused some problems in the over-all design.

Research and Design Inspiration:

"When working on international projects," Lindsay wrote, "I'm usually living in the country for extended periods and try to immerse myself in the local culture learning as much about it as I can. The extent to which designs reflect local aesthetic and values varies depending on the project and the client, some clients want a Western style project while others look for designs with a more traditional approach. Of course in the Middle East, Islamic architecture offers a wealth of design possibilities and inspirations, so we would quite often try to use traditional Islamic design with a contemporary twist".

Thanks to Jason Chan, MBCSLA #348, Dave Davies, MBCSLA #430, Lindsay Gowler, MBCSLA #230, Sung Ae Sim, MBCSLA #343 and Yong Xu Yu, MBCSLA #441, for their contributions. SL

EMBRACING Winter

By Yekaterina Yushmanova, ASLA Associate

The Wayne Grace Memorial Student Design Competition, sponsored by the Landscape Architectural Registration Boards Foundation (LARBF), provides recognition and scholarships for outstanding student design work that demonstrates how the practice of landscape architecture impacts the public's health, safety, and welfare. This article is an overview of 2010 first-place winner, University of New Mexico student, Yekaterina Yushmanova's project, "Embracing Winter", which proposes innovative solutions to address the environmental, climatic, and cultural issues that the residents of Yakutsk, a town in northeast Russia, face on a daily basis.

The coldest city on earth, built on continuous permafrost, Yakutsk is faced with an environmental crisis stemming from inadequate planning, pollution, and poor building practices. "Embracing Winter" applies concepts of sustainability to this extreme environment, combining basic practices and unique technological solutions to resolve ecological issues and to create public space for cold climate. The central elements of the proposal, positioned within a degraded and polluted drainage channel, are 12 filtration towers, which provide year-round pollutant removal and climatic refuge; a new path which reconnects neighborhoods and serves as a sculptural snow collector and play structure; and lighting for the arctic winter.

SITE ANALYSIS: The 2.8 kilometre-long, 40 to 80 metre-wide drainage corridor selected for the design intervention is a former braided channel of the Lena River, which due to anthropogenic factors, has lost its connectivity with the river and is ecologically degraded. With no outlet at its lowest point, the channel floods adjacent neighborhoods during snowmelt and becomes a stagnant polluted pool in the summer. The channel cuts through multiple neighbourhoods, creating a barrier even when it is covered with ice due to the water and sewer pipes that run along its banks. Even though there are several existing vehicular and pedestrian bridges, the distances between them are too great for comfortable travel on foot during winter months.

Photograph of existing condition: the channel and infrastructure. Credit: Yekaterina Yushmanova

SITE PLAN AND CHANNEL MODIFICATIONS: Channel modifications were necessary in order to restore the channel's function as a drainage corridor. Two new outflows are proposed at the southeast and northeast ends of the site for proper drainage. The outflow elevations are set to ensure that the channel reaches maximum storage capacity before discharge in order to minimize the amount of pollutants entering the river. Runoff will be collected from the neighbourhoods and transported to the channel via a network of vegetated swales. The channel corridor will be modified to allow for greater flood absorption, increased floodwater storage capacity, as well as habitat for wetland plants and improved pedestrian connectivity. ►

Inside of a filtration tower in spring.
Credit: Yekaterina Yushmanova

FILTRATION TOWERS: A short growing season and plant dormancy during snowmelt make application of constructed wetlands very limited for this project. While it is proposed that the channel and its sides will be revegetated using a mix of native species, the main solution for year-round pollutant removal will be 12 filtration towers. The concept for the filtration towers combines a greenhouse, a constructed wetland, and an indoor public space. The filtration towers will be climate and light controlled triple-glass enclosures positioned over the deepest parts of the channel. The filtration function will be performed by bamboo (*Phyllostachys nigra*) planted in the growing capsule. A pump will continuously pump water from the channel into the capsule where it will be distributed over the growing surface via sprayers. The condensation will then be collected and released back into the canal. The daily evapotranspiration rate of bamboo can be controlled by adjusting the temperature, in response to the amount of water available. The public space between the first and the second glass skins of the towers will provide a climatic refuge throughout the year.

PATH AND LIGHT CLOUD: The proposed elevated pedestrian path will span the entire length of the site, creating multiple connections and "stitching" together the opposite banks of the canal. The bridge-like elements of the path will extend into the neighbourhoods, creating easy access to amenities and transportation, and facilitating movement along and across the canal. The organic shape of the path will form sun lounges and benches, creating gathering and resting spaces, which in the winter, will act as sculptural snow access to the filtration towers and interact with existing infrastructure without hiding it.

The main element to address winter light conditions will be the light cloud, constructed of hundreds of metal rods of different heights with LED lights on the top. The light cloud will be a reappearing event along the path. Its soft glow will act as a magical beacon during foggy winter nights.

"Embracing Winter" demonstrates how solutions to a complex environmental situation can combine ecology, infrastructure, and public space. The filtration towers, path, and light cloud represent a de-centralized system of pollution and flood mitigation, which also addresses the everyday quality of life by providing much needed climatic refuge, light during long winter nights, and pedestrian connections for the inhabitants of Yakutsk.

While shown in the context of the coldest city on Earth, the design solutions could be applied to a number of different environments. Taking into consideration limited sunlight, cold, and climatic refuge during the design process is important for any area where such conditions exist, even for a short time. The year-round filtration concept could be used in any relatively cold climate where wetland performance is inhibited by a short growing season, or where it is necessary to have stable treatment levels throughout the year, for example in the case of sewage processing. The idea of vertical pollution treatment facilities, (versus the more common horizontal design), could be extremely useful in dense, heavily urbanized areas, where waterways have been channelized and wetland restoration is difficult and costly. **SL**

2010 Drawing on the Land Exhibition

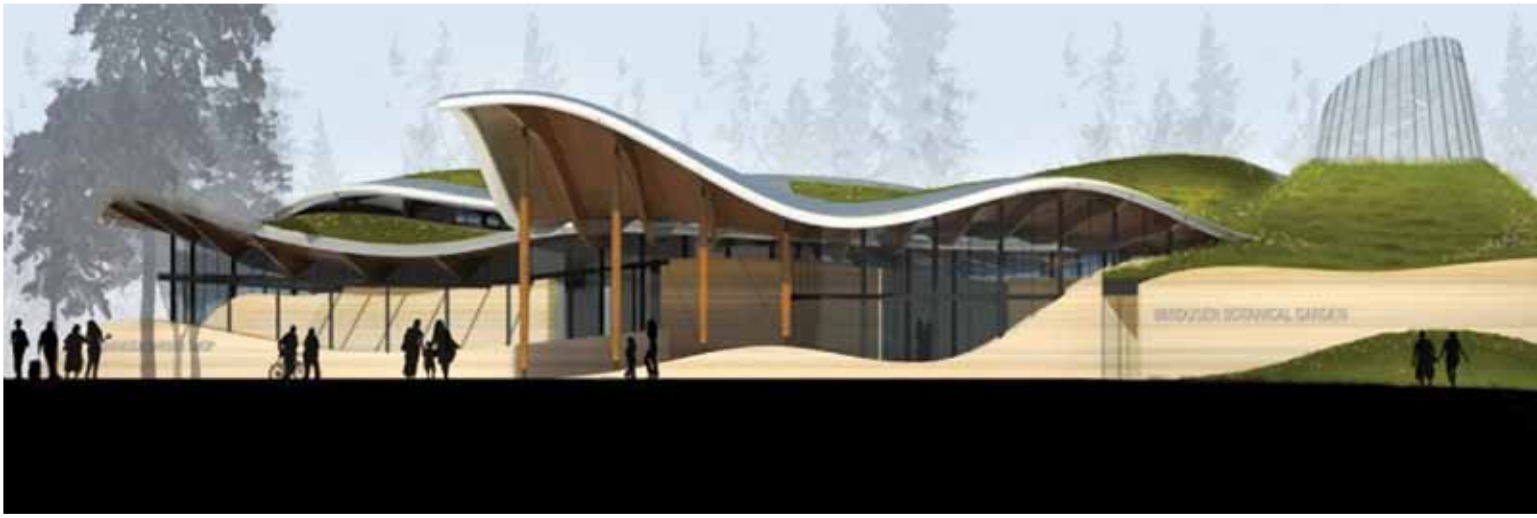
By Daniel Roehr, Assistant Professor, MBCSLA, CSLA

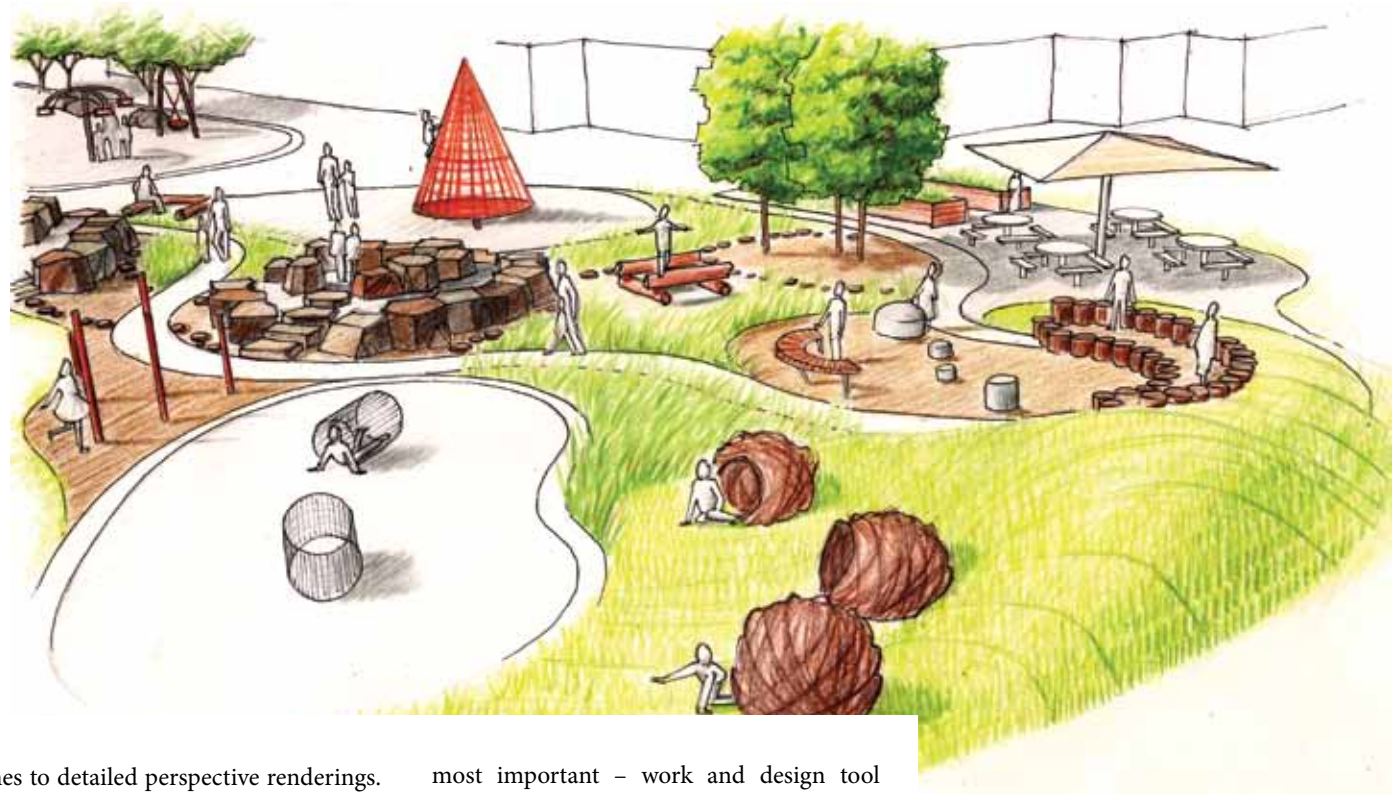
Landscape architects from BC will be exhibiting their drawing skills for the second year in a row from November 14th to December 4th. This year's venue, the Pendulum Gallery, a public space in downtown Vancouver, is a fitting location for such an exhibition. Incidentally, the show is hosted by a former landscape architect who switched to the field of organizing public art displays.

It could be said that the public exposure of landscape architecture as an arts profession is the overarching theme of this year's exhibition, Drawing on the Land. This year's jury was intent on being rigorous about the quality of drawings in the selection process. The consensus was to judge the work not only from the point of view of drawing ability but rather the landscape architectural design content the images conveyed and how the draughts(wo)man chose to apply different media to explore, explain, edit, and visualize their landscape design ideas. Furthermore, spatial experience, as well as subtle and thoughtful use of rendering/colouring techniques, was taken into account when making the final decisions. Another criterion was whether specific projects would be able to resonate with and be legible for the general public as well as the informed landscape community.

A competitive process like the Drawing on the Land shortlist serves to push the envelope of drawing quality even further in the design community. It also aids in the cultivation of drawing media skills within our profession. Drawings are the first impression a client receives of a project and they can create a lasting impression. As was revealed during this year's selection process, the task at hand was not easy, and a critical distance to one's own work was essential when making a submission.

It is the creator's name, or more often, the signature of an office that is at stake. A further selection criterion was based on the idea that images had to not only show skilful rendering techniques but also express content, experience, mood of three-dimensional landscape space, technical content or a combination of both. One way to consider and choose drawings was to look for design process and spatial atmosphere, from initial



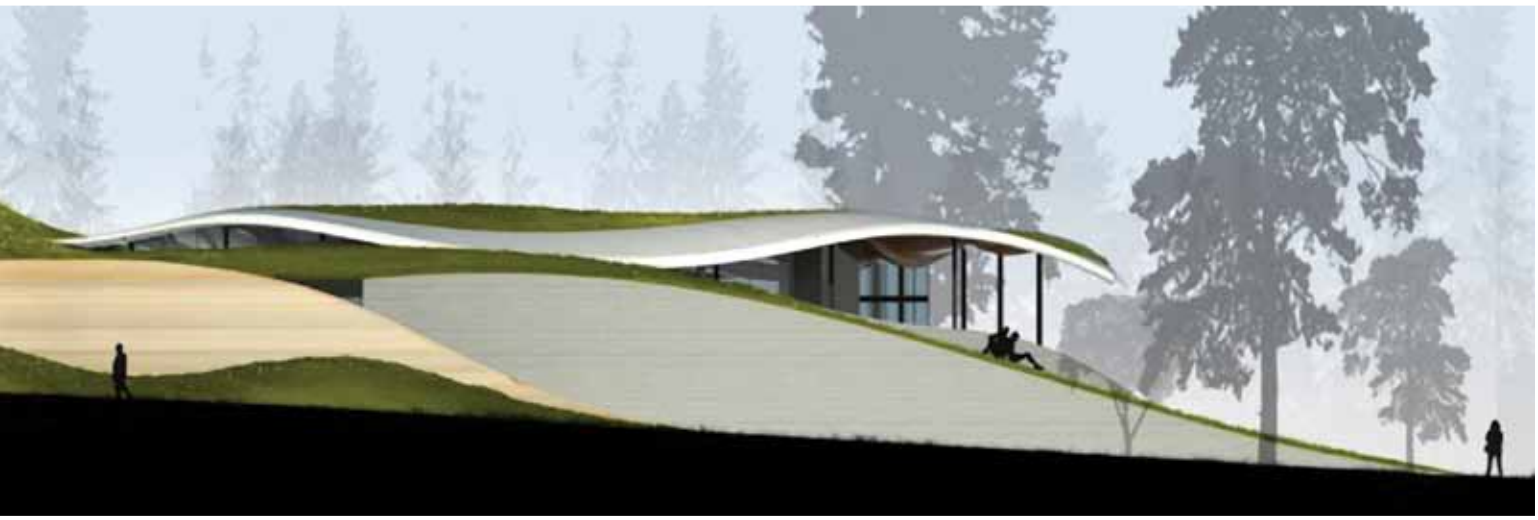


sketches to detailed perspective renderings. The jury's final selection shows examples from all scales of work BCSLA landscape architects are involved in.

This show gives an excellent overview of the current state of landscape architectural drawing in BC and around the world by BCSLA Members, but also exposes the need to push this exploration process further, using new media methods and skills to transport content. Landscape architects from BC could benefit from the development of a rigorous and competitive drawing culture. After all, drawings are a – if not the most important – work and design tool of our profession, a tool which needs constant refinement and critical discourse for improvement. The Drawing on the Land exhibition is a good start for hopefully many more drawing shows to come. SL

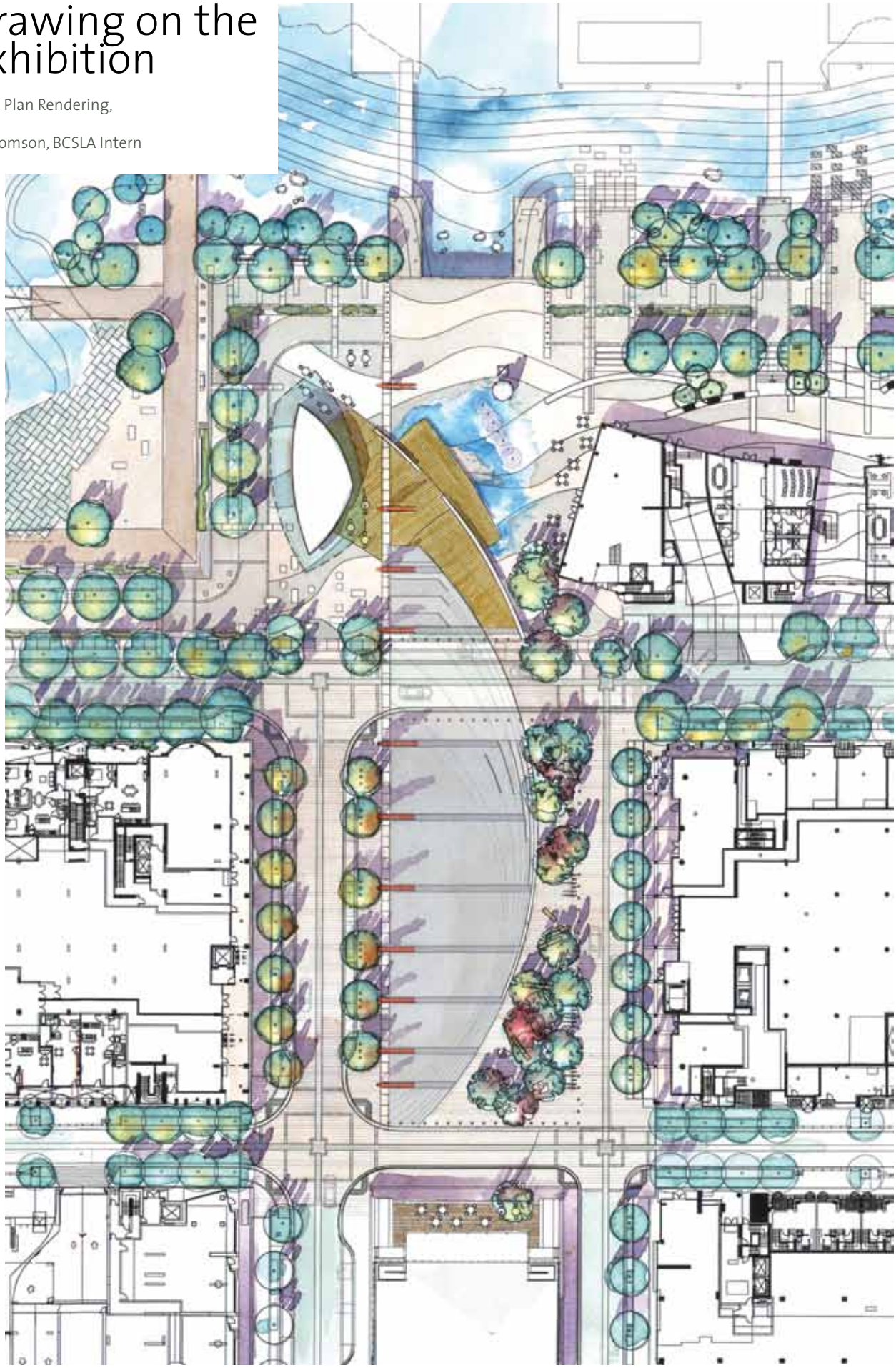
Above: Altadore School Playground Concept, Calgary, AB.
Credit: Tanya Goertzen, MBCSLA (Inactive)

Previous page and below:
VanDusen Botanical Garden Visitor Centre, Vancouver, BC
Credit: Ken Larsson, MBCSLA, Cornelia Hahn Oberlander, LMBCSLA



2010 Drawing on the Land Exhibition

SE False Creek Plaza Plan Rendering,
Vancouver, BC
Credit: Matthew Thomson, BCSLA Intern



Celebration Of The Inlet
MUSEUM OF ANTHROPOLOGY

September 19, 2010

By Cornelia Hahn Oberlander, LMBCSLA, OC, FCSLA, FASLA

This indeed is a historic moment in the life of the Museum of Anthropology at the University of British Columbia in Vancouver. Thirty-five years ago, architect Arthur Erickson unfurled a drawing of the site of the Museum of Anthropology showing the Haida Village, an inlet of the sea, and asked me, "What would you do, Cornelia, with this site?" I replied, "I would simulate the landscape of Haida Gwaii with rolling hills, native grasses and an ethnobotanical walk through the woods." In Arthur's inimitable style he said, "Go to it, Cornelia!" All I knew was a book called, This is Haida, from which I learned about inlets, shingle and shell beaches, and the vegetation. There was no money for me to travel to the Queen Charlotte Islands, so I used a magnifying glass to identify the grasses from the photographs in the book. The mix of seeds was collected and hyrdo-seeded on the Museum mounds in April 1976. This seed mix is still used today for re-seeding disturbed areas.

The Museum was opened on May 30, 1976 by Governor General Jules Leger, in the pouring rain, with no grass growing on the mounds and no water in the pond. Originally, the pond was sealed with three layers of clay and topped with pea gravel. No water was allowed for fear of a leak.

In 1976 I wrote about the vision for the Museum. The Museum of Anthropology is perched on the cliffs at Point Grey on the northern tip of the UBC campus. The panoramic view to the North Shore mountains, the Strait of Georgia and Howe Sound define the site's northern border. The totem poles, at the Museum and its adjoining replicated Haida Village, seem to be standing at the edge of an inlet, as they did in coastal villages.

I worked with Arthur Erickson to create a total environmental design. This meant not only enhancing the museum structure, but working to evoke the character of the traditional North West Coast village environment, with a simulated shingle and shell beach and grassy mounds. The landscape architect's concept was to create a planting design based on the ethnobotanical history of BC's west coast. The design principle governing the site development was to surround the Museum, visually and physically, with a landscape reminiscent of the west coast native people's settlements, ►



Credit: Elisabeth Whitelaw, MBCSLA

displaying plants used in their daily life. For example, salal and salmon berries were welcome food, cedar bark served a variety of clothing and wrapping needs, while sword fern had proven medicinal success. These native plants are introduced and nurtured among the hillocks, landforms similar to those of the Queen Charlotte Islands as well as the Fraser estuary and the northwest coast. Consequently, the peripheral surrounding woodland allows the visitor to walk though an ethnobotanical park, featuring plant materials used by British Columbia's native people in gathering food and building houses. This landscape is viewed as an outdoor extension of the Museum and complements interior displays.

On all his projects, Arthur's vision was that building and site should be one. He explained often that the outdoor areas were part of the Museum. However, for thirty-five years, there was only gravel in the inlet. Today we celebrate the reflecting inlet with water, which was made possible by the generosity of Dr. Yosef Wosk, as well as the Museum of Anthropology of the University of British Columbia, in achieving Arthur's vision. I would particularly like to thank the Director of the Museum, Anthony Shelton, Moya Waters, and David Cunningham, for their constant encouragement and support, as well as the help of David Grigg, of Campus and Community Planning for completing the platform for special events.

It took a team of committed professionals led by the University of British Columbia, and the staff of the Museum, to build a new platform for events, and to adhere to the requirements of Metro Vancouver regarding seismic upgrading and introducing yet a new self-sealing liner of the pond with bentonite.

As the Landscape Architect, my five "P's" saw me through the project: patience, persistence, politeness, professionalism, and passion.

This could never have been accomplished without teamwork and the leadership of Karen Koyama, Project Manager; Graeme Macleod, Geotechnical Engineer; and the expertise of Noordin Walji and Frank Antonishyn of MMM Group. I am forever grateful to them for their work, as well as Elisabeth Whitelaw from my office, who gave hours of encouragement when things were rough and tough.

My thanks especially to our expert landscape contractor, Tim Ferguson of North by Northwest, with whom I worked in 1997 to recondition the landscape for an APEC meeting. He provided his excellent crew under the leadership of Roberto Vazquez. From now on, the inlet will proudly tell its story, delight the eye, and realize the dream of Arthur Erickson.SL

Phosphorus and the Philosopher's Stone

By Mike Van Ham, Senior Environmental Scientist, RPF, RPBio, PAg SYLVIS

Most discoveries are made serendipitously: scientists, inventors, and explorers – in the process of looking for one entity – discover something completely different. The discovery of phosphorus (P), an essential plant macro nutrient and the "middle number" in a chemical fertilizer guarantee, is no exception.

In 1669 a German alchemist named Hennig Brand was attempting to create the "Philosopher's Stone". This mystical material was thought to be an elixir for immortality and have the power to turn lead into gold. While he was boiling down human urine he isolated a white crystal that glowed in the dark and burned with an intense white flame. He had not found the "Philosopher's Stone" but instead discovered phosphorus. Brand aged, then distilled approximately 1,100 litres of human urine to get 60 grams of phosphorus.

Early agriculturalists understood the benefits of fertilization with different manures. Prior to Brand's discovery, the Inca in Peru realized the benefits of adding phosphorus to soil (although they did not know exactly what it was). Seabird and bat manures (guano) were the primary source of Incan phosphorus fertilizer. Guano was subsequently shipped around the world until the early 1800's when it was replaced by bone meal. The acidification of bone meal, and ultimately that of mined rock phosphate, increased phosphorus availability and enabled the production of chemical phosphorus fertilizers. Over 80% of the world's production of phosphorus is devoted to plant fertilization.

As an essential plant nutrient, phosphorus is involved in "transfer" reactions – transferring energy and genetic material within the plant. Typical foliar phosphorus concentrations are 0.2 to 0.5% in mature leaves. More important is the ratio of phosphorus to other essential nutrients in plant tissue to achieve optimum growth. Typical ratios in mature foliage are nitrogen to phosphorus (3:1) and phosphorus to zinc (200:1). Deficiencies in phosphorus appear as slow growing stunted plants. The deficient plants can appear dark green, with older leaves showing a purple colour as limited phosphorus is transferred within the plant from old leaves to new leaves. Plant symptoms from an excess of phosphorus are not common, and typically observed as a foliar deficiency in iron or zinc.

Understanding the forms of phosphorus in the soil is important to ensure its availability to plants. In most soils, phosphorus is found in equal amounts of organic and inorganic forms. Organic phosphorus is found in humus and decomposing organic matter. As the organic matter is mineralized (broken down), inorganic phosphorus is released. Soil organisms do this mineralization, and are most efficient in warm, moist soil. In one year, a very small amount, (about 1-2%), of organic phosphorus is mineralized to inorganic phosphorus. Inorganic phosphorus is important, as plant roots assimilate only this form of phosphorus. For plant assimilation, the inorganic phosphorus must also be soluble to allow uptake by the root.

The forms of inorganic phosphorus in the soil are all anions – meaning they have a negative charge. These inorganic forms of phosphorus will bind with cations in the soil – other elements with a positive charge. Examples of cations include calcium (Ca), iron (Fe) and aluminum (Al). Reactions in the soil between inorganic phosphorus and these cations result in the phosphorus becoming insoluble or "bound up" within the soil. If it is not soluble inorganic phosphorus, plants cannot assimilate it. The presence of calcium, iron, and aluminum in the soil are important determinates in phosphorus solubility, as is the soil pH.

Inorganic phosphorus is most readily available in the soil between pH 6 to 7. At lower soil pH (between pH 5 to 6), the inorganic phosphorus becomes bound up with aluminum. Lower than pH 5, reactions with iron immobilize even more of the inorganic phosphorus. Above pH 7, inorganic phosphorus is made increasingly unavailable by reacting and combining with calcium.

All these reactions are ongoing in the soil: the mineralization of organic phosphorus to mineral forms, and the reaction of these mineral forms with elements that change their availability. Plant roots can also support ►

mycorrhizae, a fungal relationship. This fungal association greatly increases the surface area of the plant roots and assists with the phosphorus uptake.

When acidic soils are fertilized with phosphorus fertilizers, lime is often required to increase the soil pH and prevent the phosphorus fertilizer from being "bound up" by aluminum and iron, as described above. Phosphorus fertilizers often occur in compounds with calcium and sulfur, and these formulations should be understood with respect to their effect on soil pH and phosphorus solubility.

A soil can contain relatively high concentrations of phosphorus, but most of it is either in an organic form and mineralizing slowly, or an inorganic form and bound tenaciously to cations or soil particles. Phosphorus is very immobile in soils. This is the opposite of nitrogen. In soils with excess nitrogen, inorganic forms of nitrogen (nitrate) can leach and adversely affect water quality. With phosphorus, it is not the movement of inorganic phosphorus but the movement of soil itself – soil erosion into water bodies that can result in pollution and eutrophication.

Understanding soil fertility and the availability of essential plant nutrients to ensure optimum plant survival and growth is both an art and a science. There are many soil tests for phosphorus – total, organic, inorganic, and different laboratory methodologies to estimate the availability of inorganic phosphorus depending on different extractions. In evaluating soil phosphorus fertility, it is important to use the correct methodology to provide meaningful comparative information.

Growing media and fabricated soil specifications often identify a range for soil phosphorus, which is often interpreted incorrectly. High inorganic phosphorus in growing media does not necessarily imply an environmental concern. The availability of inorganic phosphorus is determined by solubility. Elevated inorganic phosphorus in soil is not like inorganic nitrogen – it does not readily leach.

Phosphorus fertilizers are expensive, and there is a worldwide finite limit to the amount of mineral phosphate rock available. It is estimated that within 30 to 40 years, the demand for phosphorus fertilizer will exceed the supply. Compounding this shortage is regional disparity – a handful of countries hold the majority of the mineral reserves. Judicious use of phosphorus fertilizers is prudent. The appropriate use of animal manure and biosolids as phosphorus sources in fabricated soil and as fertilizers is important.

Fabricated soils benefit from the stable forms of phosphorus present in biosolids. Much of the phosphorus arriving at the wastewater treatment plant will have originated from the arable land to begin with, as the food produced on those lands is ingested in the city, ultimately ending up in biosolids. The phosphorus in these fabricated soils is retained in these soils, particularly following planting, which initiates the soil-plant cycling of phosphorus.

Irony and serendipity are best friends. Fertile fabricated soil is a valuable commodity for the horticulture, landscape, and construction industries. The phosphorus content of biosolids, (from which many soils are fabricated), together with our understanding of the forms and availability of phosphorus has led to innovative chemical processes to recover a portion of the phosphorus directly from wastewater treatment plants.

This is a non-fictitious full-circle "Philosopher's Stone" that once again obtains fertilizer phosphorus from pee…. SL

Left: Phosphorus, an essential plant nutrient, was first isolated from human urine
Credit: Mike Van Ham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Congratulations

The BCSLA Board of Directors is pleased to welcome thirteen new Registered Landscape Architects. Hongbing Chen, David Davies, Karin England, George Harris, Renée Lussier, Alan Main, Joseph McLeod, Elise Menard Jonker, Donna Rodman, Marina Rommel, Nicole Taddune, Zhi (Cherie) Xiao and Yong Xu Yu have been added to the BCSLA Membership Roster. We wish you good luck in your careers. SL

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