RHYTHMIC FLUIDICS

Its Functional Role in Nature

Ian Trousdell

FOUNDATION FOR WATER

help water support life

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CONTENTS

RESEARCH BACKGROUND

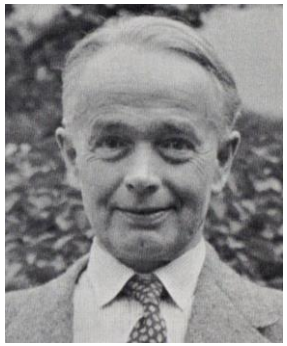
Foundation for Water in Sussex, UK

Interest since the 1960s

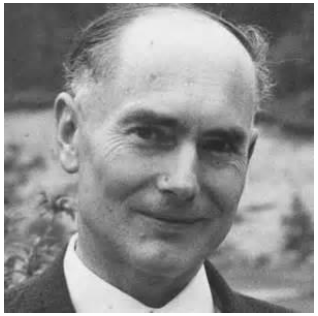
- **Rhythms in flow**
  formative processes
  dynamic water flow
- **Energy in water**
  how to influence it
  how to measure it
- **Flow surface design**
  biomimicry
  mathematics

Our methods have been mostly inductive and qualitative. We are now strengthening deductive and quantitative methods.

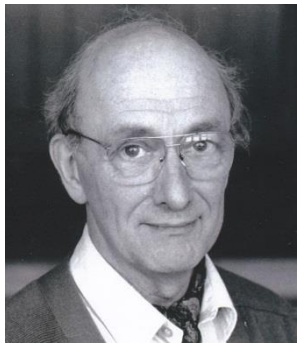
Rudolf Steiner PhD
1861 – 1925
Subtle influences operating in nature



George Adams MSc
1894 – 1963
Mathematics of formative processes



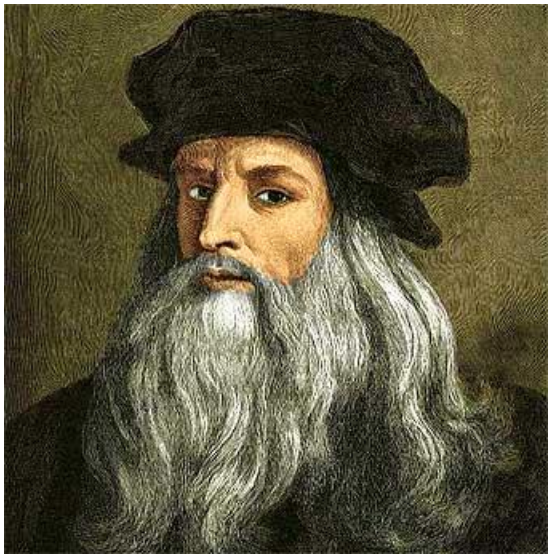
Theodor Schwenk
1910 – 1986
The Institute for Flow Sciences



John Wilkes ARCA
1930 – 2011
Research into flow and form

Previous inductive natural science researchers are being taken more seriously

“To develop a complete mind:
Study the science of art;
Study the art of science.
Learn how to see.
Realize that everything
connects to everything else.



da Vinci 1452 – 1521

“Thinking is more interesting than knowing, but less interesting than looking.”

Goethe developed an inductive method of sensory perception where their connected intuitive concepts also require specific perceptions.

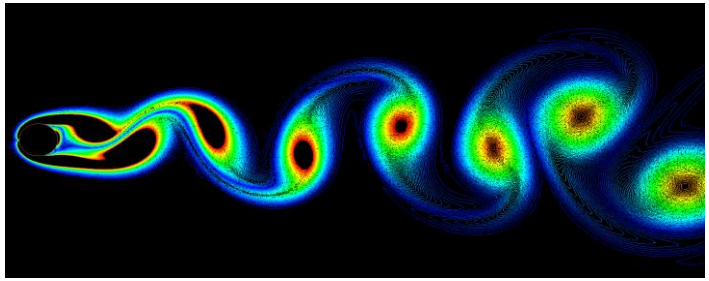
von Goethe 1749 - 1832

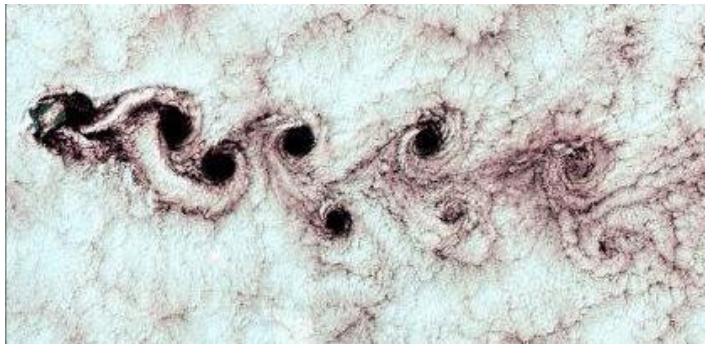
RHYTHMIC FLUIDICS – in the laboratory and in nature

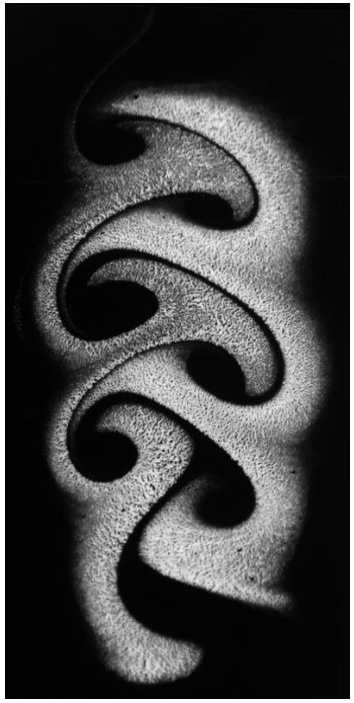
Tódor Kármán's 'virbelstrasse' – air or water moving around a fixed object. (left)

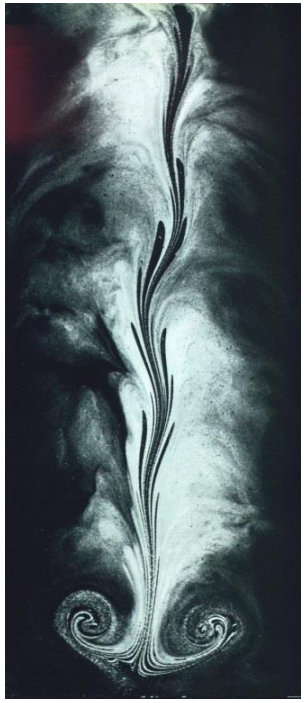
Theodor Schwenk and John Wilkes showed flow within previously still water, where a harmonic balance occurs between its momentum and surrounding resistance (right)

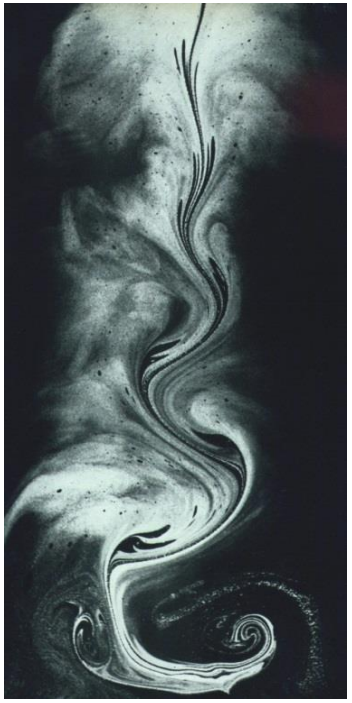
Rhythmic expressions – in time, a pulse - in space, symmetry



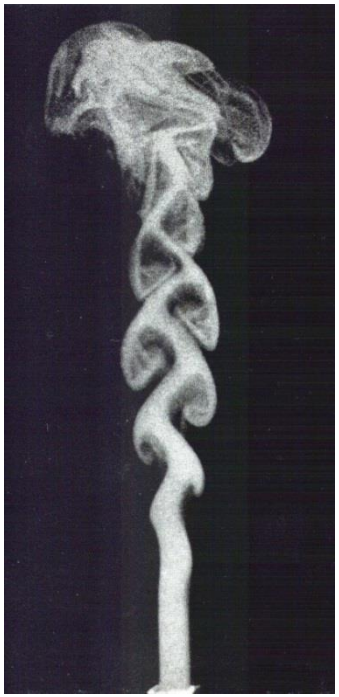




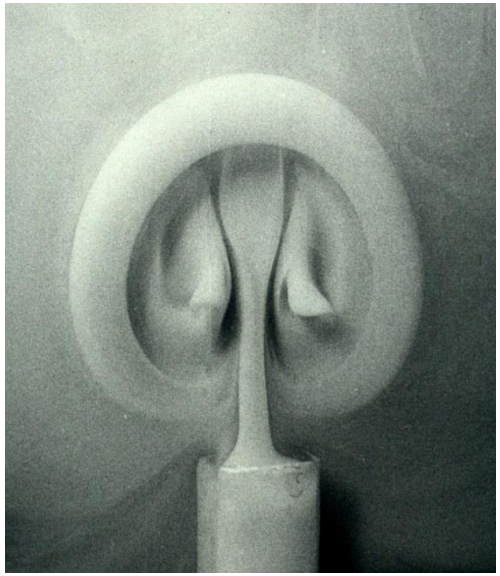


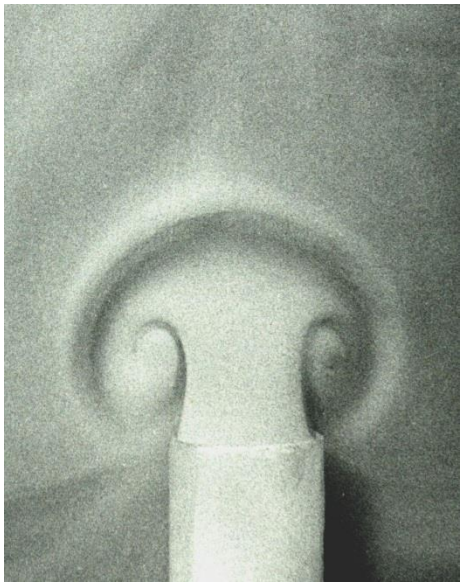


Relationship between momentum and resistance gives rise to laminar, harmonic and turbulent flow

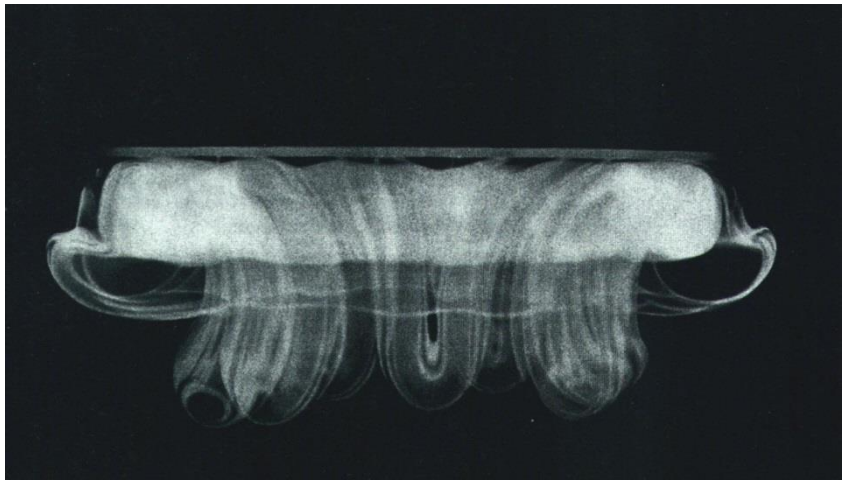


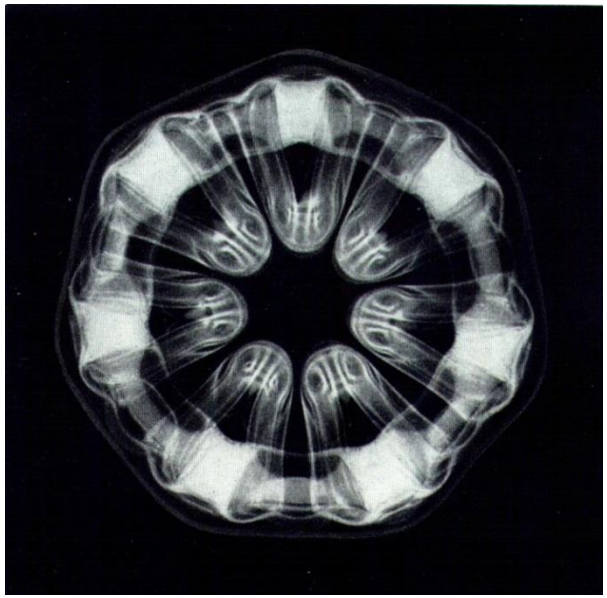
A few similar gestures in nature





An even flow of water upwards into still water becomes rhythmic in a formative process of self organisation.



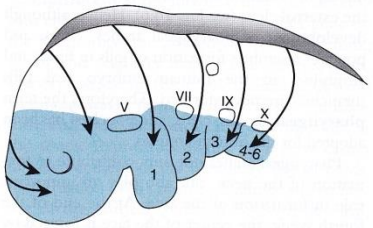


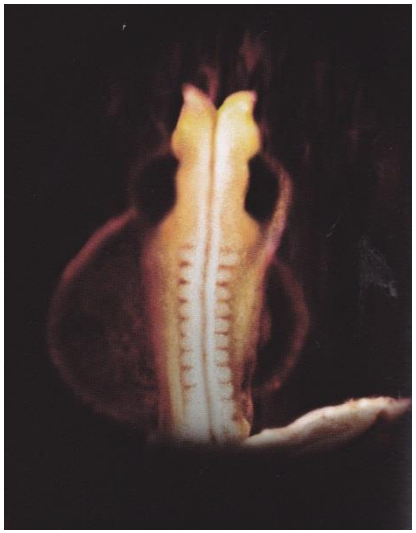
Short puffs of coloured water rising in still water on touching the meniscus - top left, bottom right

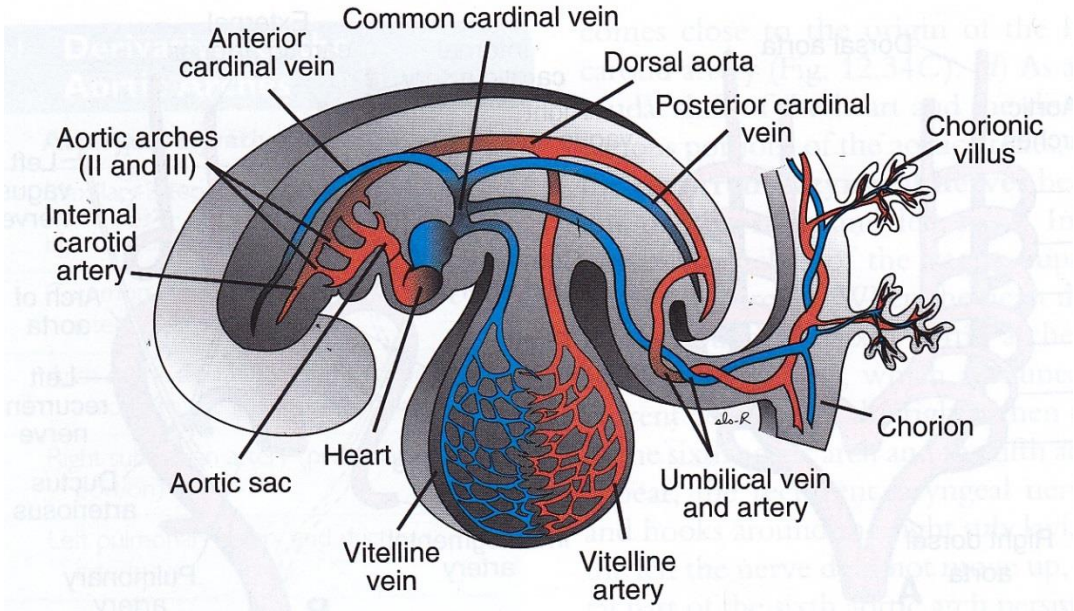
Human embryology – slow motion flow in the first two months

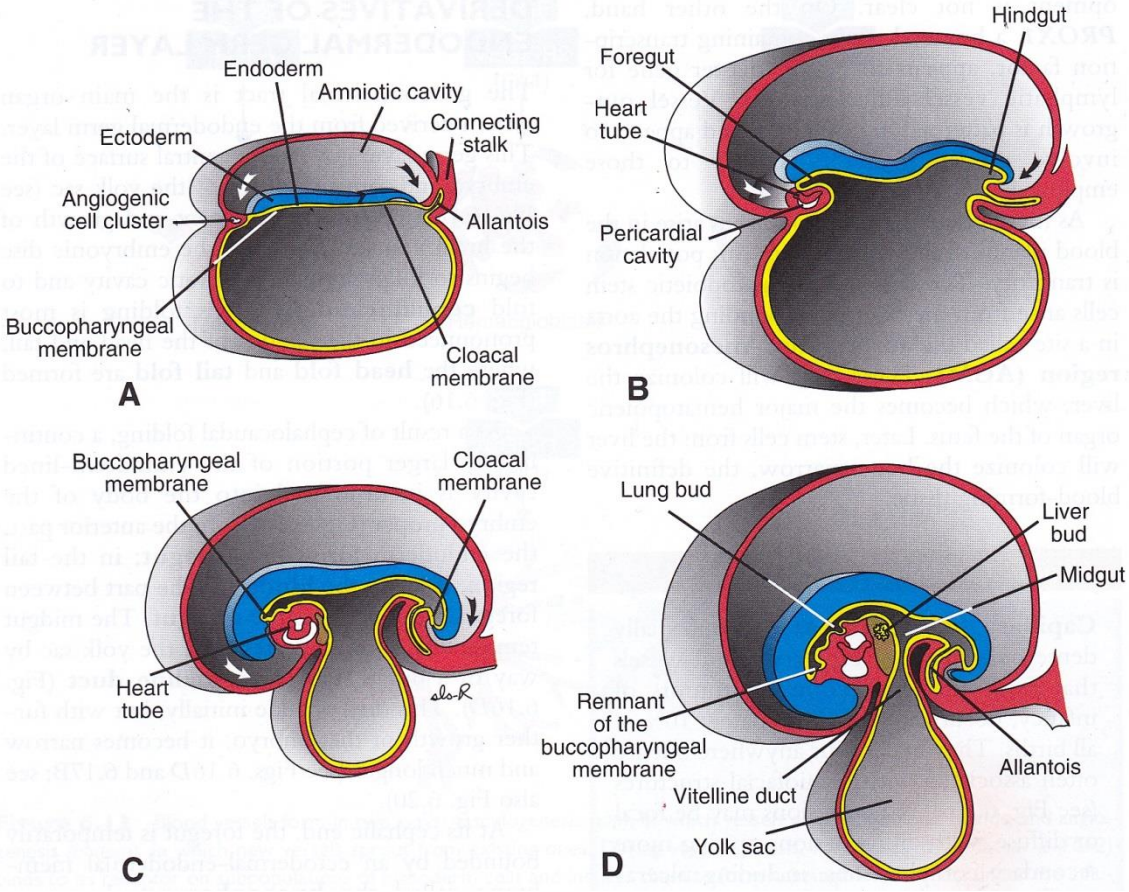
<u>Somites</u> – rhythmical waves flow down the centre creating the spine (left) Independent rhythms can also be traced in the cranio-sacrum system through the natural life of a person

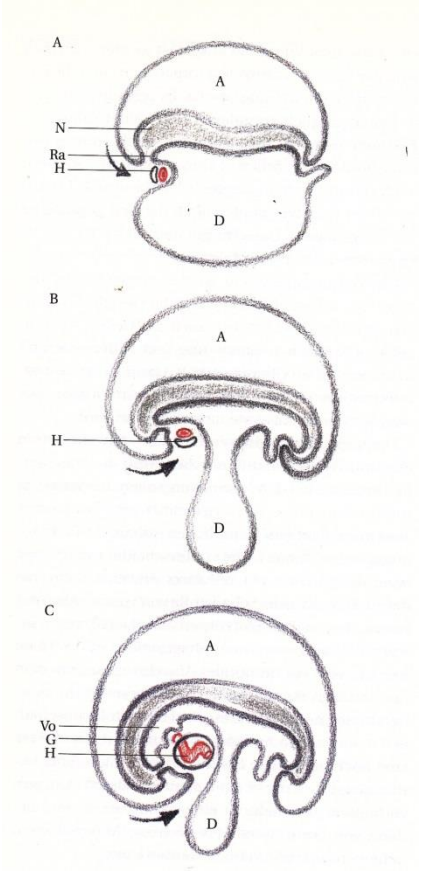
<u>Blood flow system</u> - at two weeks, the heart is in the head region and the independently rhythmic vascular and the arterial flows are outside the embryo. By four weeks combine to create a complete system within the embryo (right)





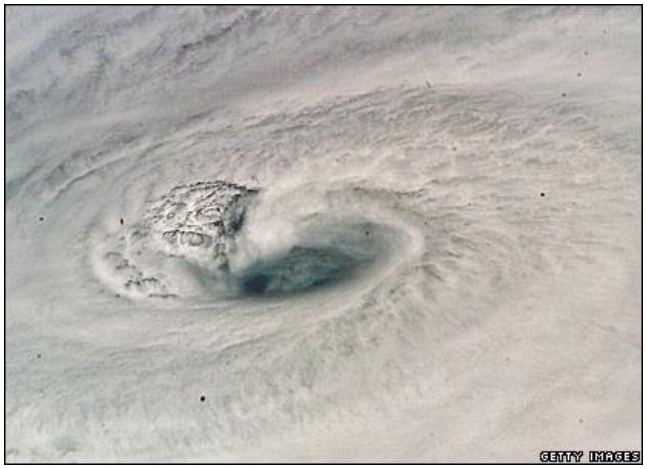


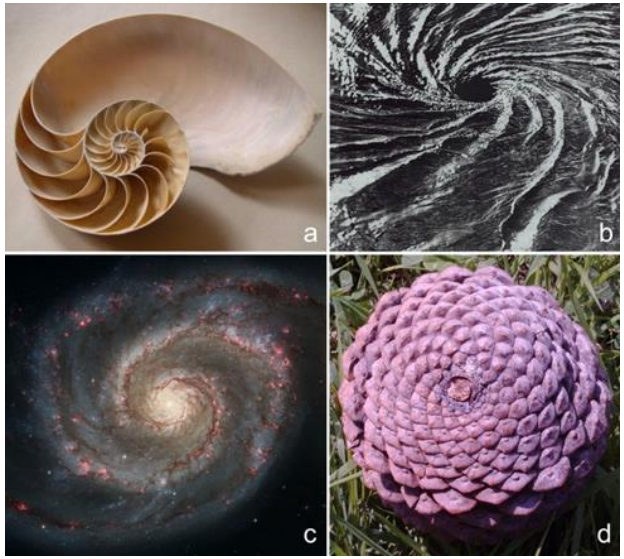


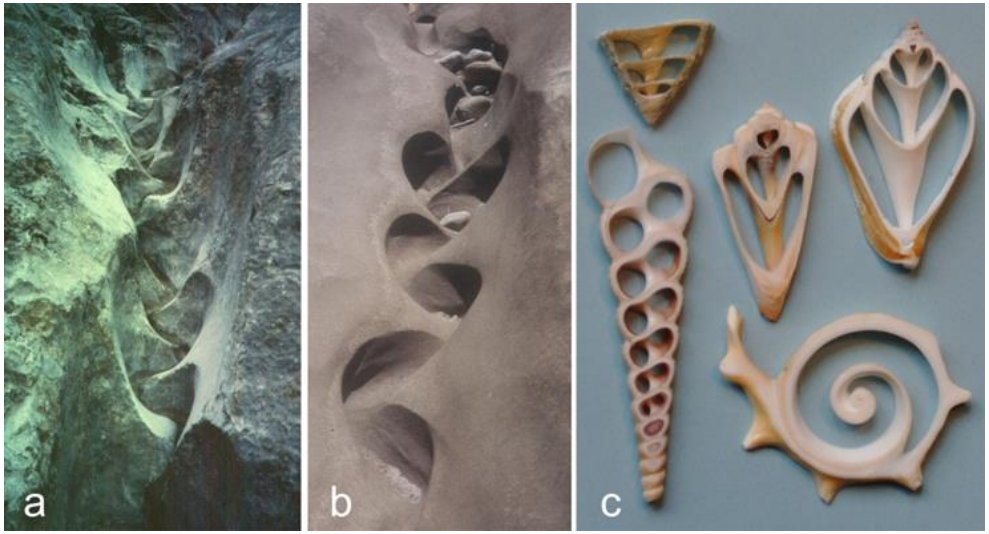


In the first two weeks the embryo forms via a slow motion process similar to water flow into a still body

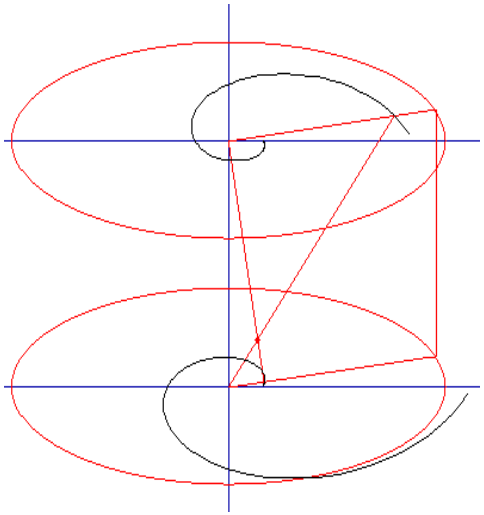
The Vortex - a primary archetype for the building of nature's forms

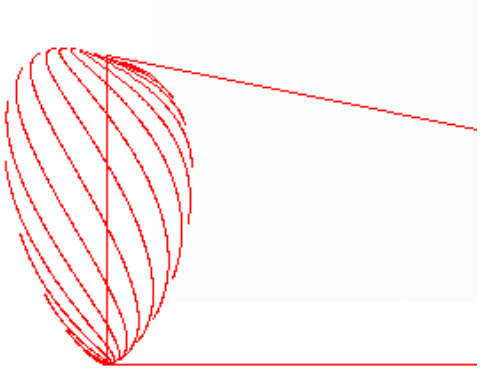


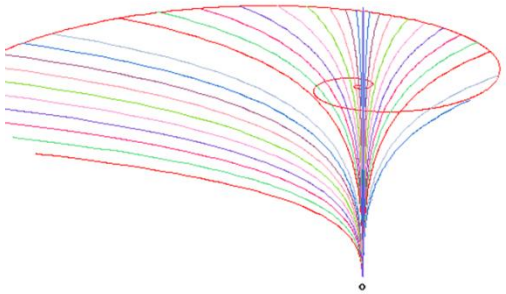


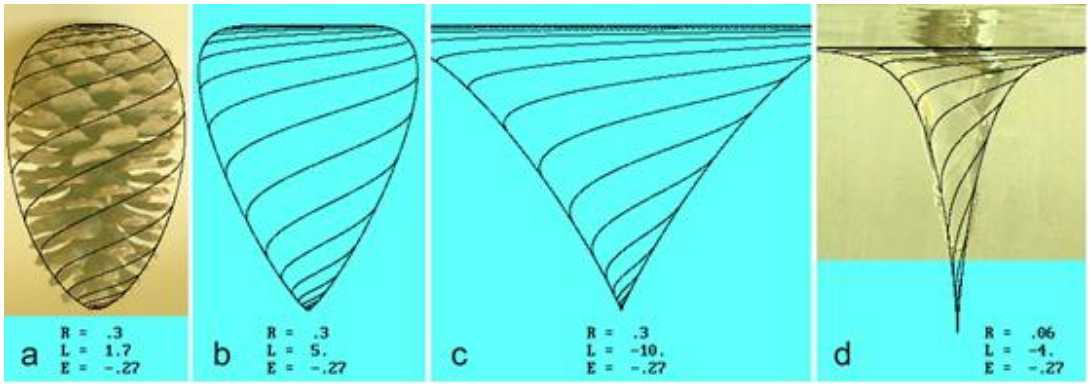


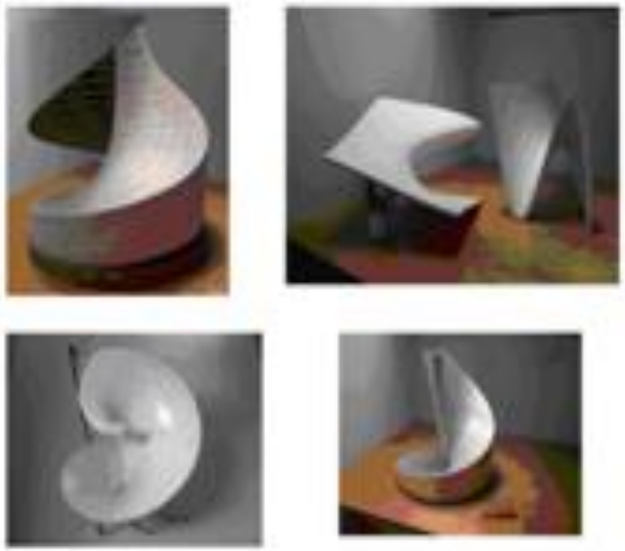
Geometry of surfaces in nature used to create flow surfaces

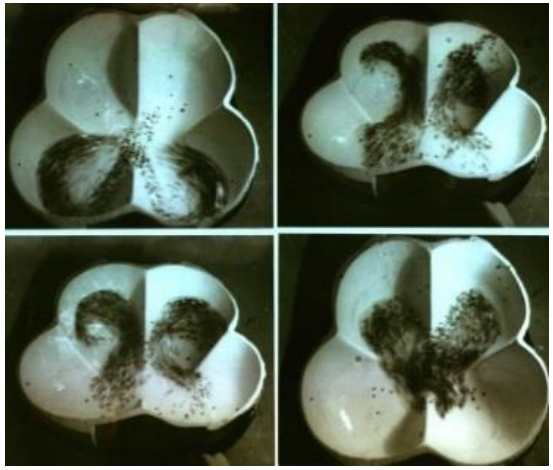






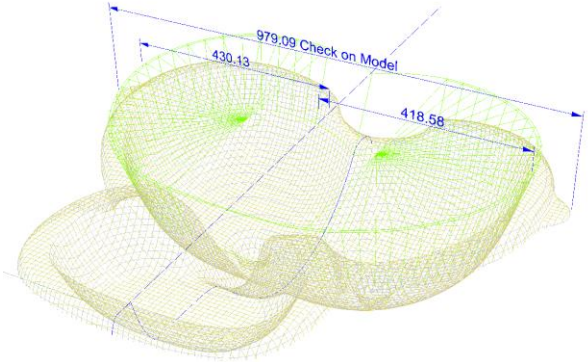


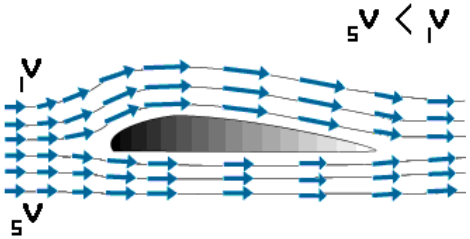


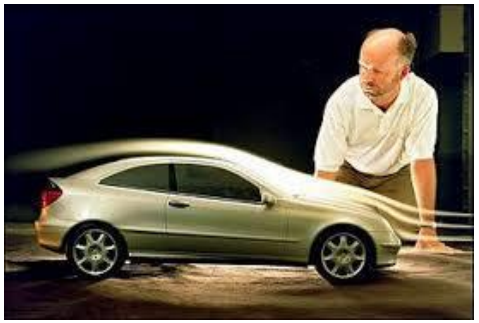


FLOW SURFACE TECHNOLOGY

bringing nature's dynamic flow into the human-use water cycle

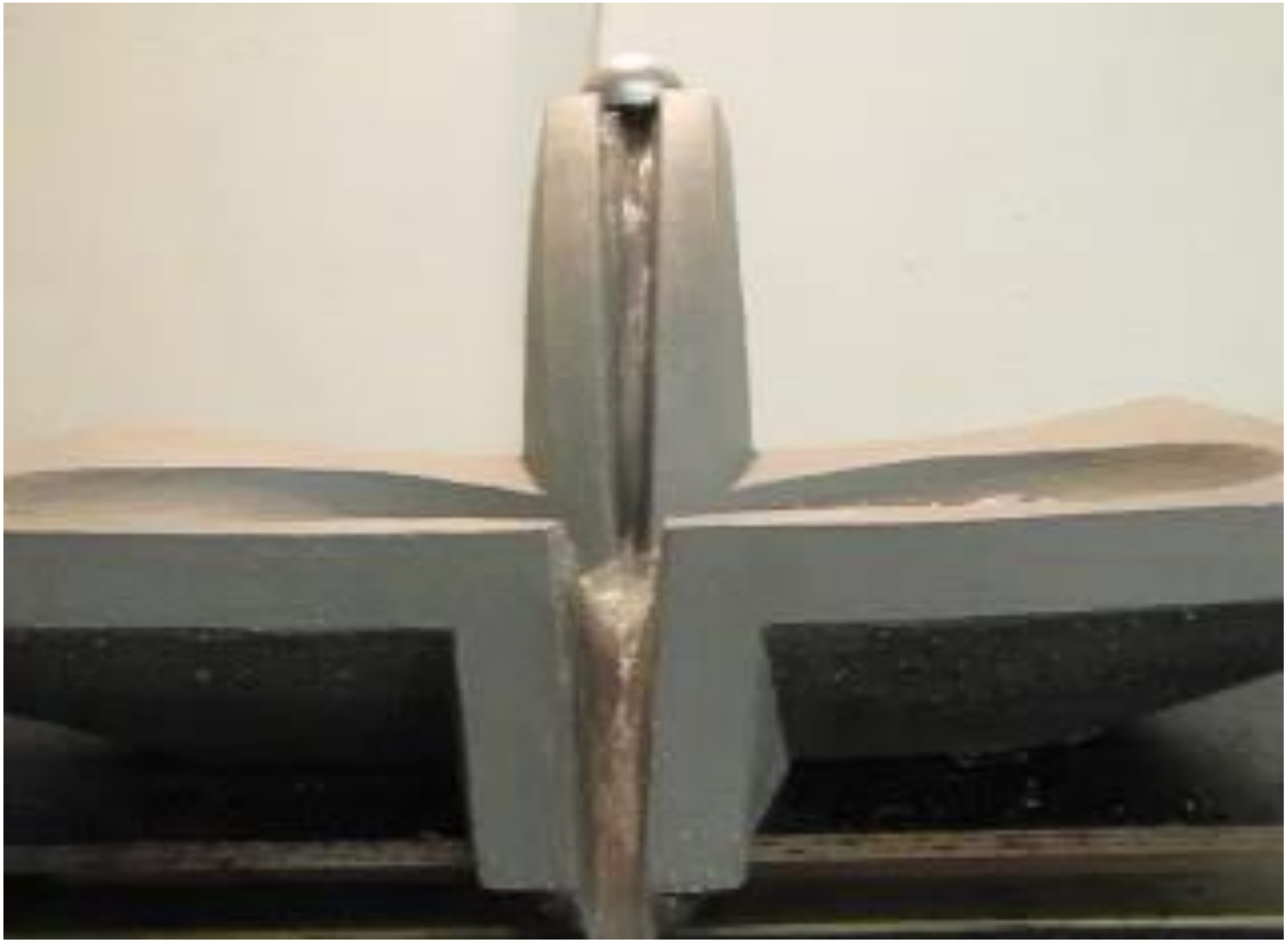




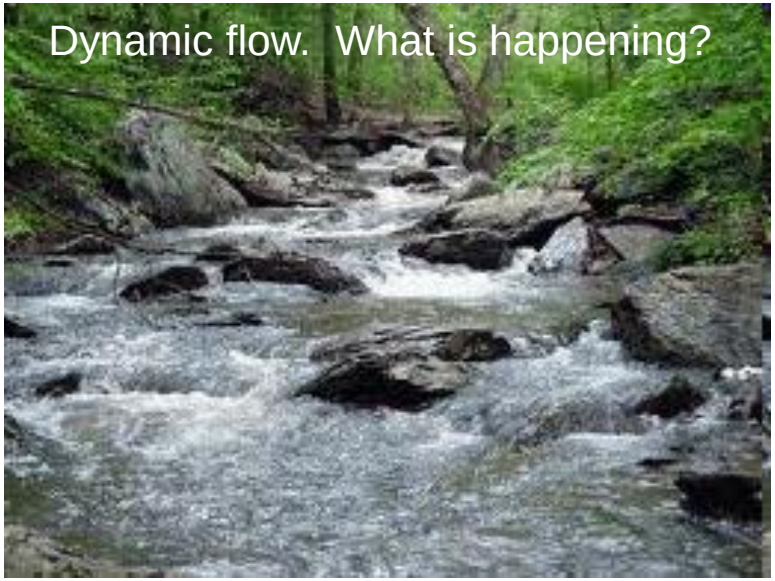


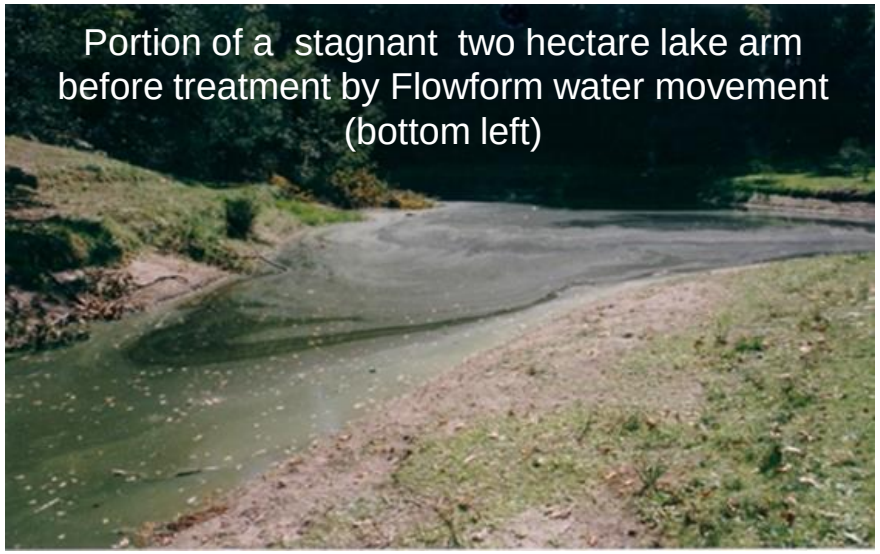
FLOWFORM® - rhythmic fluidic research over decades
led to the lemniscatory rhythmic flow discovery by John Wilkes.

Bringing 10 metres impact of dynamic flow into 1 metre of surface by repeating figure8



DYNAMIC WATER FLOW - and stagnancy, being the lack of dynamic flow.
How can we better understand the differences between these water conditions?





50 metres of Flowform to recycle lake water

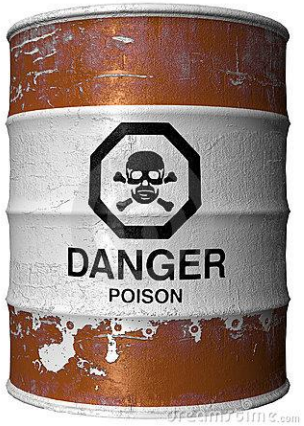
’The change in water quality is astounding.’
Dale Eady , Director Parks, Waikato, NZ

Size of the problem – loss of dynamic flow in the human-use water cycle

Approximately 15 trillion litres of water are taken out of nature each year for human use. It becomes stagnant after losing its freely moving dynamic flow

The many problems caused by this are treated with chemical-mechanical interventions costing over US$200 billion a year, yet without solving the cause of the stagnancy issue - loss of water quality from loss of dynamic flow

OR



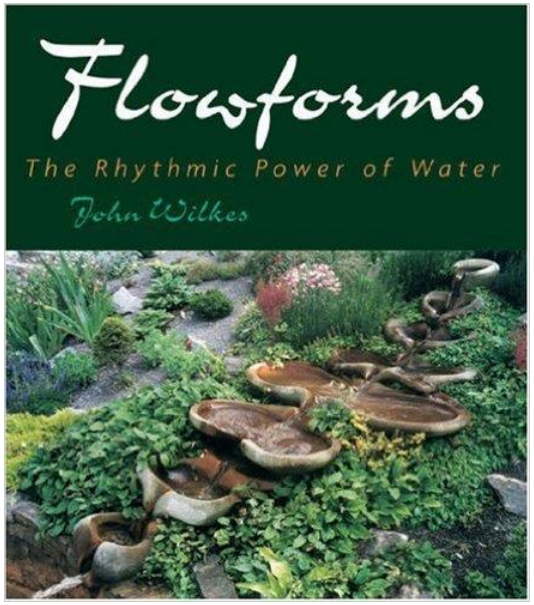
What are the characteristics of dynamically flowing water?

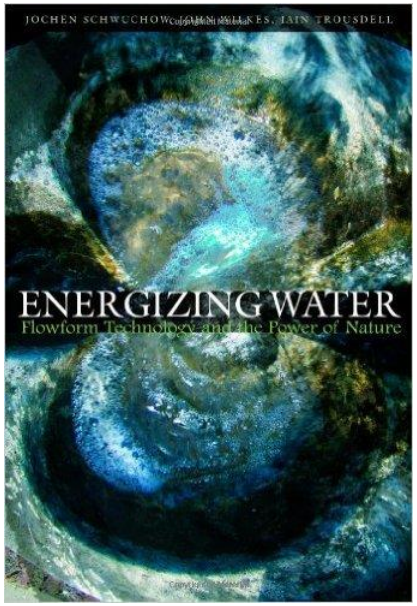
And of hypoxic stagnant water?

- oxygen hydrogen
- molecular structure
- available energy
- supporting life
- formative support
- coherent state
- relationship to time

ENERGY IN WATER - more questions than answers

Our books set out the results of research FFW design and observations. Our interest in the effects of dynamic rhythmical flow on the life supporting capacity of water is broadening into more quantitative research to enable design of precise flow technology with multiple water quality influencers incorporated

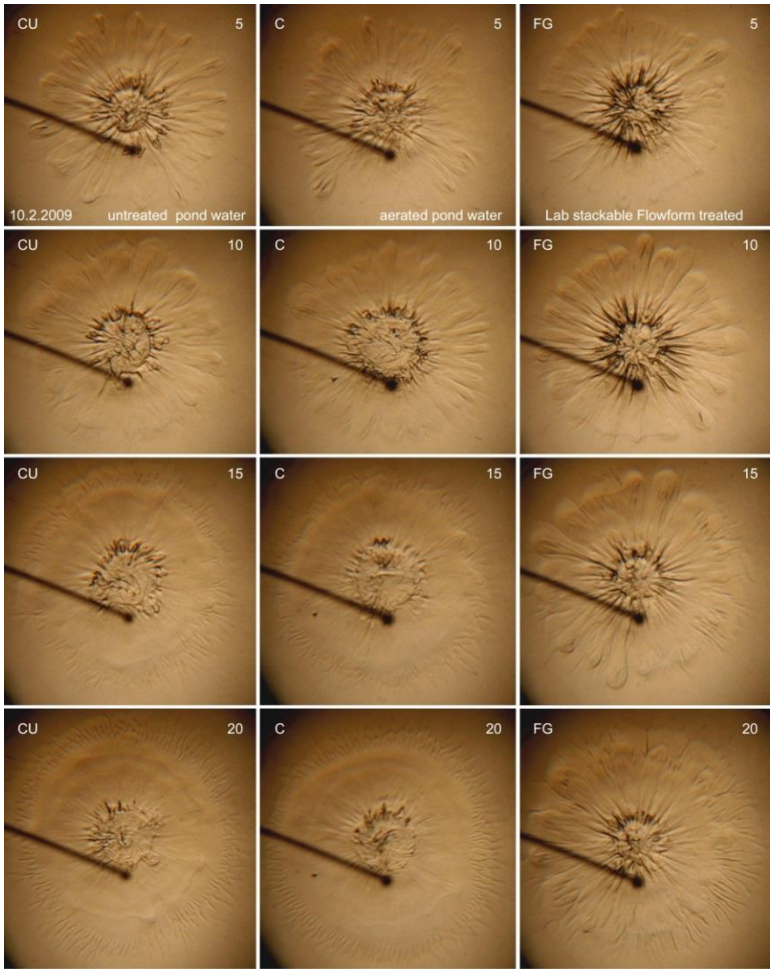


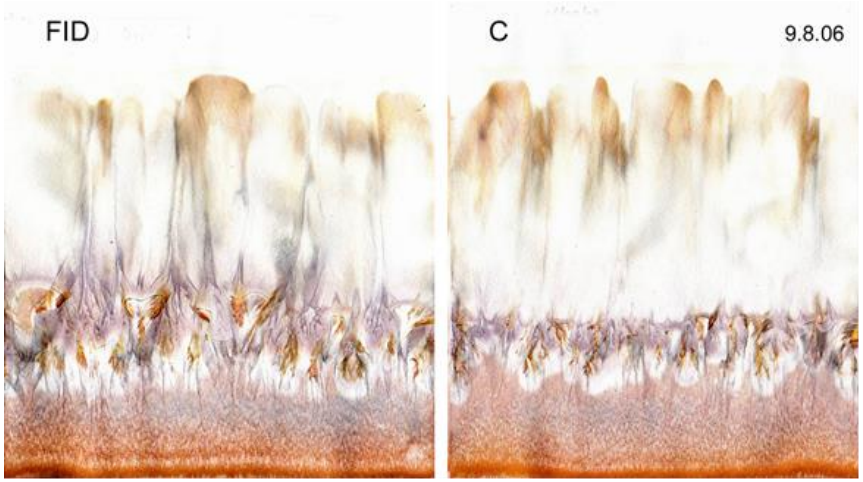


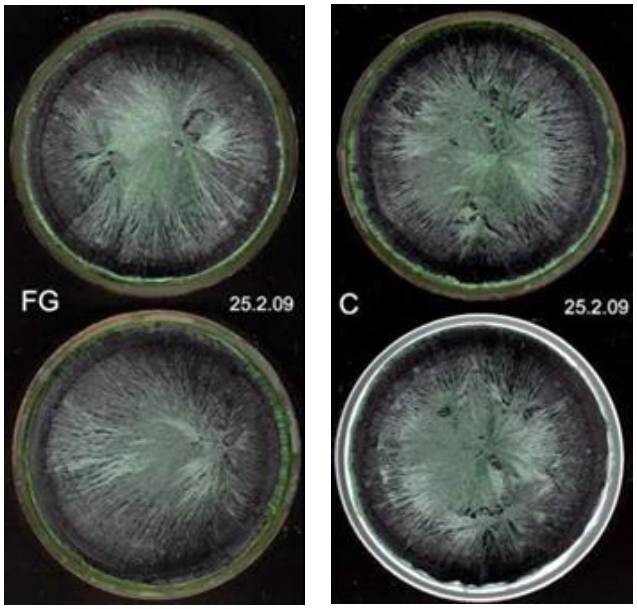
Nature uses dynamic flow externally and rhythmic flow internally to help maintain formative energy in water and water-based fluids (?)

Qualitative Depiction Methods

assessing rhythmic dynamic flow via degrees of apparent entropy or activity



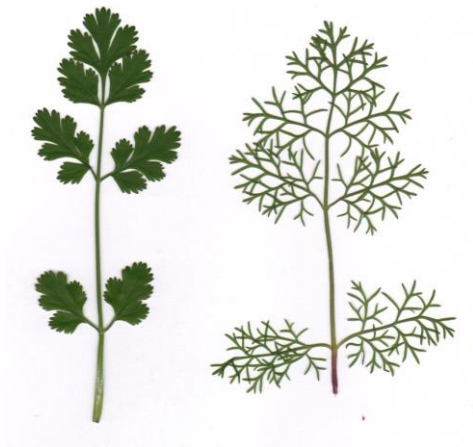




Clockwise from above: Waterdrop, Steigbild, CuCl2 crystallisation methods

Plant Growth & Morphology indications– testing of rhythmical dynamic flow effects

Plants also resist pests better, taste sweeter and grow more into their 'natural forms'. (control, left)



Coriander plant morphology showed morphological differences as if exposed to much greater sunlight (left, above)

Wheat root growth shows an average of 20% increase – but with wide variations regarding time of germination

Lettuce morphology showed opposite tendencies to coriander. Are plants encouraged to self organise more?

Present project – Energizing Water

Stage 1: assessing methods of measuring levels and types of energy in water

Led by Prof Jan Capjon, Oslo, with the Akloma Laboratory in Sweden and Pollack Laboratory in Seattle and individual scientists in Europe, the Foundation for Water is assessing quantitative methods to measure energy in water in nature and in human use.

The aim is to design various positive influencers of energy in water, including rhythmic and dynamic flow, mathematical flow surfaces and shapes, materials and more.

Presently, Dr Karin Seidler is working at Prof Gerald Pollack's laboratory in Seattle and Dr Benny Johansson will revisit FFW. We are applying Thermal IRI and UV-vis spectroscopy. Other methods are sought which can provide valid and reliable data (!?) suitable – eventually - for publication and to change government policy regarding energetic water quality.

This work has the hoped-for-outcome of a more knowledgeable and effective management of water quality into the future, both in the human-use and the natural water cycles.

Ways of defining the concept of Energy in Water

Coordination needed as they require different research methods

- offer capacity for more ‘work’
- available for uptake by living organisms?
- different light / wave length characteristics?
- changed molecular structure?
- differing electro - magnetic - chemical properties?
- closeness to quantum coherence?
- and more…

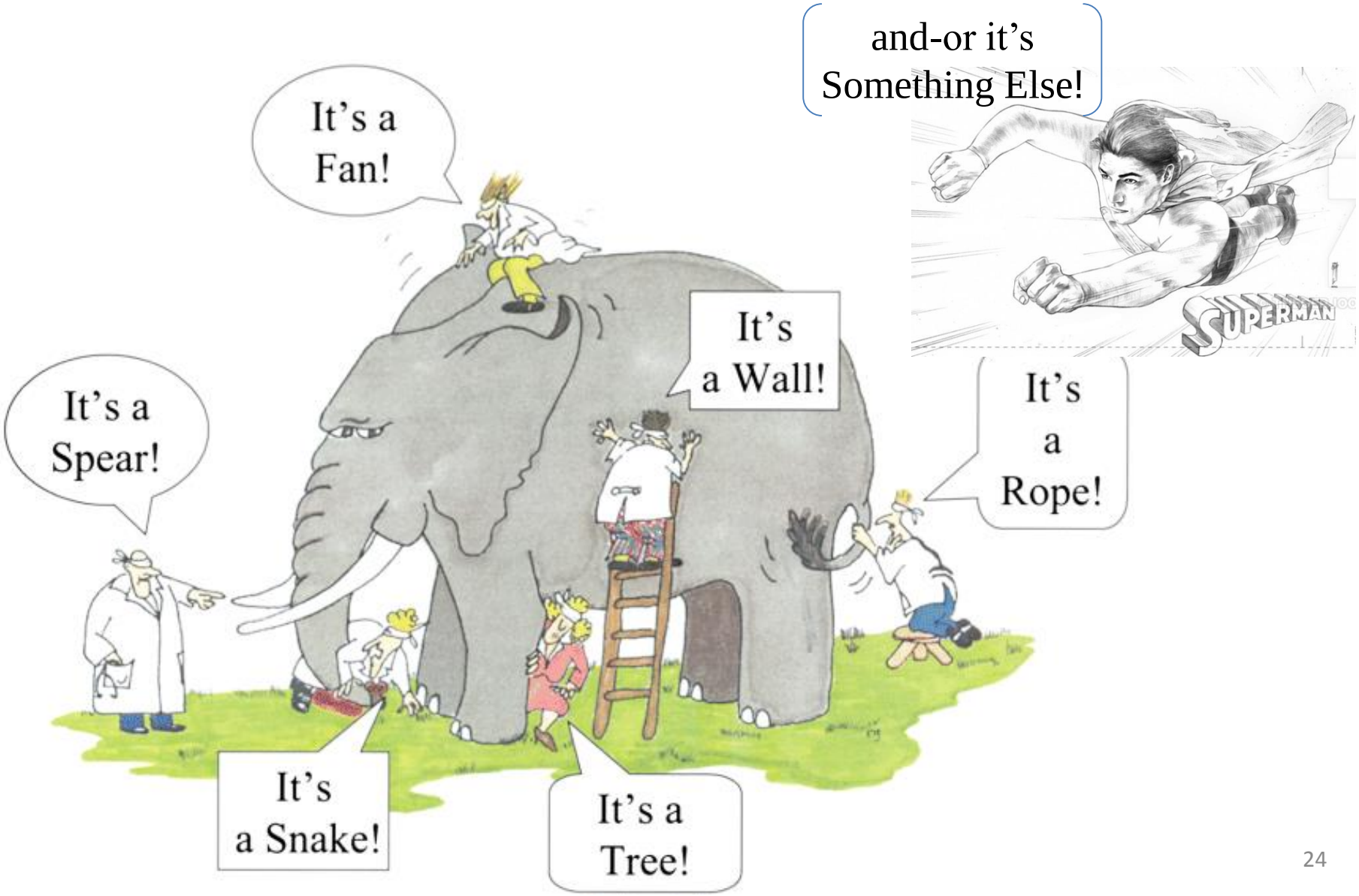
Measurement Methods - to various levels of acceptability?

A set of methods as the basis for correlated ‘broad picture’ research?

- Thermal Infrared Imaging and fractal analysis (in process)
- UV-visible spectrometry (…in process)
- Radiometry -- TIR-spectrometry
- Aquaphotomics -- Electrophonic Imaging (…GDV)
- Changes in botanical organisms (in process)
- Changes in biological organisms
- plus other methods…

We are interested in discussions about these topics

Water in Energy – a position statement



IN SUMMARY

- Inductive and deductive approaches needed to understand anomalous water
- Water flows rhythmically when balanced between momentum and resistance
- Rhythmic fluidics are vital to nature as pulse in time and symmetry in form
- These properties can be maintained by specific flow surface parameters
- Nature's water treatment can be brought into the human-use water cycle
- Understand more about dynamic and stagnant water realities around us
- Clarify 'energy in water' definitions and measurement methods in order to design better water quality technology for water management

We are interested in discussions about these topics

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FOUNDATION FOR WATER

help water support life

Thank you for your interest

and our particular thanks to

Software AG Stiftung

for its support in the present Energizing Water research project and for its earlier building of FFW's centre