

Art, outreach and pattern formation

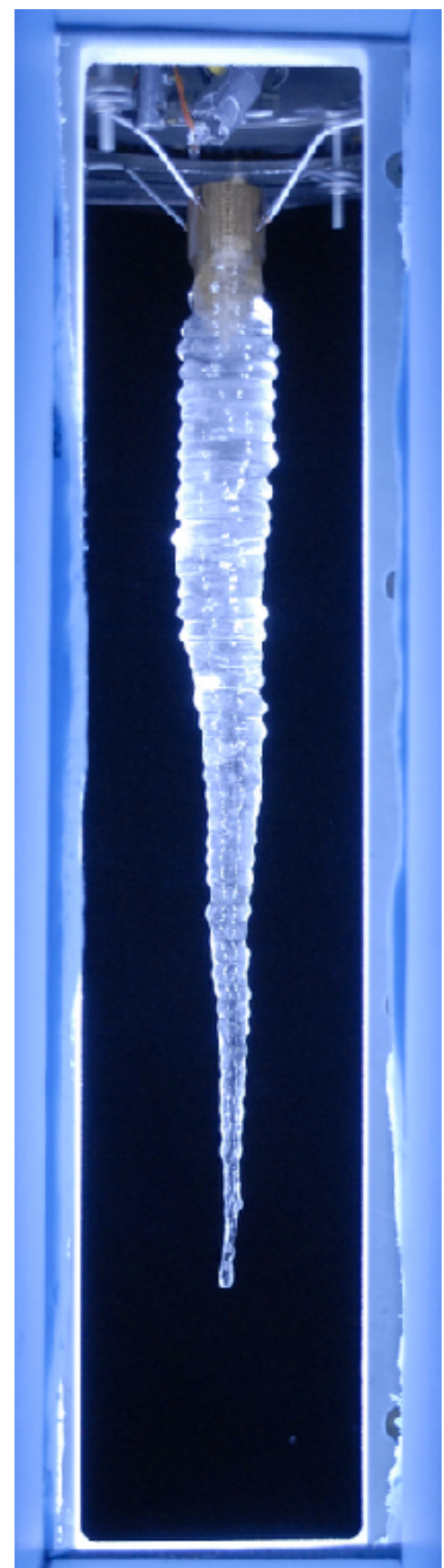
Stephen Morris,
*Dept. of Physics,
University of Toronto*

Roberta Buiani, Ron Wild,
Antony Chen, Michael Rogers,
Quinsin Nachoff
and many others ...



or

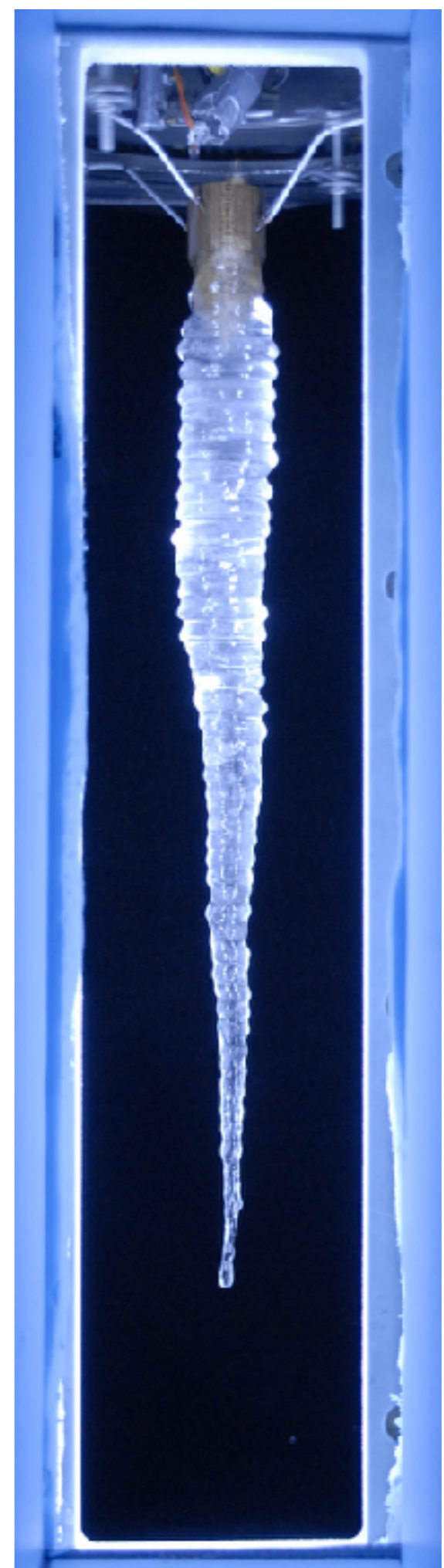
my adventures
wandering the art world



The simple idea:

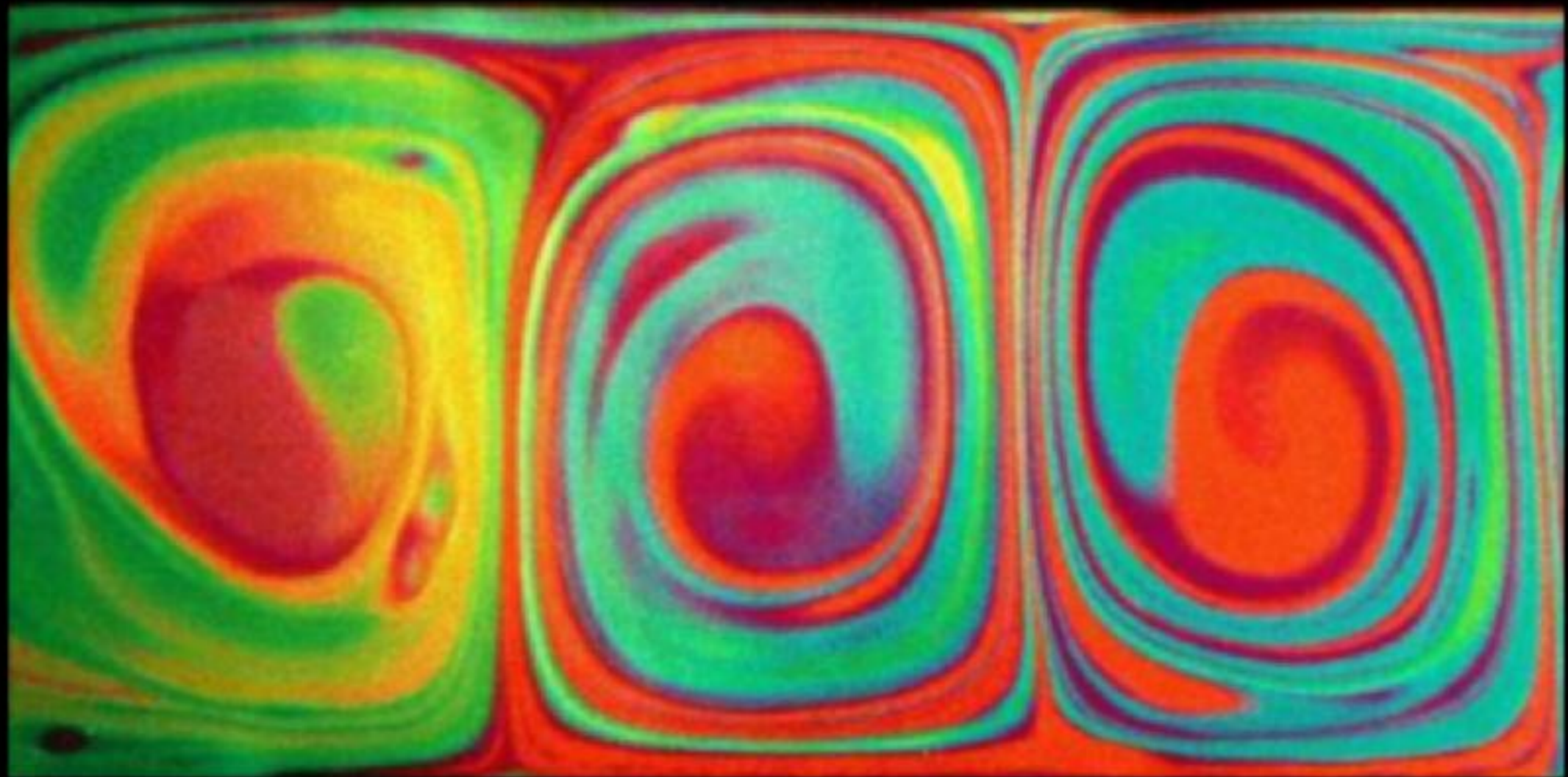
Present scientific images of natural and laboratory nonlinear pattern formation as *art* and get away with it by calling it *outreach*.

- Gallery and outdoor art shows
- Salon events at the Fields Institute
- Open data archives
- Musical collaborations



I was hooked on pattern formation **when I saw this ...**

Smectic electroconvection, 1990



Smectic electroconvection, 1990

Pattern formation images as scientific folk art



The scientific field of pattern formation has developed a distinct aesthetic sensibility, informed by mathematics and physics, but inherently visual and dynamic.

This aesthetic is an essential motivation for the scientist (*i.e.* me). Like other forms of “**outsider art**” — *i.e.* art not made by people professionally trained as artists — it can easily cross over and enter the “normal” art world, which relentlessly seeks novelty.

Spiral defect chaos, 1993



S. W. Morris, E. Bodenschatz, D. S. Cannell and G. Ahlers, *Phys. Rev. Lett.* **71**, 2026 (1993).

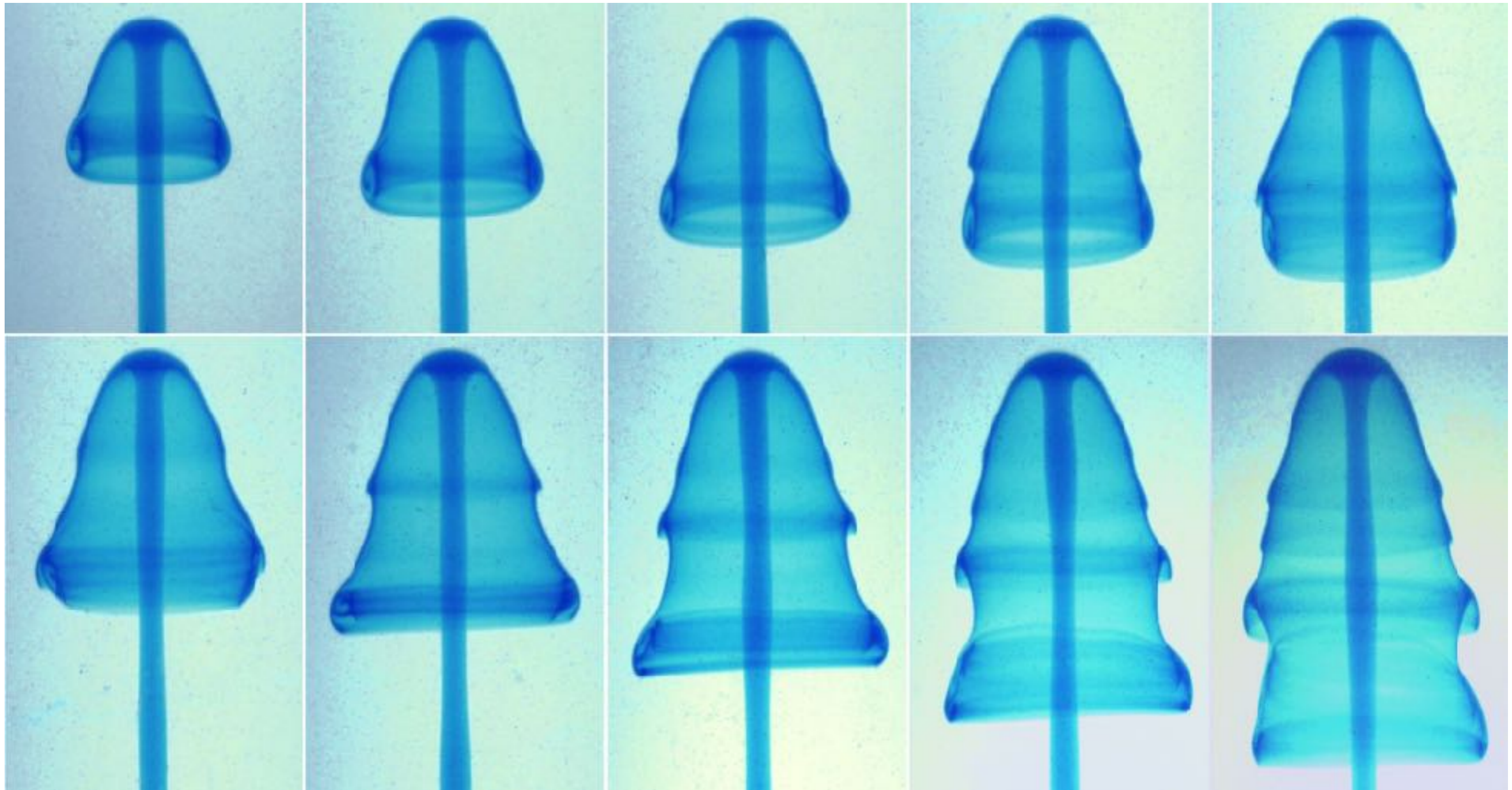


Spiral defect chaos presented as art in a gallery, **20 years later**.
The *twisted* show at the Project Gallery, Toronto, Nov. 2013.



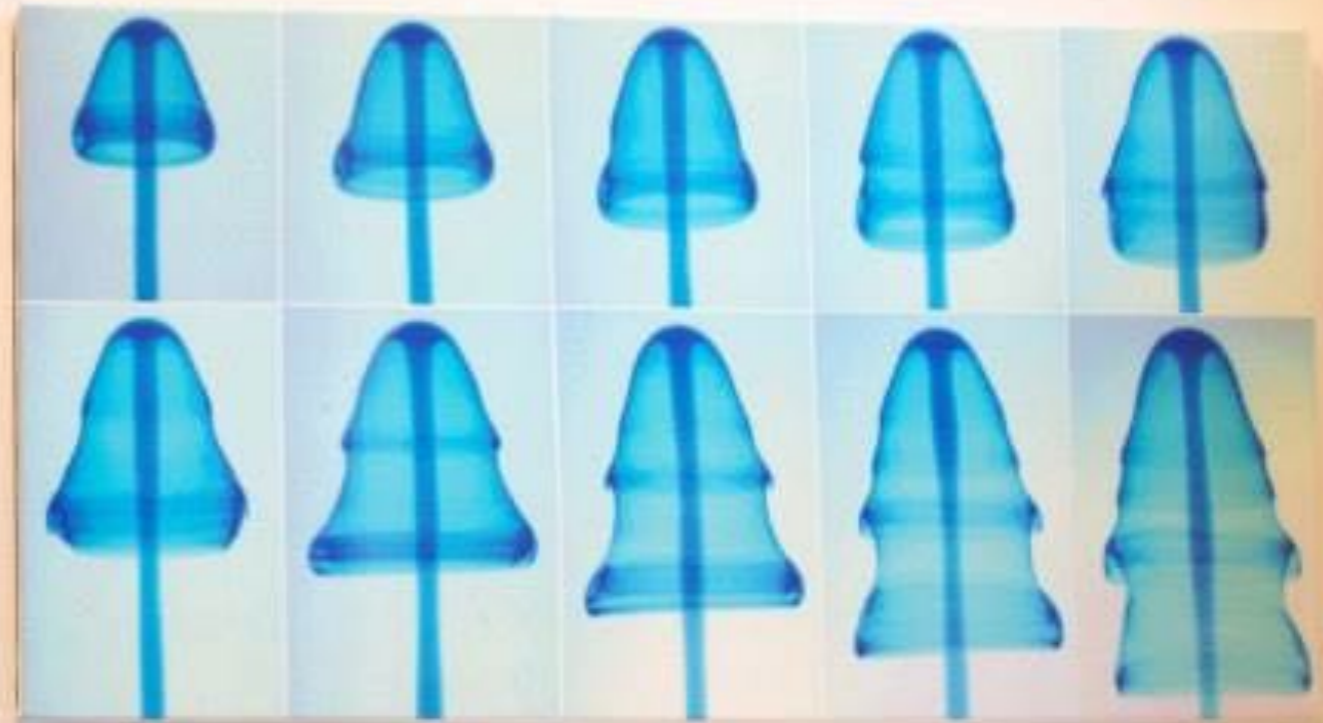
Spiral defect chaos presented as art in a gallery, **20 years later**.
The *twisted* show at the Project Gallery, Toronto, Nov. 2013.

Some laboratory patterns ...



An injected buoyant plume with an unstable head

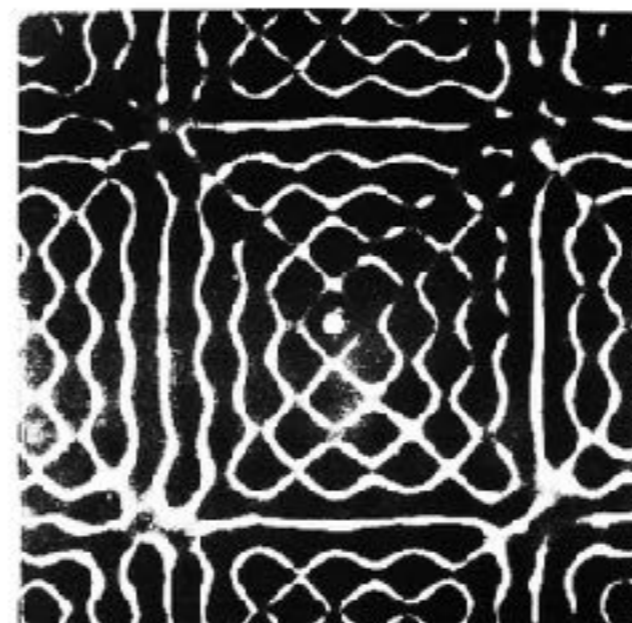
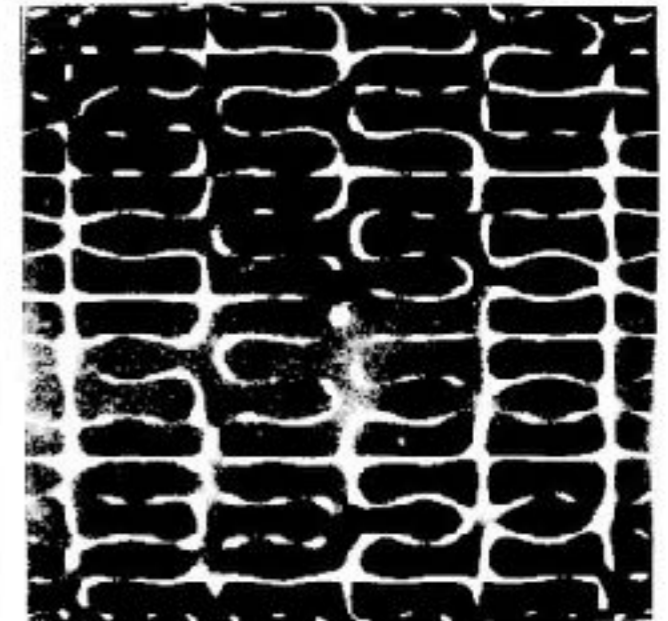
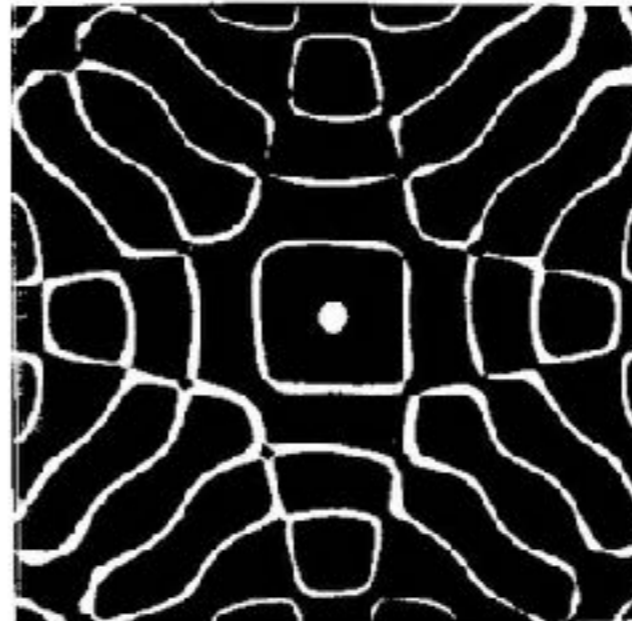
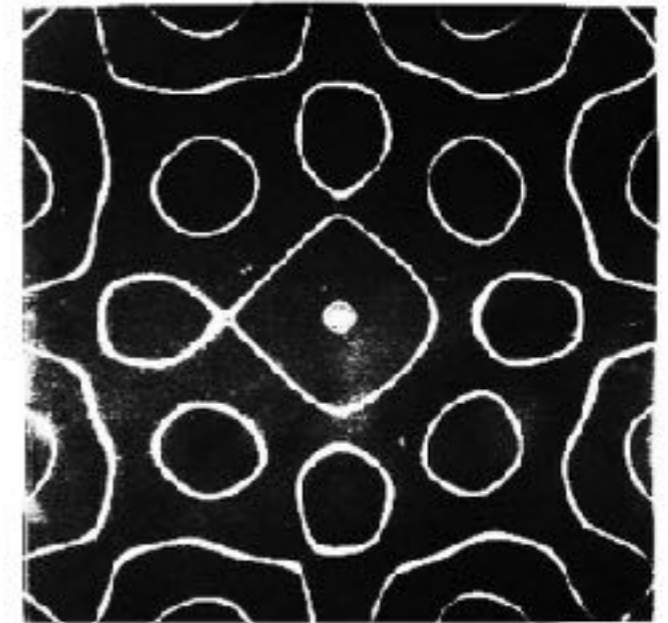
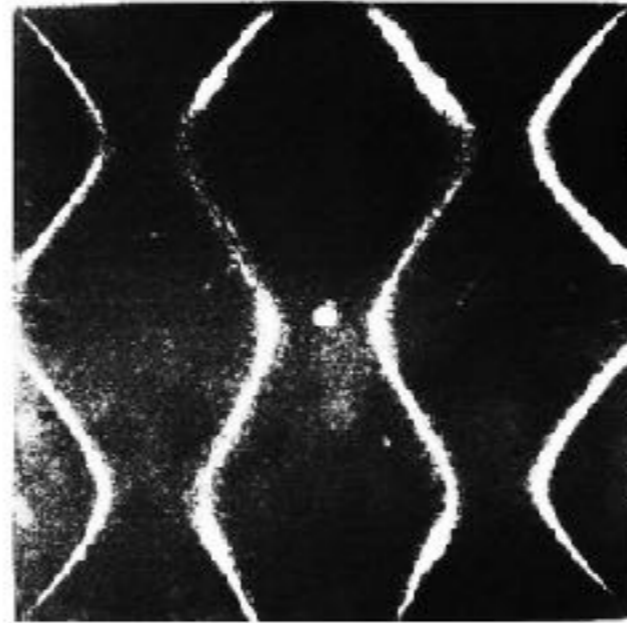
M. C. Rogers and S.W. Morris, *Phys. Fluids*, **21**, 083601 (2009).



Plumes and smectic convection
video in the Project Gallery
Perpetual Motion show,
Toronto, June 2013

Some laboratory patterns ...

*Chaldni patterns on
a square plate for
increasing frequency*

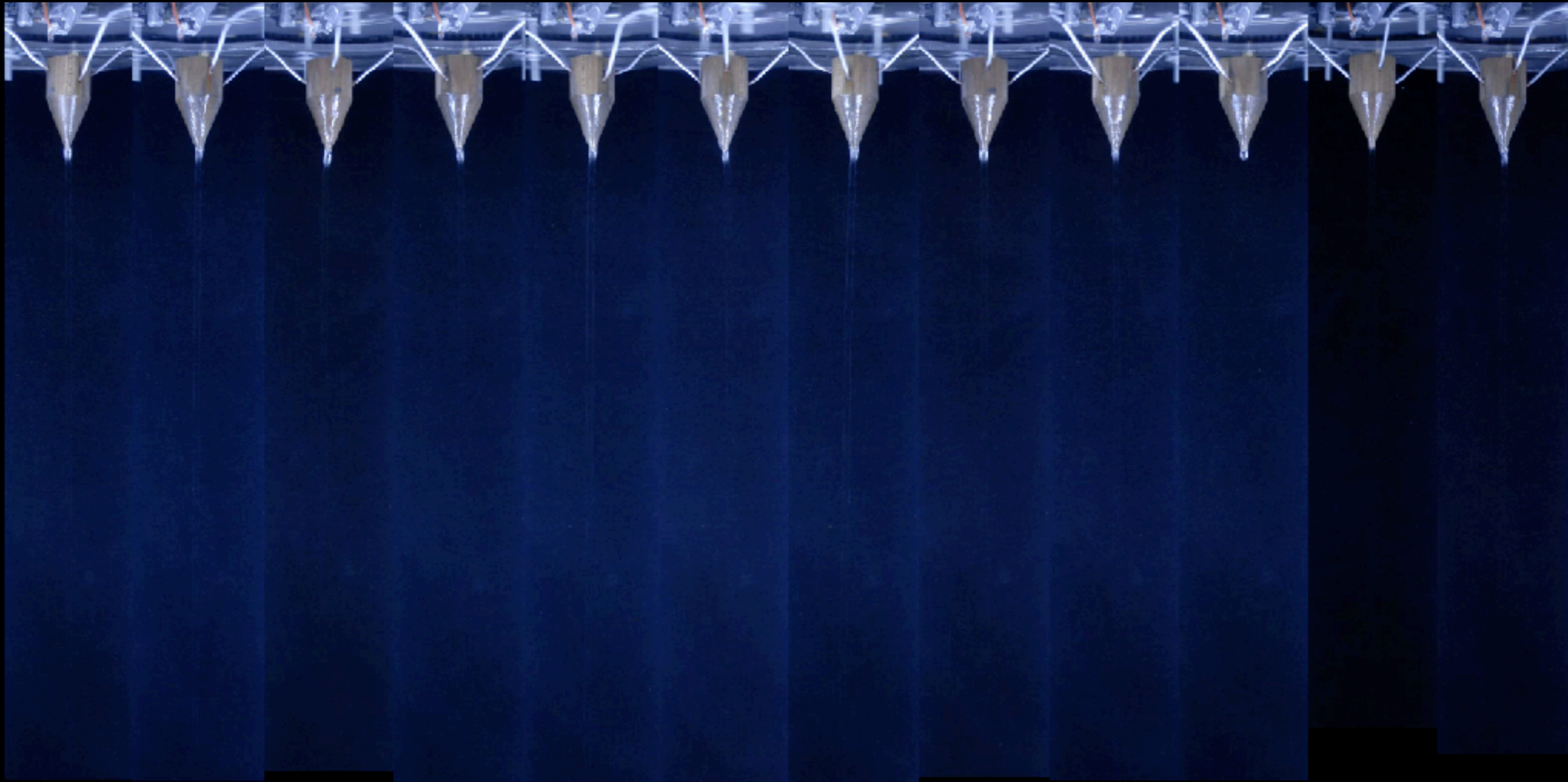


Some laboratory patterns ... A live Chaldni pattern performance in The Project Gallery



The Icicle Atlas

An open access database containing thousands of images of icicle shapes, hundreds of time lapse videos and 3D printable files.



A. S-H. Chen and S.W. Morris, *New Journal of Physics*, **15**, 103012 (2013).

Some natural patterns ...



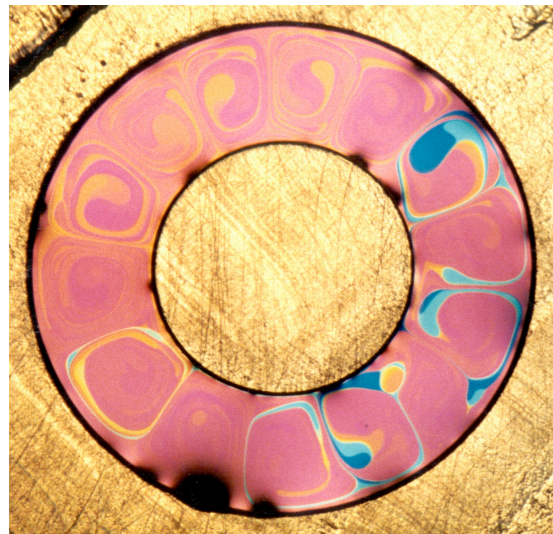
Phyllotactic defect in corn

Some natural patterns ...



Bisected brussels sprout

Outdoor art shows: once you convince a jury, they give you a tent ...



Stephen Morris

art / physics
pattern formation

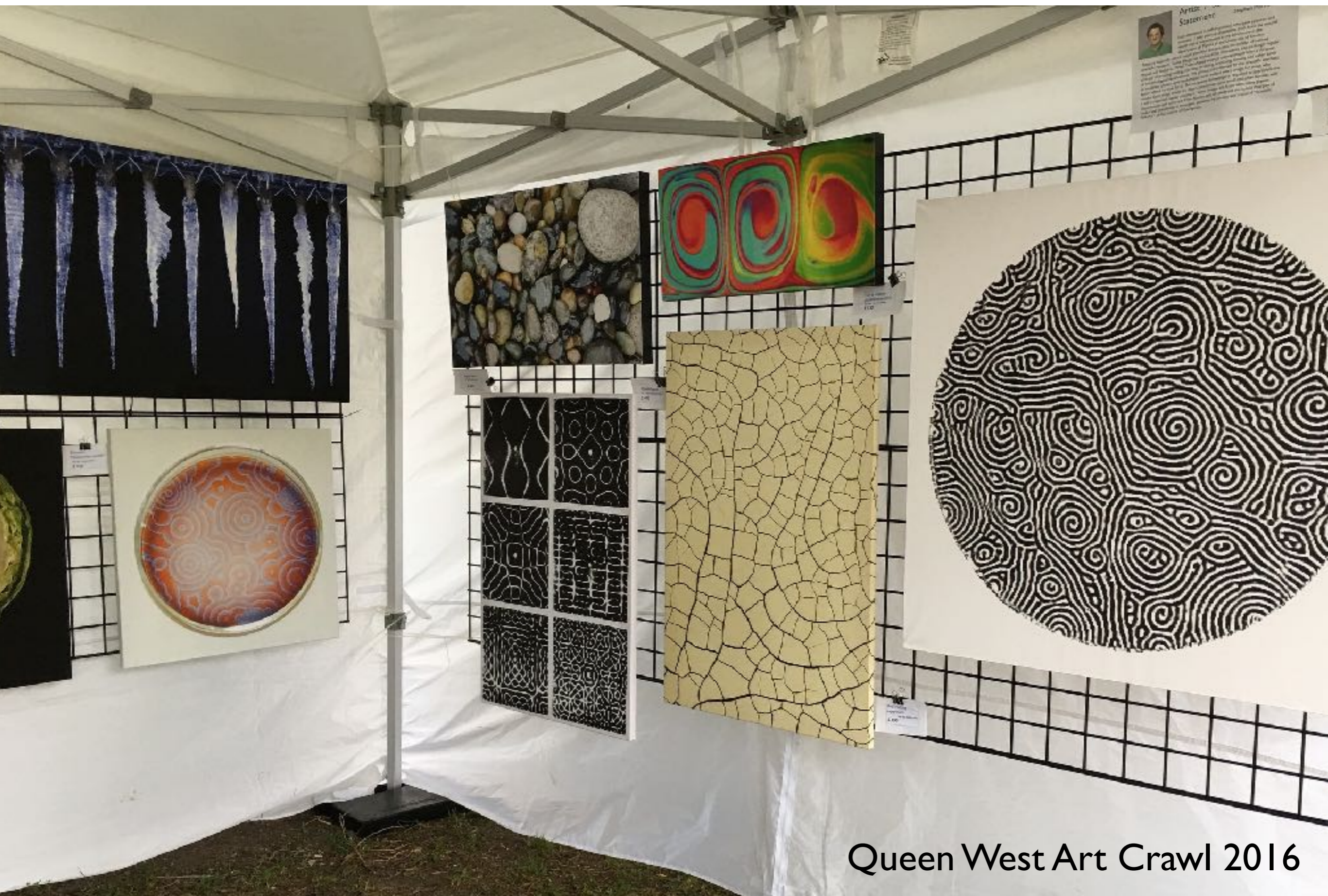


Riverdale Art Walk 2013



QueenWest Art Crawl 2016

Outdoor art shows: once you convince a jury, they give you a tent ...



Queen West Art Crawl 2016

Or maybe just a storefront ...



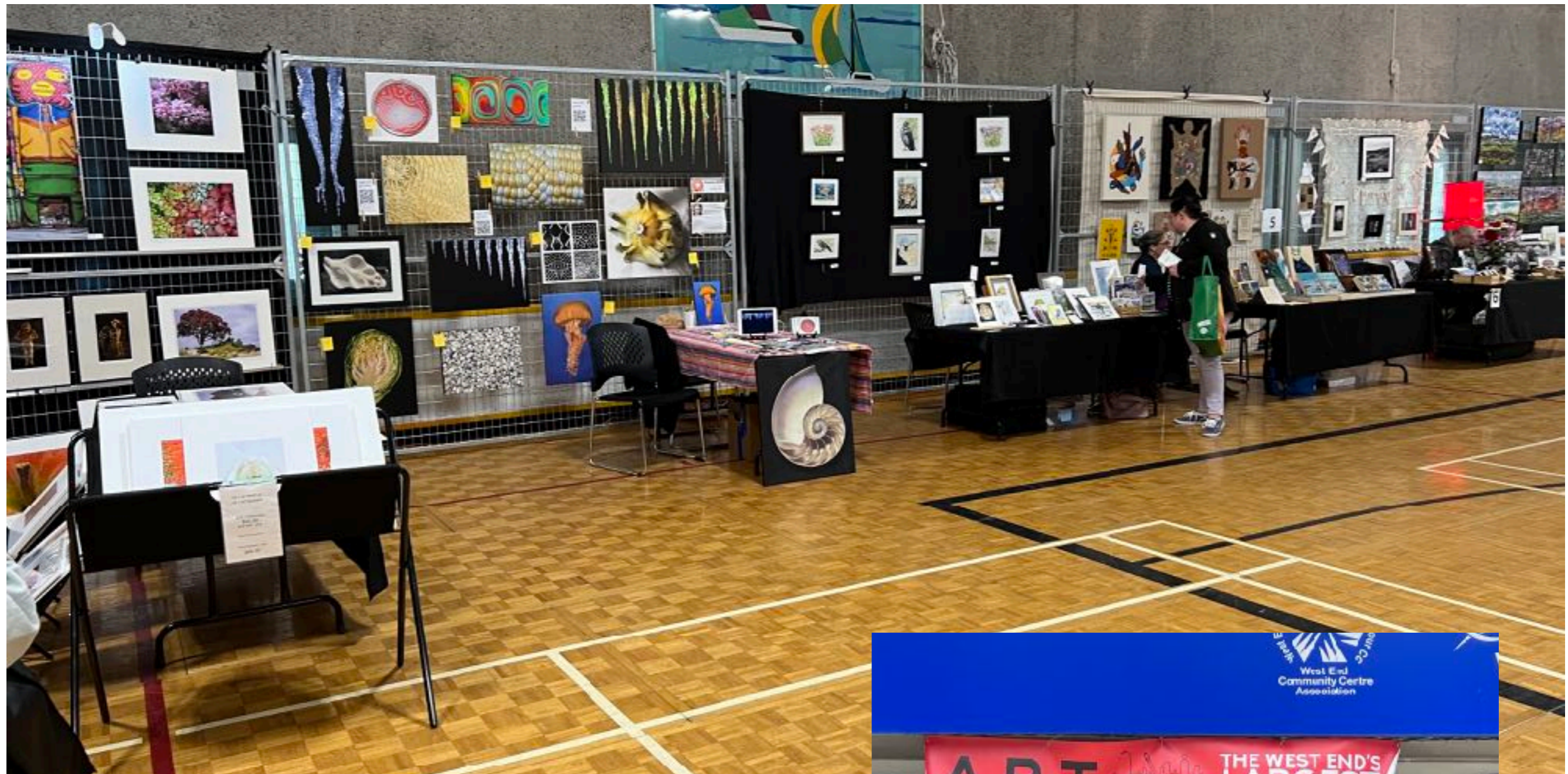
Annex Patio Art Show 2013

Or maybe just a storefront ... next to the Hungarian restaurant



Annex Patio Art Show 2013

Post retirement art ventures in Vancouver ...



Art in the City Show 2024



Post retirement art ventures in Vancouver ...



Art in the City
Show 2024



Gallery show

The Map and the Territory
at the Red Head Gallery
Toronto, a show jointly
with artist Ron Wild



The Map and the Territory
at the Red Head gallery
Toronto, a show jointly
with artist Ron Wild

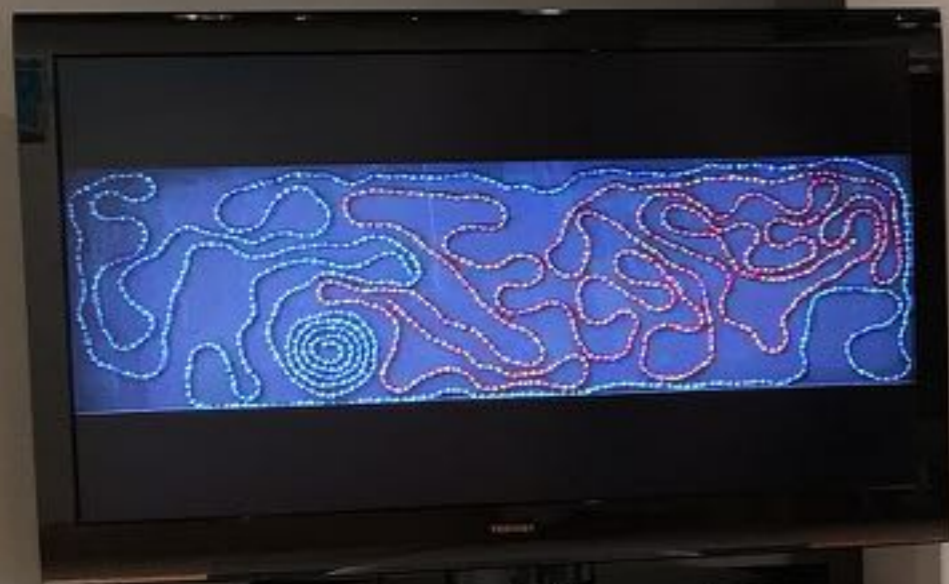


Nonlinear Map
by
Ron Wild



Gallery show

The Map and the Territory
at the Red Head gallery
Toronto, a show jointly
with artist Ron Wild



HD TV in the gallery
showing segregating chains
and many other videos

Gallery show

The Map and the Territory
at the Red Head gallery
Toronto, a show jointly
with artist Ron Wild



The segregation of two colored chains

Opening
*The Map and the
Territory*



The ArtSci Salon at the Fields Institute of Mathematical Science

A regular evening meet-up with short talks by artists and scientists, followed by a trip to the pub.



ArtSci Salon



FIELDS



Co-curated with
Roberta Buiani

An ArtSci Salon by Prof. Kari Dalnoki-Veress, presented in the Red Head Gallery during the *Map and the Territory* show.

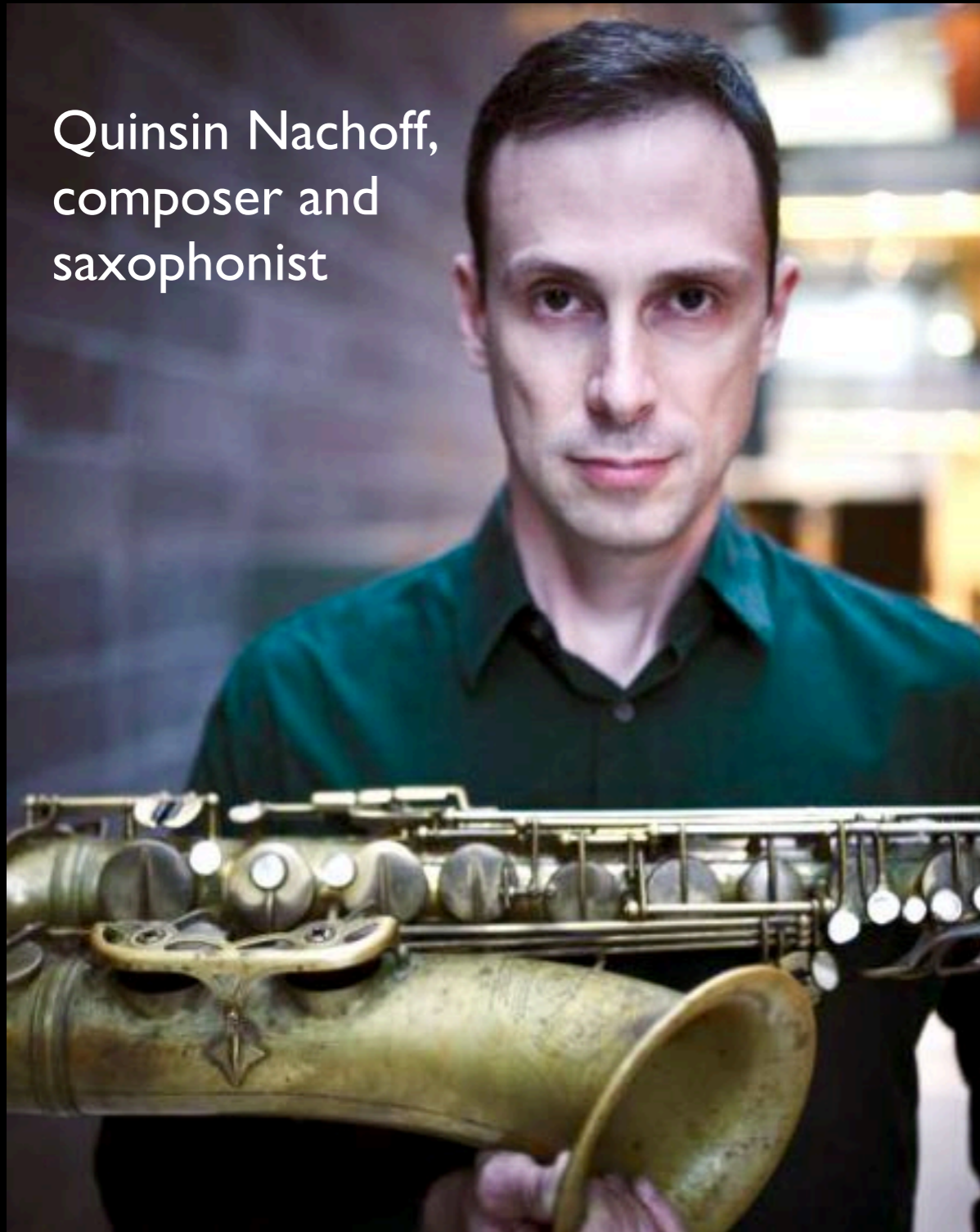


A physics talk in an art gallery ...

Musical collaborations

Patterns from Nature, a major multimedia composition

Quinsin Nachoff,
composer and
saxophonist



Music • Film • Physics

ArtSci Salon presents

PATTERNS FROM NATURE

SATURDAY November 4 • 2023 • 8:00 PM *free admission*

ISABEL BADER THEATRE

93 CHARLES ST. WEST • TORONTO, ON • CANADA



A collaboration between Quinsin Nachoff (composition/saxophone), Stephen Morris (University of Toronto Physics) and filmmakers Erika Blak, Tina de Groot, Lee Hutzulsk and Udo Pronsens. The centerpiece is a four-movement, forty-minute work where the film weaves and compares niches into *Patterns from Nature*, exploring *Branches*, *Flow*, *Crystals* and *Ripples*. The film's premiere will feature new music from a fifteen-piece chamber orchestra, featuring François Houle (cello), The Molinari String Quartet, Santiago Leïsson (piano), Carlo De Rosa (bass), Satoshi Takeishi (drums), Ryan Keberle (trombone), and Quinsin in an immersive blend of jazz, classical, and film.

DESIGN: 'LARRY TAYLOR'



Government of Canada

Canada Council for the Arts



Great
Library
Access

Musical collaborations

Patterns from Nature, a major multimedia composition

Featured four pattern-themed movements, *Branches*, *Flow*, *Cracks* and *Ripples*

each accompanied by a video by a different film maker



Musical collaborations

Patterns from Nature, a major multimedia composition

Lee Hutzulak

Gita Blak

Udo Prinsen

Quinsin Nachoff

Tina de Groot

Stephen Morris



Musical collaborations

Patterns from Nature, a major multimedia composition



Branches, with video by Tina de Groot

Musical collaborations

Patterns from Nature, a major multimedia composition



Ripples, finale, with video by Udo Prinsen

Conclusion

Pattern formation can **be** art or can be used to **create** art or can just be used to create interesting **conversations** and **collaborations** with **art people**.

Art can be **outreach** and **outreach** can be **art**.

