



Hydraulophone

H₂Orientation

Steve Mann | Ryan Janzen | Ken Yang

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The Hydraulophone: World's First Musical Instrument Making Sound Out of Water

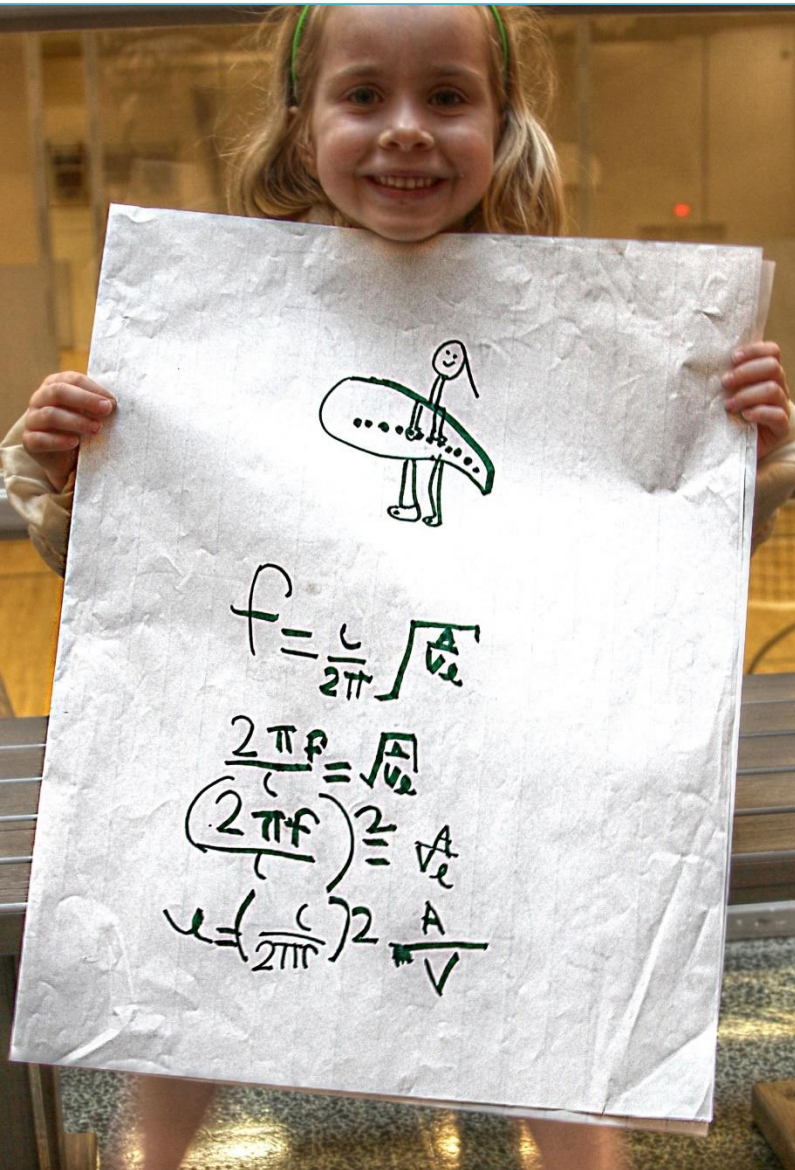


Hydraulophone & Violin Performance

Ryan Janzen, Hydraulophone; Colin Maier, Violin

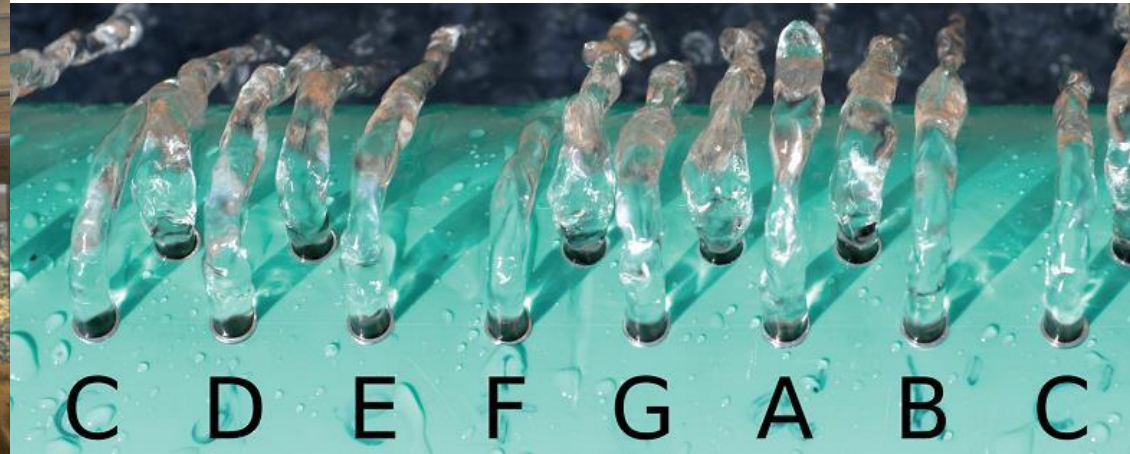
The Hydraulophone:

A musical and scientific breakthrough



The hydraulophone is an incredibly fun and musically expressive instrument for both experienced musicians and those with no musical training.

The notes are laid out like a piano. When the holes are pressed, the water flowing out is redirected into a sounding mechanism. The result is a huge innovation in music making.



Business Overview: Large, Untapped Market with 18-year Exclusive Monopoly Rights

- World's largest waterpark designer & manufacturer waiting to buy
- Proven success in waterparks, splash pads, beach areas, civic centres, museums, and attractions internationally
- Numerous Hydraulophone art installations around the globe
- Strong patent portfolio already successful in defending against infringers
- Countless applications in rehabilitation, spa facilities, cancer treatment, and in retirement homes

World's largest Hydraulophone as the main centrepiece outside the Ontario Science Centre



Proven Traction: Numerous installations around the world prove a substantial market for this product



Steve Mann and his student, Chris Aimone have built a number of hydraulophones (including several “Nessies”) by hand. The success of these sales have spawned an entire backlog of orders from around the world!

(Top – left to right:) Legoland California; Canadian National Institute for the Blind.

(Bottom – left to right:) African Lion Safari; Experimentarium in Copenhagen.

(Not shown:) Chicago Children’s Museum.

Customer Profile:



WhiteWater West Industries, Ltd., the world's largest designer and manufacturer of waterpark attractions has purchased several hydraulophone “innards” for their AquaTune™ product.

The company wants to install them in most of the waterparks, splash pads, and aquatic areas around the world. We have been unable to meet their demand.

- Founded: 1980
- Annual Revenue: over USD \$100 million
- Revenue per sale of innards: \$10,000
- 4000+ projects worldwide
- 450+ employees globally
- 19/20 of the world’s top waterparks



The [AquaTune™](#) allows the whole family to create and play their own musical fun.

“A park might spend **\$500,000 to \$1 million** on a typical attraction, and needs up to 20 of them, curated so that there’s something for everyone in the family.”

- Rick Briggs, Design Director, Whitewater West

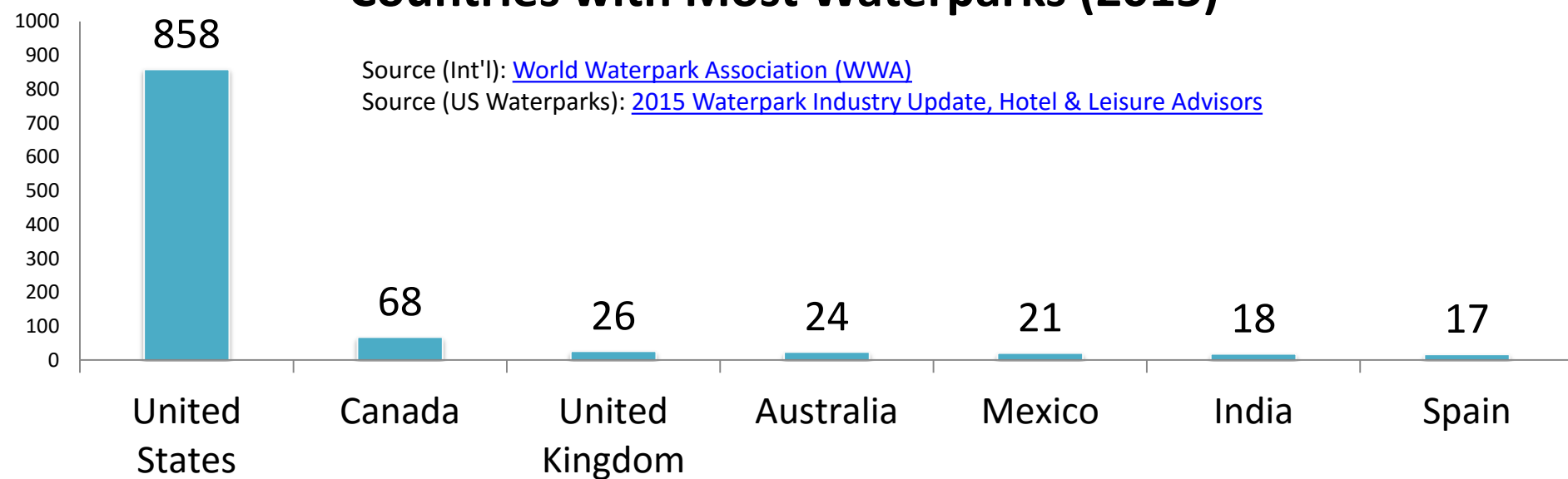
Market Profile: Waterparks as a low-risk, high-reward point of entry

There are an estimated **over 1,338 waterparks in the world**, with the vast majority in US.

Countries with Most Waterparks (2015)

Source (Int'l): [World Waterpark Association \(WWA\)](#)

Source (US Waterparks): [2015 Waterpark Industry Update, Hotel & Leisure Advisors](#)



“As the amount of indoor waterpark square footage and number of outdoor waterparks increase in 2014 and 2015, many new parks are looking to the latest trend in recreational water entertainment to set them apart.”

- 2015 Waterpark Industry Update, Hotel & Leisure Advisors

Market Profile: Waterparks as a low-risk, high-reward point of entry

At the current confirmed price point of \$10,000 per sale, the total market opportunity is **at least \$13.4 million** on only the first flagship innards product in the waterpark market alone.

This estimate does not take into account multiple/repeat sales, manufacturing and selling the entire hydraulophone, other musical products/services, and other target markets.

Total Revenue – Waterparks Only (\$ millions)

		Average Revenue per Waterpark									
		\$ 10,000	\$ 20,000	\$ 30,000	\$ 40,000	\$ 50,000	\$ 60,000	\$ 70,000	\$ 80,000	\$ 90,000	\$ 100,000
Total Market Penetration	10%	1.3	2.7	4.0	5.4	6.7	8.0	9.4	10.7	12.0	13.4
	20%	2.7	5.4	8.0	10.7	13.4	16.1	18.7	21.4	24.1	26.8
	30%	4.0	8.0	12.0	16.1	20.1	24.1	28.1	32.1	36.1	40.1
	40%	5.4	10.7	16.1	21.4	26.8	32.1	37.5	42.8	48.2	53.5
	50%	6.7	13.4	20.1	26.8	33.5	40.1	46.8	53.5	60.2	66.9
	60%	8.0	16.1	24.1	32.1	40.1	48.2	56.2	64.2	72.3	80.3
	70%	9.4	18.7	28.1	37.5	46.8	56.2	65.6	74.9	84.3	93.7
	80%	10.7	21.4	32.1	42.8	53.5	64.2	74.9	85.6	96.3	107.0
	90%	12.0	24.1	36.1	48.2	60.2	72.3	84.3	96.3	108.4	120.4
	100%	13.4	26.8	40.1	53.5	66.9	80.3	93.7	107.0	120.4	133.8

Selected Patents from Steve Mann's IP Portfolio

A strong intellectual property arsenal allows us to corner the market, enjoy pricing power, and build a foundational business to develop and commercialize a wide array of innovative musical and Phenomenal Augmented Reality products.

Country	Title	Pub. No.	Filing Date	Expiry Date
CA	Wet user interface or liquid user interface with one or more spray jets or bodies of water	CA 2499784 C	12/30/2004	12/30/2024
CA	Acoustic, hyperacoustic, and electrically amplified hydraulophones and multimedia interfaces	CA 2633679 A1	6/6/2008	6/6/2028
CA	Musical instrument based on water-hammer, hydraulophonic, or hydraulidiophonic percussion	CA 2722916 A1	11/26/2010	11/26/2030
CA	Fluid user interface such as immersive multimediation input/output device with one or more spray jets	CA 2517501 A1	9/9/2005	9/9/2025
US	Acoustic, hyperacoustic, or electrically amplified hydraulophones or multimedia interfaces	US 8017858 B2	6/6/2009	6/6/2029
US	Fluid user interface such as immersive multimediation or input/output device with one or more spray jets	US 7551161 B2	12/14/2005	12/14/2025
US	Fluid user interface such as immersive multimediation or input/output device with one or more spray jets	US 8294019 B2	5/20/2009	5/20/2029
US	Musical water instrument or water filled instrument having rigid pipes connected to elastic or rigid media	US 20140174277 A1	1/20/2012	1/20/2032

Patent Infringers: High Market Demand Breeds Competition



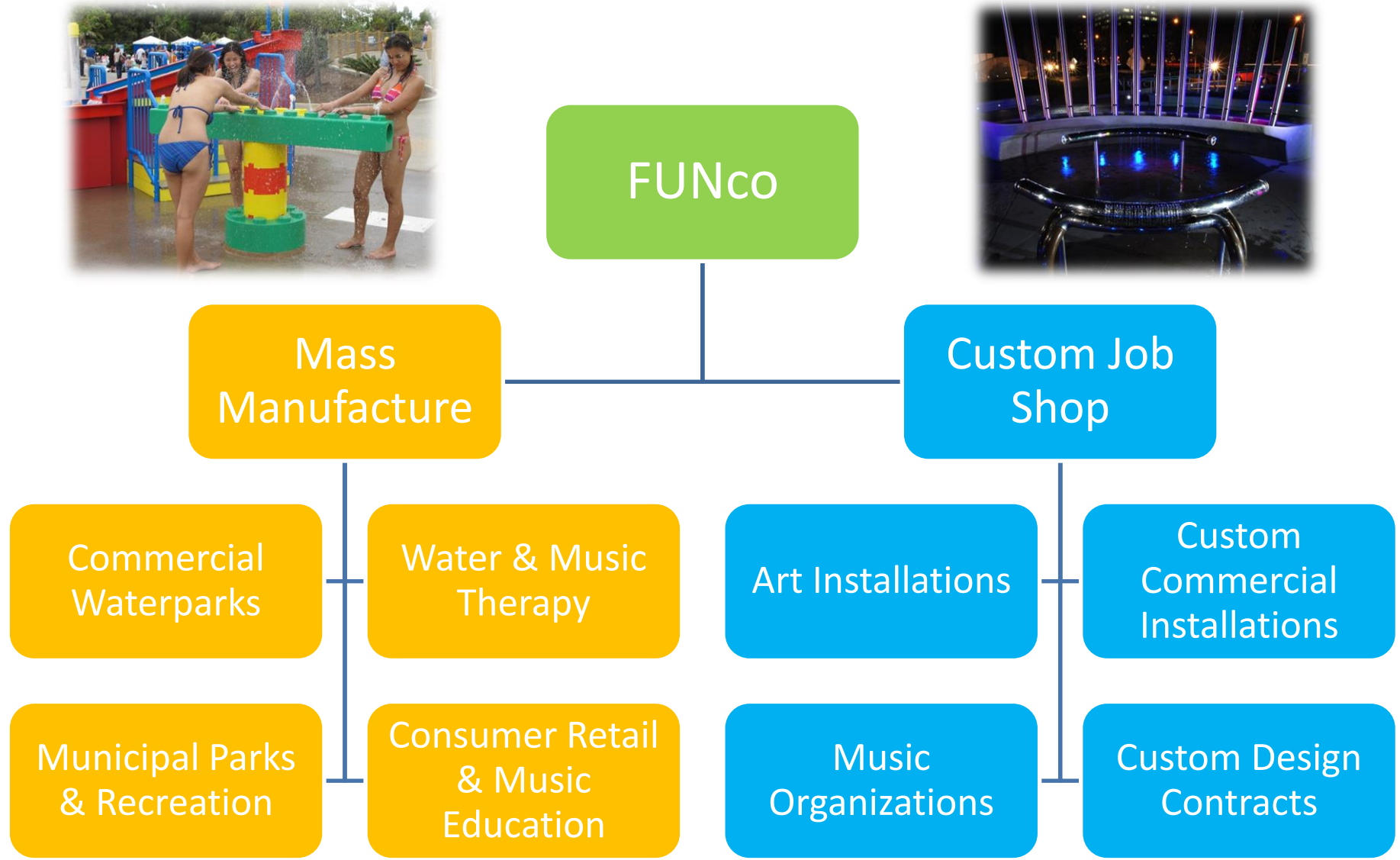
In 2011, Steve Mann successfully and quickly defended his monopoly rights against **Waterplay Solutions Corp.** (based in British Columbia) and **Lincoln Equipment, Inc.** (based in California) after discovering that they had developed and sold infringing products of an inferior quality. The defendants complied with a court order to cease the sale of said infringing products before the matter went to trial.



[Stephen Mann v. Waterplay Solutions Corp et al](#) (2011), filed in Western District of Texas

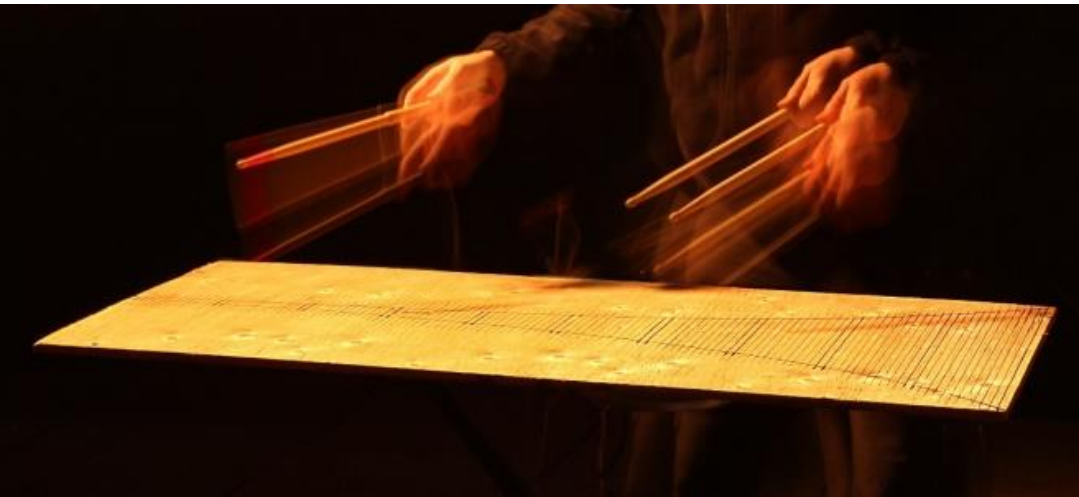
We will expect numerous competitors to rush the market upon patent expiry. That gives us approximately 20 years of monopoly power to saturate the various markets. High replacement costs for the customer for 2nd-tier copycat products will allow us to stay entrenched in the market. We will only lose a sale if we did not reach the client first.

Production Strategy: Low-cost mass production business unit will complement custom job-shop unit



Corporate Mission: Pioneer and Innovator in Musical Instruments, Phenomenal Augmented Reality, and Music Education

With proven success, the Hydraulophone is an ideal entry point into music and phenomenal Augmented Reality products. Steve Mann and his students have invented a host of instruments to revolutionize music performance, education, and our interaction with sound in the world around us.



(Top left to bottom) **Xyolin** – A single wooden plank turned into an elegant performance instrument.
Andantephone – A highly expressive musical instrument you play by simply walking on it.
Musicmaking on skates – Use your skates like a violin bow to make music, controlling your pitch with a hand-held keyer. [[More Info](#)]

Corporate Mission: Pioneer and Innovator in Musical Instruments, Phenomenal Augmented Reality, and Music Education



The **Hot Tub Hydraphone** is one of many types of hydraphones made to date.

Steve Mann has invented a host of new musical instruments with various combinations of interface and sound-producing medium.

The hydraphone is an example where the interface is the same as the sound-producing medium. The musician feels an intimacy with the instrument, much like a guitar or harp player does.

The States of H₂Orchestra is an ensemble that has toured the world performing on instruments that exist in all four “Elements” of H₂O



Idratmosphone (Callioflute)
Gas H₂O



Plasmaphone
Plasma H₂O



Pagophone
Solid H₂O



Hydraulophone
Liquid H₂O

More Info on H₂Orchestra:
<http://wearcam.org/H2Orchestra.pdf>
<http://wearcam.org/h2orchestra.htm>



Who We Are

Steve Mann The Father of Wearable Computing

Inventor, HDR, Eyetap Digital
Eye Glass , and the Smartwatch

Founder, MIT Media Lab
Wearable Computing Group

Chief Scientist, Creative
Destruction Lab

Chief Scientist, Meta

Inventor, InteraXon

stevemann.org

Ryan Janzen

Modern day Leonardo Da Vinci.

Prolific inventor, composer,
hydraulist. Inventor of HDR
audio, extramissive optics, and
aircraft PLC.

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Chris Aimone Alpha polymath
CTO, InteraXon



Ken Yang
Business
Spearhead

JD/MBA, Top Bay St. corporate law firm
Creative Destruction Lab Alumnus
Concert Pianist



More Resources on The Hydraulophone

Links

More Info on Hydraulophones [[PDF](#)]

States of H2Orchestra [[PDF](#)]

WhiteWater West Aquatune [[Link](#)]

Selected Articles

Steve Mann. "Natural Interfaces for Musical Expression: Physiphones and a physics-based organology", *Proceedings of the 2007 Conference on New Interfaces for Musical Expression (NIME07)*, June 6-10, New York, NY, USA. [[PDF](#)]

Steve Mann, Ryan Janzen, and James Meier. "The electric hydraulophone: A hyperacoustic instrument with acoustic feedback", *Proceedings of the 2007 International Computer Music Conference (ICMC2007)*, August 27-31, Copenhagen. [[PDF](#)]

Steve Mann, Ryan Janzen and Mark Post. "Hydraulophone design considerations: Absence, displacement, and velocity-sensitive music keyboard in which each key is a water jet", *Proceedings of the 2006 ACM International Conference on Multimedia (ACM MM)*, October 23-27, Santa Barbara, USA. [[PDF](#)]

Jason Nolan, Steve Mann, and Danny Bakan, (2012). "Nessie the Hydraulophone: A Water-Driven Musical Object for Children", *Children, Youth and Environments*, Volume 22, Number 2, p 263-272. [[PDF](#)]

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