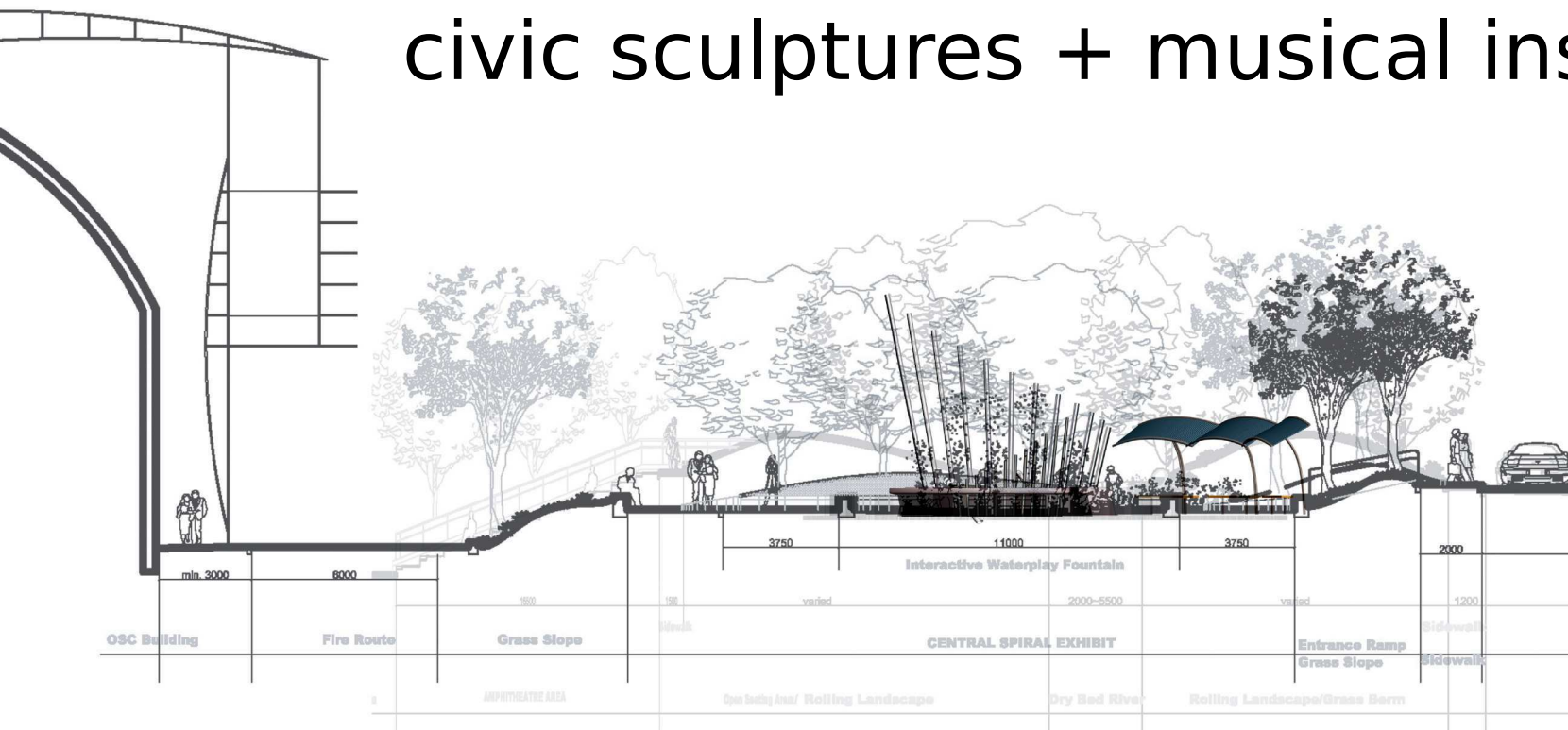


hydraulophone

civic sculptures + musical instruments





This hydraulophone installation, as the main architectural centerpiece out in front of the Ontario Science Centre, is a musical instrument that is open to the public 24 hours a day.

Top: Aerial view of hydraulophone installation in Teluscape park.

Bottom: Nighttime panorama of the piece.



Hydraulophone installation at Ontario Science Centre:
(Steve Mann and Chris Aimone, 2006)

The hydraulophone is like a woodwind instrument but it runs on water rather than air. You play the hydraulophone by stopping the jets of water with your fingers or hands. By blocking multiple jets you can even play chords.



Hydraulophone installation at Early Learning Centre:

(Steve Mann and Chris Aimone, 2005)

Starting from the left side of the hydraulophone, each jet corresponds to a note on the musical scale starting at "A", and moving through the musical alphabet, where each jet can be labeled as "A, B, C, D, E, F, G, a, b, c, d, e."

CATHY MCFEE: CNIB OPENS INNOVATIVE OUTDOOR CLASSROOM FOR CHILDREN

BY SARAH FABBRI

A young boy in a playground giggles when he discovers that a special water fountain he is playing with makes different sounds when he moves his fingers – like a keyboard. The boy is blind and he's playing on something called a hydraulophone which is helping him learn more about the world around him. He's in the CNIB's (Canadian National Institute for the Blind) recently opened Outdoor Classroom in Calgary. It's the first facility of its kind in Canada.

"We have created something that has tremendous meaning for these children and their families," says Cathy McFee, Director of Services and Operations, CNIB - Alberta NWT Division. McFee received her Leadership Development Certificate of Excellence last spring and says her Banff Centre experiences played an important role in the development of the Outdoor Classroom.

The idea for the classroom started more than two years ago when employees with Urban Systems, a Calgary consulting firm, participated in the United Way's Day of Caring by painting fences in the CNIB's Family and Children's area, says McFee.

"We invited the Urban Systems team in for a tour, to share information about CNIB, and this led to some discussion

about developing a sensory playground to better meet the needs of children with vision loss," she says. Currently CNIB Calgary has about 80 preschool children registered with its services.

"We started to ask ourselves questions such as: Who uses this space? How is it used? How does it compliment the services of the CNIB program?" says Leighton Ginther of Urban Systems.

There was a lot of enthusiasm and creativity, recalls McFee. "We pulled together an exciting plan. We designed an educational facility where children with vision loss could explore, develop skills, and build confidence in a safe, interactive and accessible environment."

Plans featured a tactile map at the entrance to help children mentally map the outdoor space, a looped pathway system to give children the opportunity to develop their orienteering skills, a xylophone, and a sound bench.

"We were faced with a number of challenges," says McFee. These included securing approval from the CNIB's national office and securing the resources to fund the project.

At the time, McFee was just about to start her fourth



Leadership Development program, *Leading Teams for High Performance*.

During *Leading Teams*, McFee says she had a chance to present the Outdoor Classroom plans to her learning group. "I gained more confidence about how to communicate a plan to our national office, highlighting the benefits and outcomes to the organization. I (also) learned about staying focused, connecting with my own sense of values, and leading others with both purpose and passion."

The national office gave McFee the nod of approval to go ahead with the project.

McFee and her project team then secured additional partners in addition to Urban Systems, including WestJet. The tasks expanded, from creating a fundraising strategy to organizing volunteers.

"I learned about facilitating a new team that involved both internal and external stakeholders," explains McFee. She now had to build consensus and foster collaboration around a common goal.

In November 2007, McFee took *Art of the Executive Leader*, her fifth program. "One of the things I have learned is that

for nonprofit organizations to be competitive and successful you need to be innovative and mobilize every sector of society."

On October 3, 2008 McFee's shared vision became a reality and the CNIB Outdoor Classroom officially opened. The most memorable moment for McFee was watching several of the young children with vision loss engaged in play with the many components of the Outdoor Classroom.

"One very small child stood quietly – head bowed, eyes closed, tiny hands grasping onto the smooth xylophone bars – enjoying the calming vibrations of sound as his father delicately struck the instrument," McFee says.

McFee says she is grateful for the support she has received along her 10-year learning journey, one made possible thanks to the generosity of others. "It happened because of the Centre's scholarships for non-profit leaders and I want to express my gratitude and appreciation."

Sarah Fabbri is marketing officer for Leadership Development.

Natural Technologies

Our technology has been designed to run on low-voltage (12 volts DC), making it easy to run from **green technologies** such as solar panels.



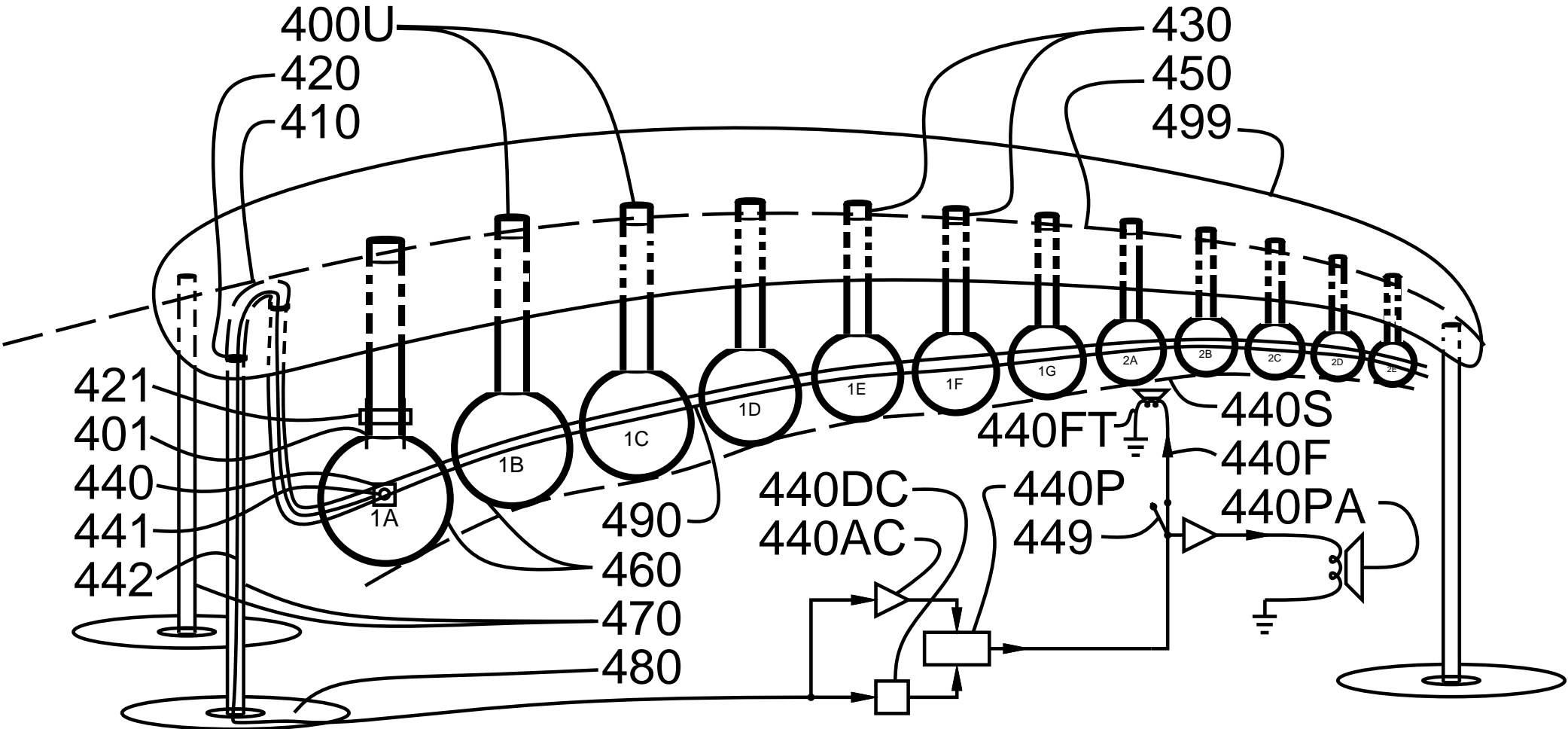
The pictures to the right show a solar panel powered **WaterTouch™** prototype placed in a water table. Both Children and parents alike find the gentle soothing vibrations wonderful to the touch providing hours of musical fun and entertainment.

Watertouch™ creates interactive multimedia events simply by touching water. We have explored many exciting possibilities including soothing therapeutic sound, subsonic water vibrations, responsive lighting and other multimedia events - all through physical interaction with water.



The patented **WaterTouch™** technology can be used in various forms, from stand-alone units to integrated applications such as in baths and showers. Stand-Alone Units have been used in water parks, schools, day care centres, and also in rehabilitation and therapy facilities. For instance because of the tactile nature of the hydraulophone it is now used by the Canadian National Institute for the Blind (CNIB) in rehabilitation therapies and for teaching music to the deaf. We have also started to explore the use of this technology in retirement homes.

Patented technology



Hydraulophone: World's first musical instrument that makes sound from vibrating liquid!

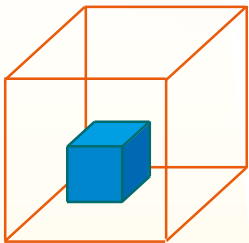
About the inventor: Steve Mann received his PhD degree from MIT in 1997, and is currently a tenured professor at University of Toronto. He was born in Hamilton, Ontario, and also holds degrees in engineering physics and electrical engineering from McMaster University. His hydraulophone invention won first place in the Coram International Sustainable Design Award (10,000 euro prize). Mann's work has been shown at the Smithsonian Institute, National Museum of American History, The Science Museum, MoMA, Stedelijk, Triennale di Milano, San Francisco Art Institute, etc., and in New York Times, LA-Times, Time, Newsweek, Fortune, WiReD, NBC, ABC, CNN, David Letterman, CBC-TV, CBS, Scientific American, Discovery Channel, Reuters, Rolling Stone, BBC, etc.. A 35mm motion picture film, based on his book "Cyborg" (Randomhouse Doubleday), was rated "Canada's most important film of the year".

THE FIVE ELEMENTS OF MUSICAL INSTRUMENTATION

1
SOLID
"Earth"



strong bonds



holds shape
fixed volume

GAIAPHONES
"Solid Instruments"

- 1.1 chordophones
- 1.2 membranophones
- 1.3 idiophones



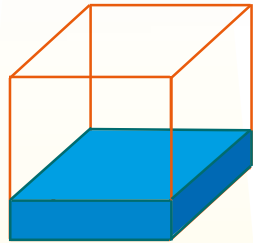
strings

percussion

2
LIQUID
"Water"



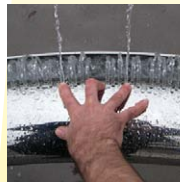
weak bonds



shape matches bottom
of container, flat surface above
fixed volume

HYDRAULOPHONES
"Water Instruments"

reedless



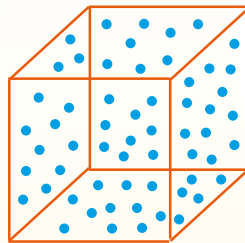
reed-based



3
GAS
"Air"



no bonds



shape matches container
fills volume of container

AEROPHONES
"Wind Instruments"

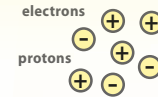


woodwind
instruments

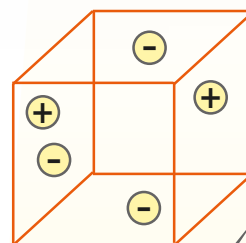


brass
instruments

4
PLASMA
"Fire"



ionization

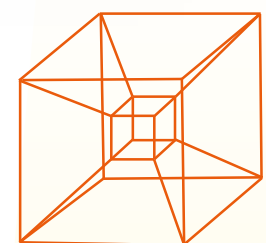


PLASMAPHONES
"Plasma Instruments"



5
QUINTESSANCE
"Idea"

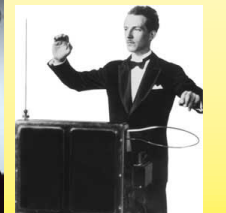
Process or
procedure
not limited
by matter



hyperspace, not limited by
space constraints

QUINTEPHONES
"Non-physical Instruments"

- mechanophones (mechanical comp.)
- electrophones
- optiphones (optical computing)
- biological computing
- neural networks





Pagophone
Solid H₂O (Ice)



Hydraulophone
Liquid H₂O (Water)



Idratmosphone
Gas H₂O (Steam)



Plasmaphone
Plasma "H₂O" ("Lightning")

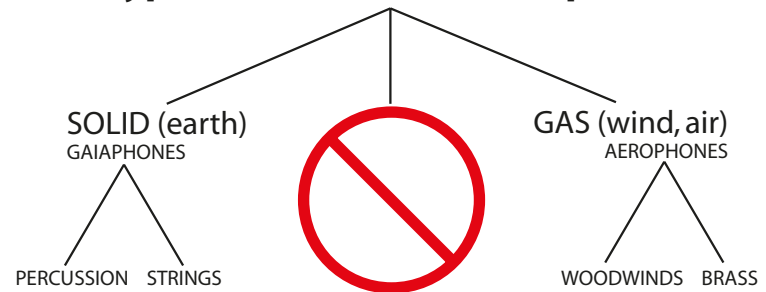
Hydraulophones and the "States of H₂O Orchestra"

Dihydrogen monoxide H₂O exists in the familiar states-of-matter or phases, known as ice (solid), water (liquid) and steam (vapor, gas).

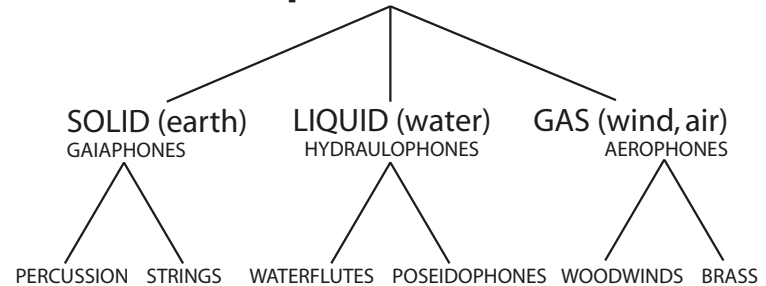
FUNtain's "H₂O Orchestra" demonstrates a wide range of artistic and design creativity and an ability to invent a wide range of new sculptural forms such as musical instruments that exist in all four "Elements" of H₂O: "Earth" (solid H₂O, ice); "Water" (liquid H₂O); "Air" (gaseous H₂O); and "Fire" (H₂O-initiated plasma).

The States-of-H₂O Orchestra was born in Canada in the early 1980s, with the invention of the hydraulophone. It was inspired by the sounds of liquid flowing through valves, by inventor Steve Mann whose work has been shown in numerous museums around the world, including the Smithsonian Institute, National Museum of American History, The Science Museum (Wellcome Wing, opening with Her Majesty The Queen June 2000), Museum of Modern Art (MoMA in New York), Stedelijk Museum (Amsterdam), Triennale di Milano, Austin Museum of Art, and San Francisco Art Institute. Mann also won the Coram International Sustainable Design Award (first place) for this interactive musical aquatic play invention/sculpture. These inventions are covered by an extensive patent portfolio, by patents filed in various countries.

Typical Orchestra (incomplete)



Complete Orchestra



The hydraulophone is a musical instrument used around the world in concerts and dramatic performances to raise awareness of the importance of clean lakes, rivers, and water as a natural resource.



Each water jet is a key on this water keyboard. Sound from vibrating water makes intricate microtonal harmonizations



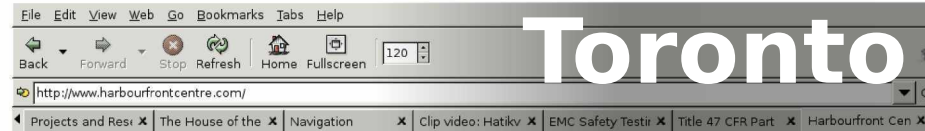
New
York
City

H₂O Orchestra

WORLD TOUR



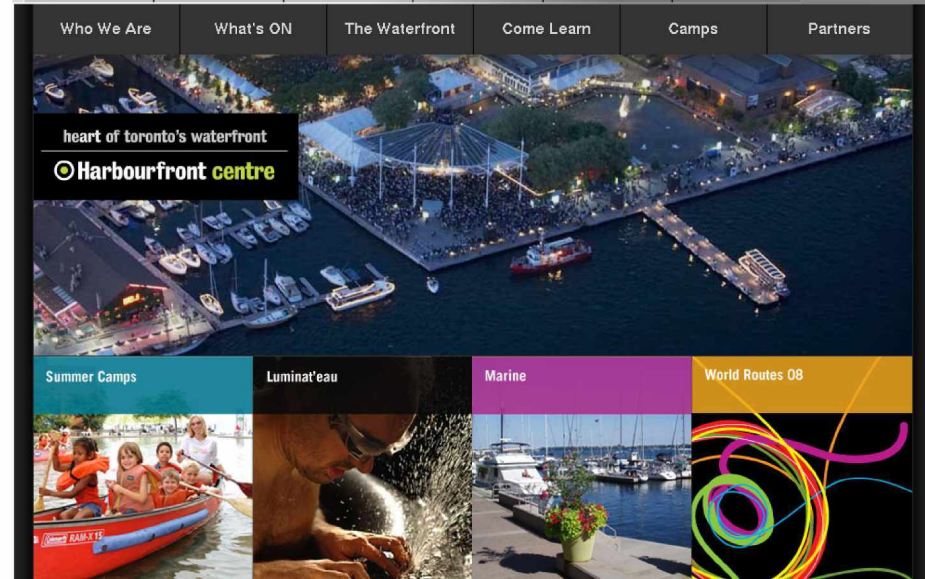
Orlando



Toronto

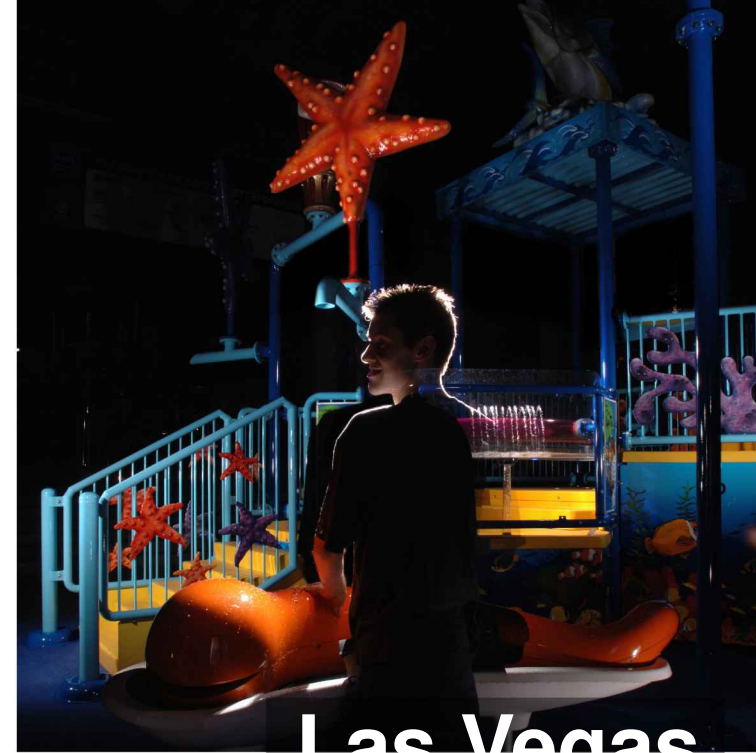


Ottawa

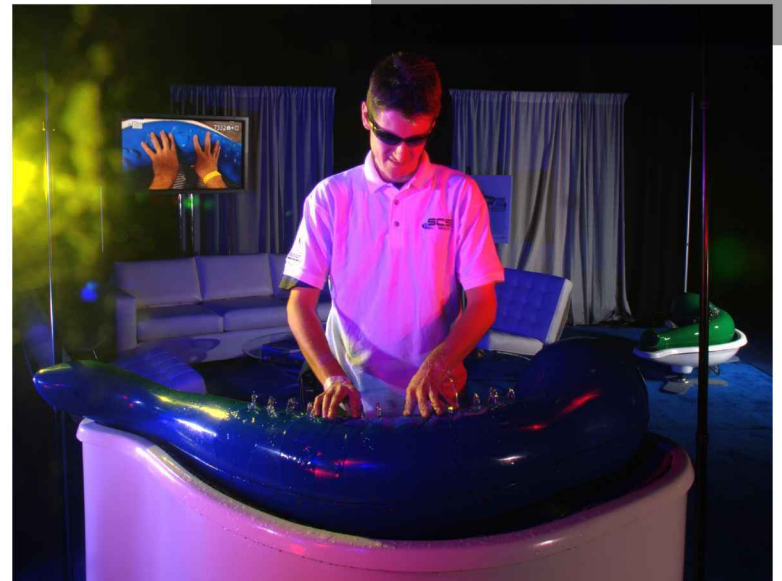


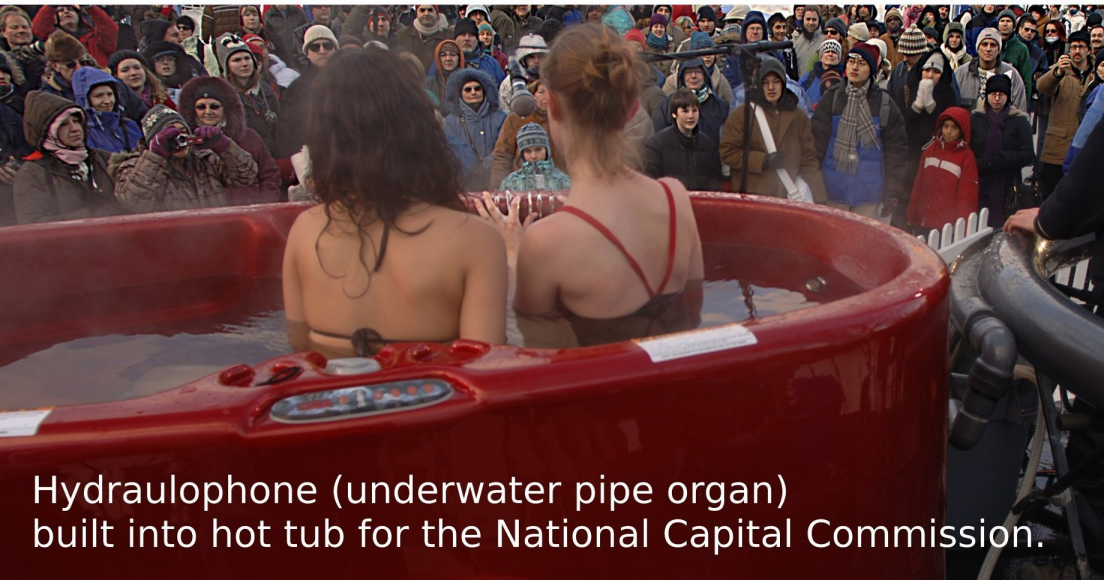


Copenhagen



Las Vegas

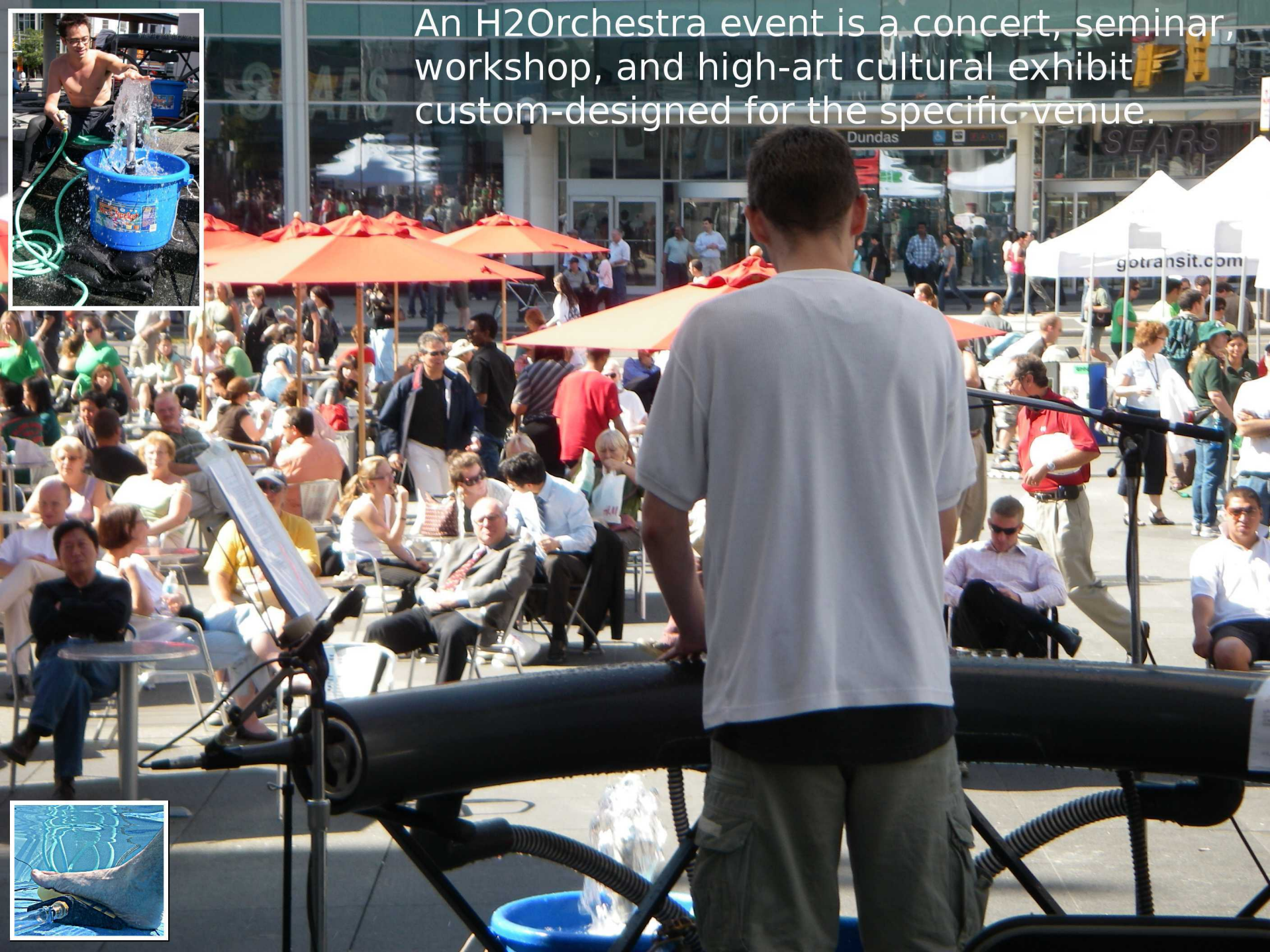




Hydraulophone (underwater pipe organ)
built into hot tub for the National Capital Commission.

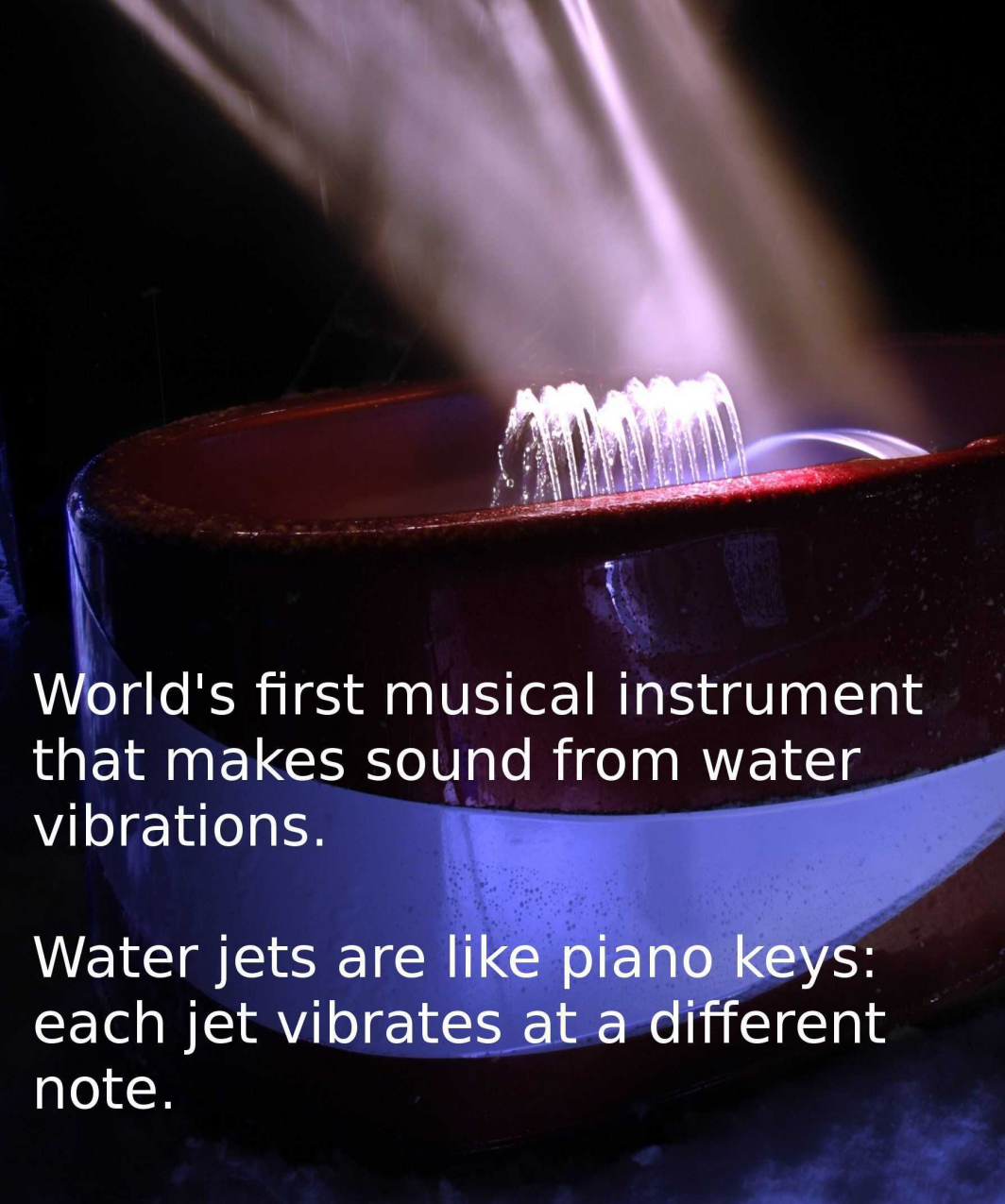
Main act for Winterlude, North America's
largest winter festival, played to
audience of more than 10,000 people.

An H2Orchestra event is a concert, seminar, workshop, and high-art cultural exhibit custom-designed for the specific venue.



H2Orchestra was the main act for SPLASH Festival 2011. Lake Simcoe was turned into the world's largest musical instrument. Turning the lake itself into a giant musical instrument raised awareness of the importance of clean lakes and rivers.





World's first musical instrument that makes sound from water vibrations.

Water jets are like piano keys: each jet vibrates at a different note.



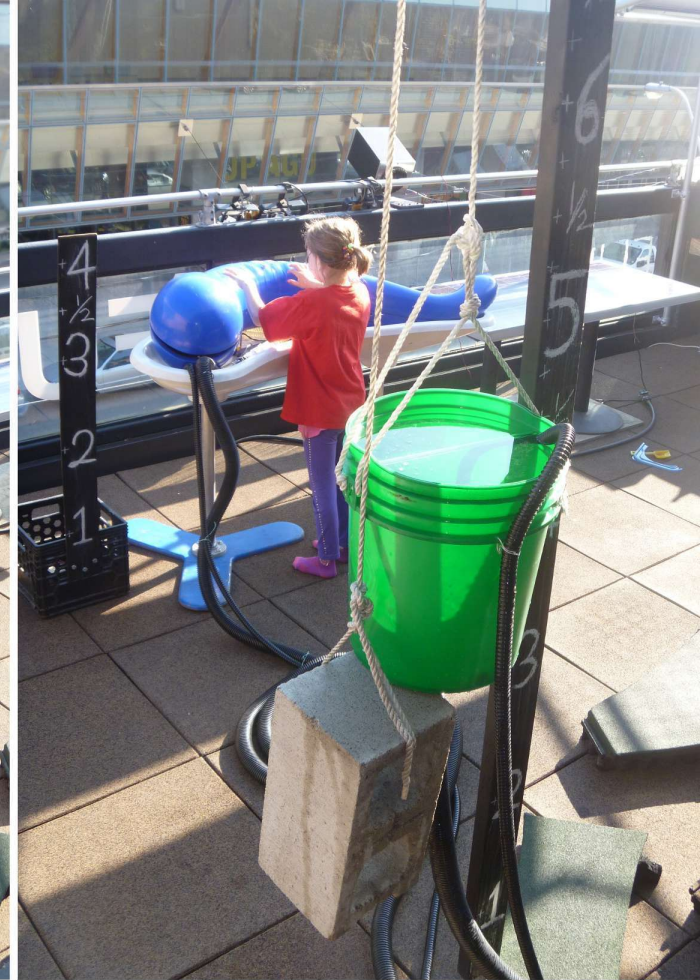
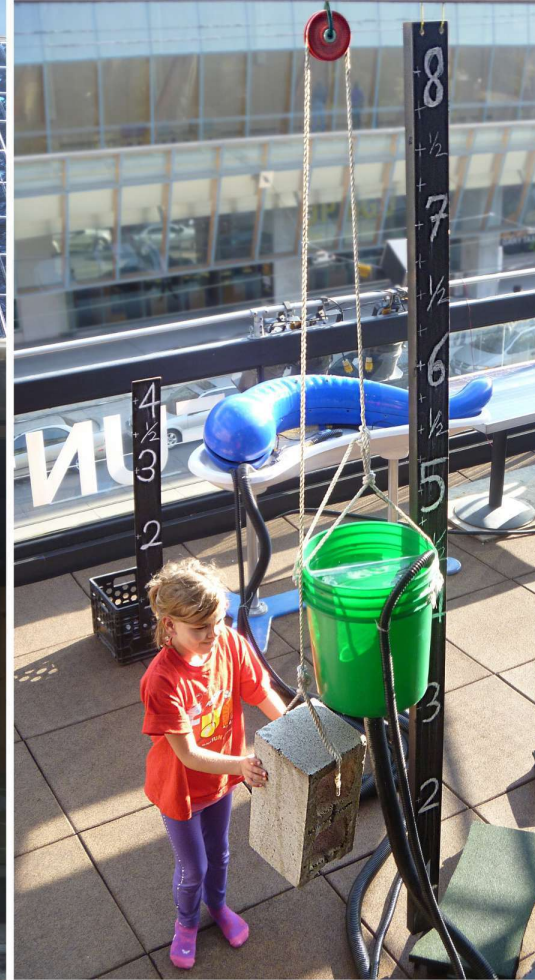
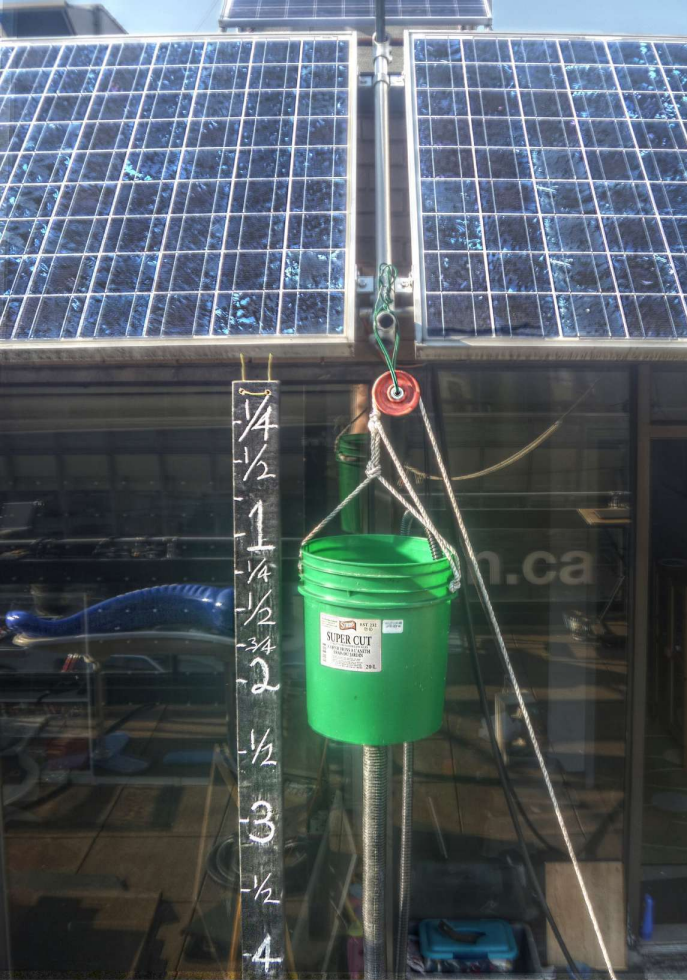


Cover removed to show hydraulophone innards:
Underwater organ pipes embedded inside hot tub housing.
Patented and patent-pending invention by S. Mann.



Public interaction, installations onsite, educational exhibits





Hydraulikos activities: Science, exploration, experimentation, and understanding



GLORIOUS GREECE • HOLISTIC HEALTH • WHEELCHAIR CURLING

abilities

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make beautiful music

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