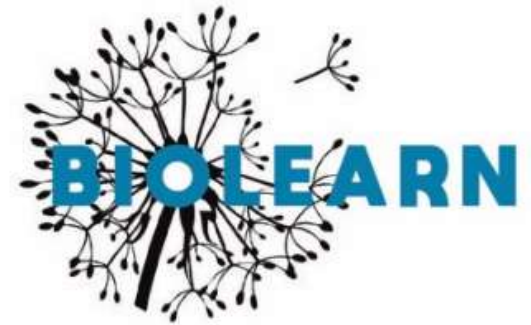


# Learning from Nature

**Introduction Biomimicry**

**[www.biolearn.eu](http://www.biolearn.eu)**







Stick like a gecko?



# TacTiles from Interface



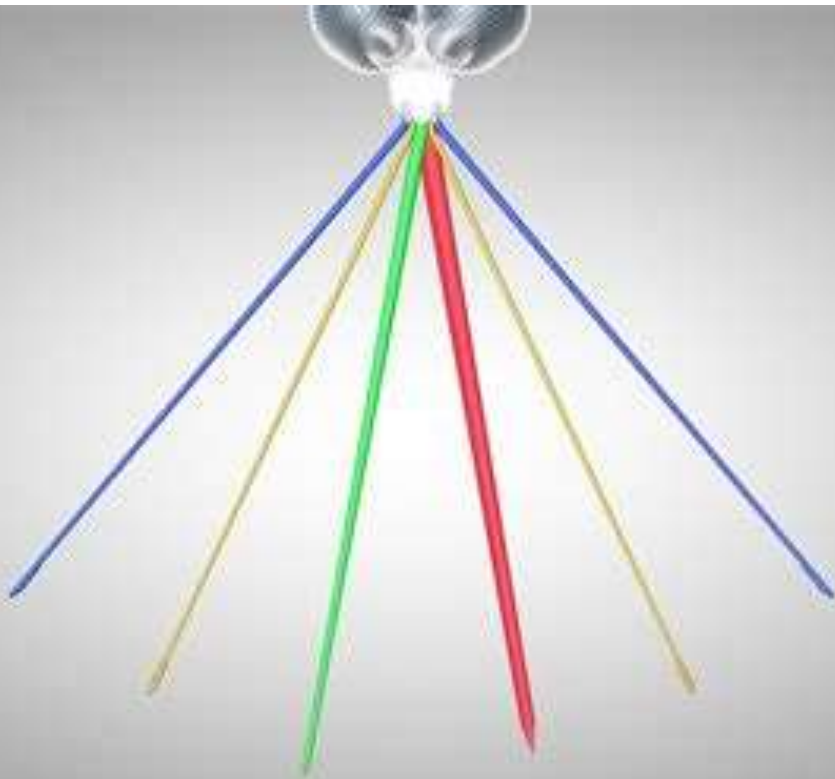




Needle without pain  
like a mosquito?



# Pain-free Needle









Harvest water like a  
darkling beetle?



# Fog collection



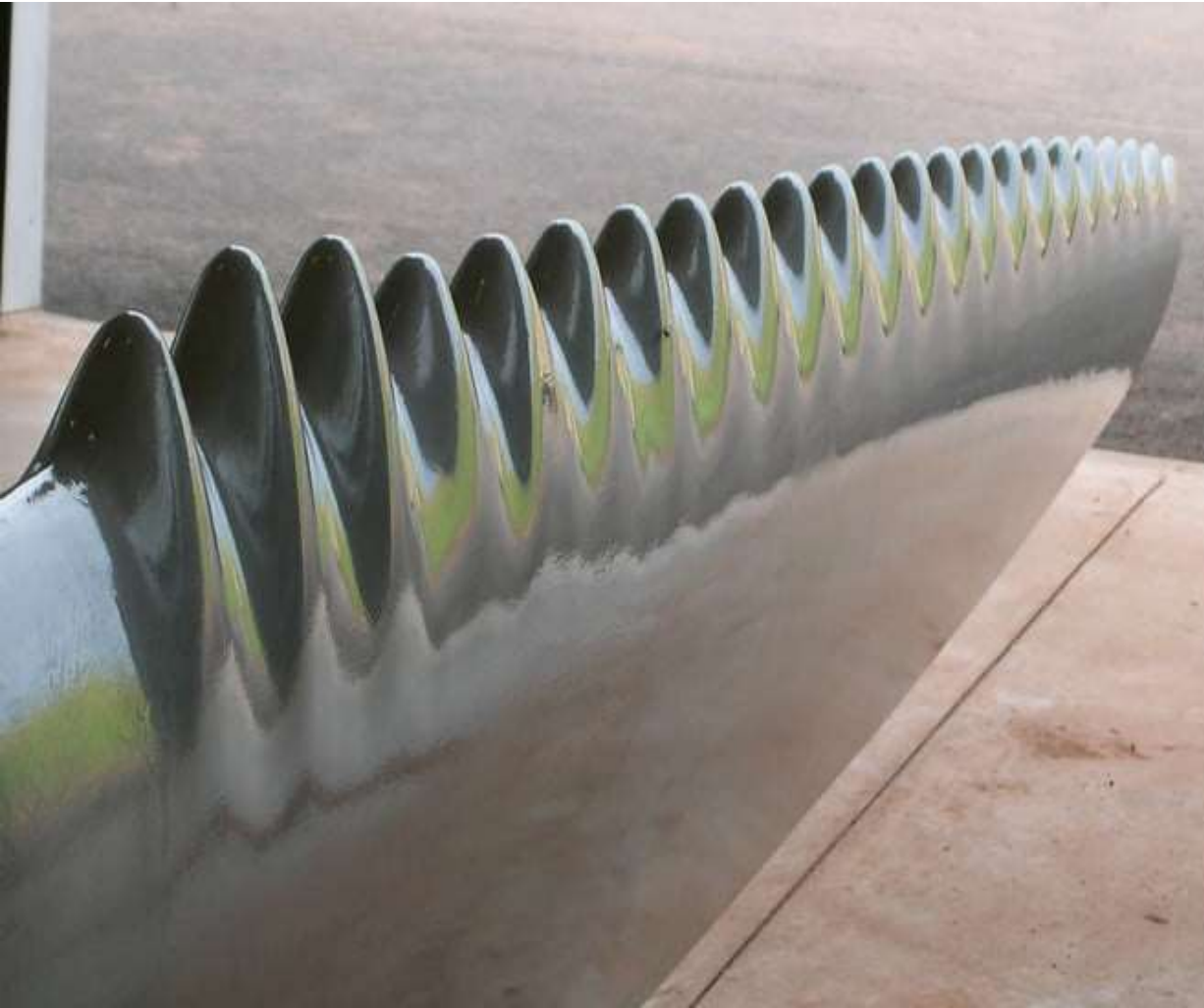




Move efficiently like  
a whale?

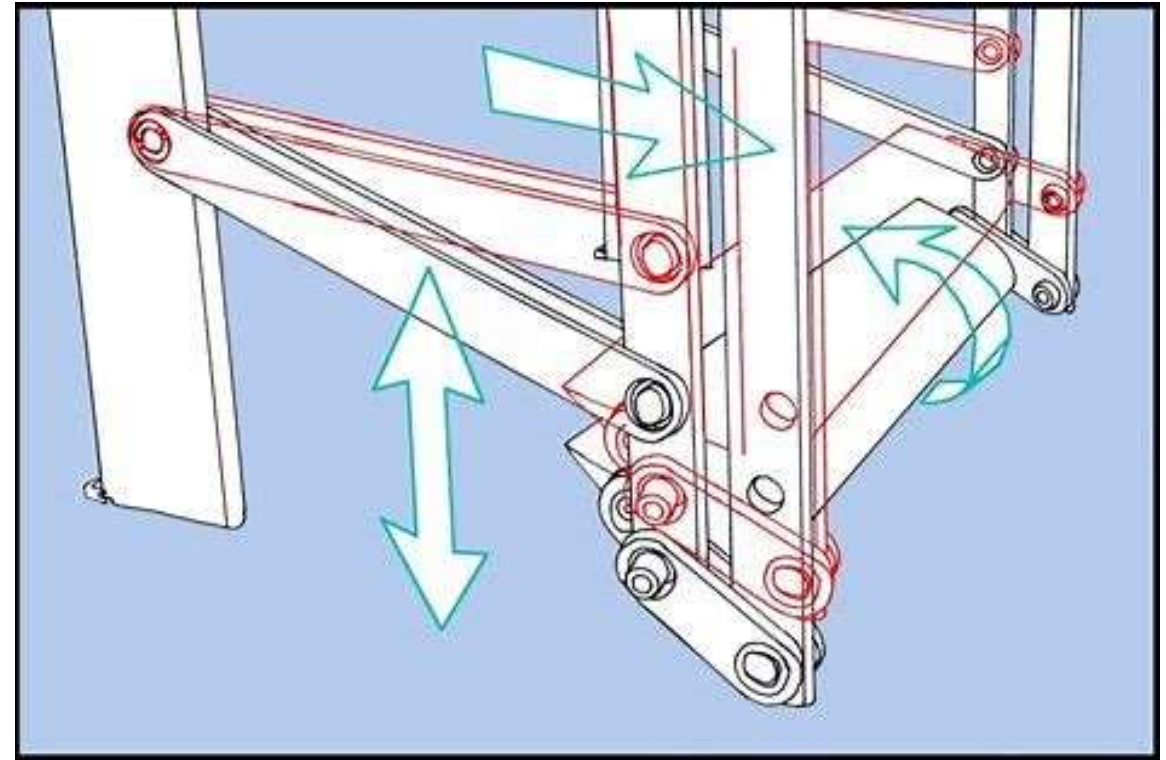
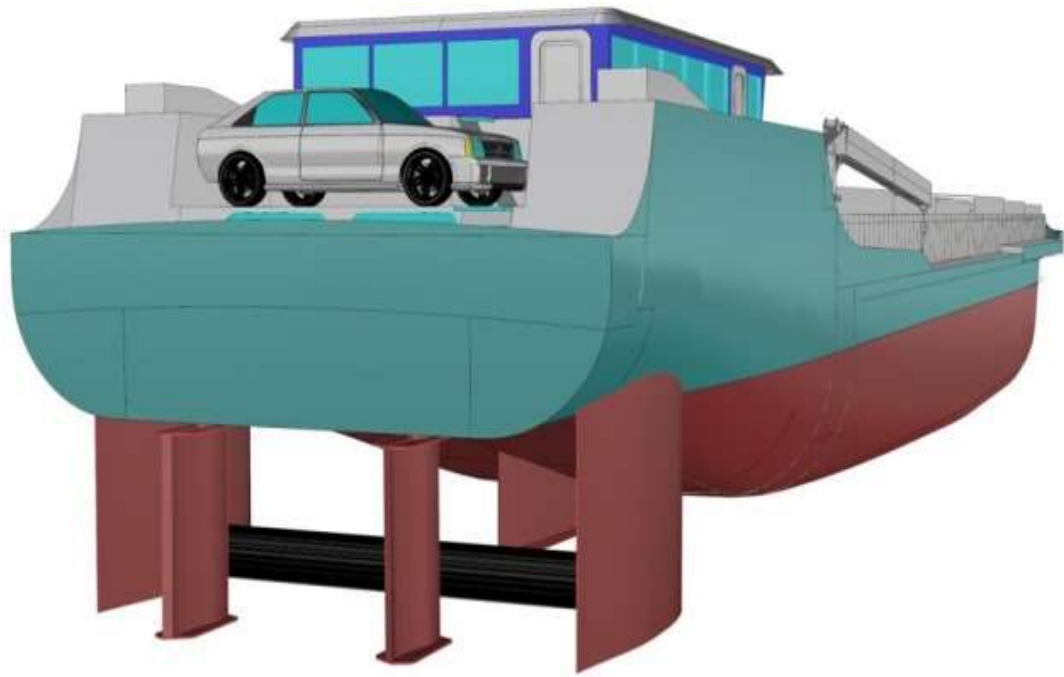


# Turbines





# O Foil Boat Propeller





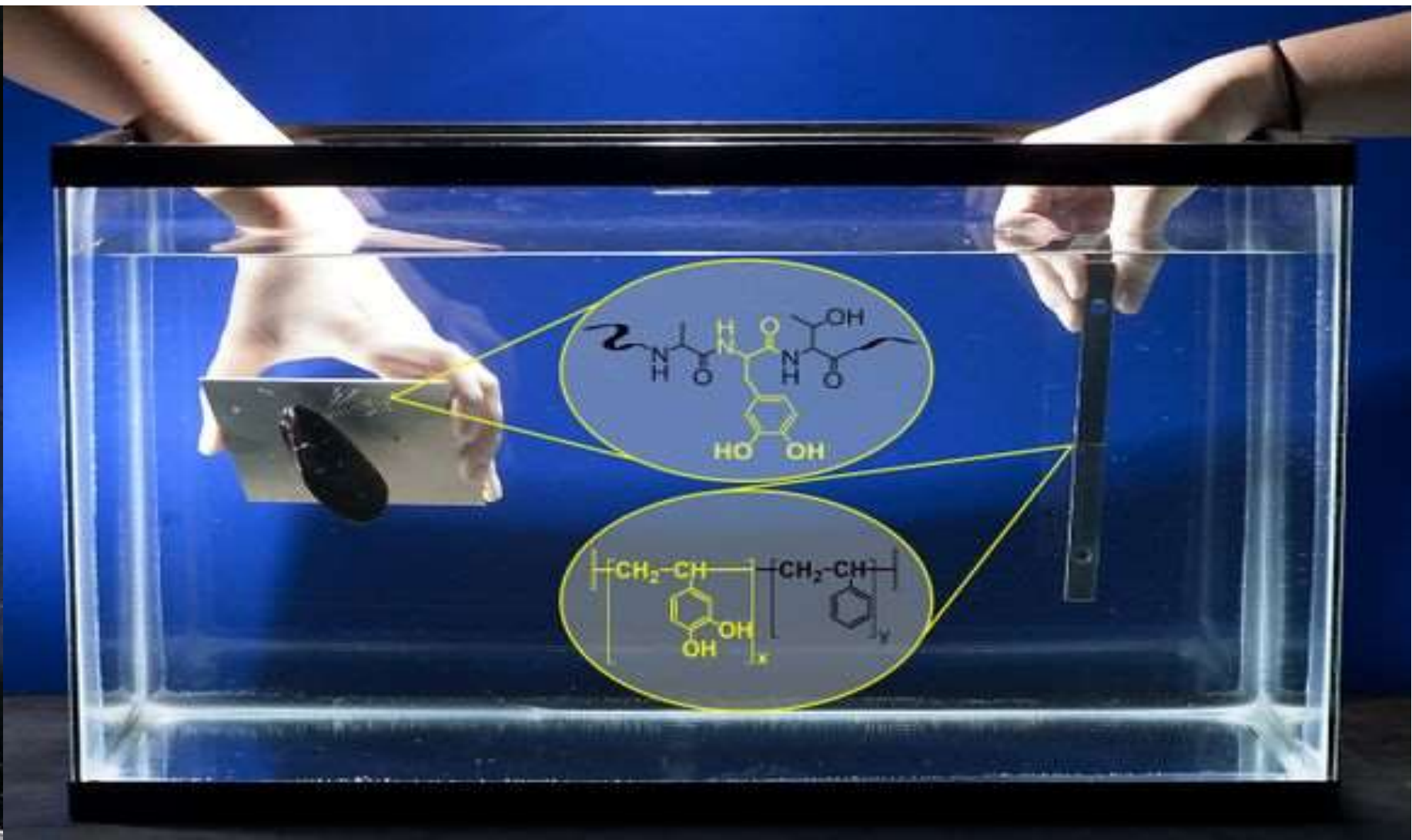


Do chemistry in  
water like mussels?





# Super Glue (in water)



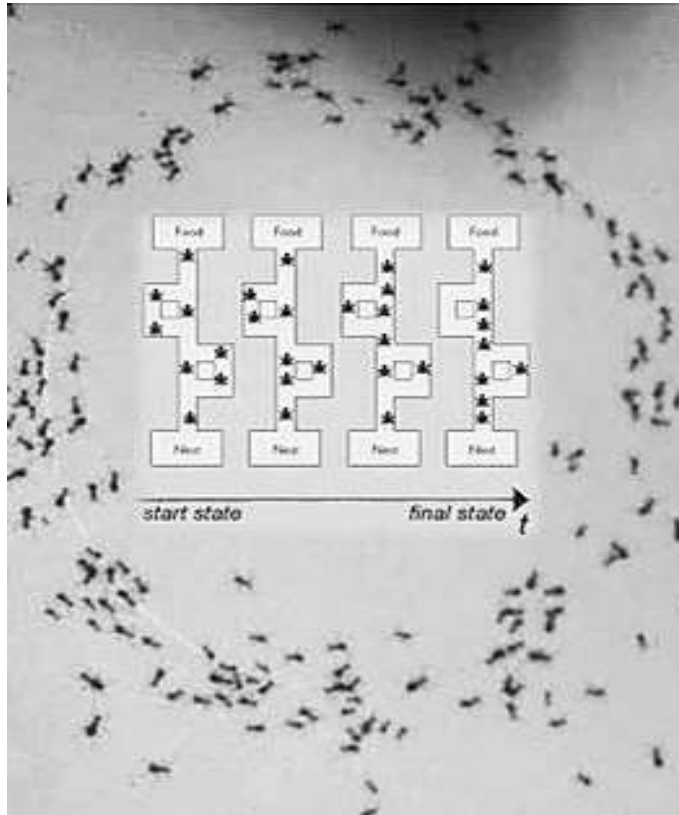




Communicate like  
ants?



# Ant colony optimization algorithms







Run a factory like a forest?



# Factory as a Forest

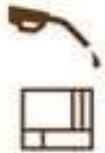
1994



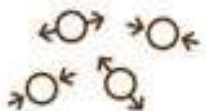
Smokestacks



Take Make Waste



Petroleum intensive products



Disconnected supply chain

NOW-2020



Factories to Zero



Recycled, closed loop materials



Low carbon products



Sustainable supply chain

BEYOND 2020



Factories as Forests



Products from dispersed materials



Products that sequester carbon



Supply chain that benefits all life

## THE CLIMATE TAKE BACK

**LIVE ZERO**

Aim for zero negative impact on the environment

**LOVE CARBON**

Stop seeing carbon as the enemy and start using it as a resource

**LEAD THE INDUSTRIAL RE-REVOLUTION**

Transform industry into a force for the future we want

**LET NATURE COOL**

Support the biosphere's ability to regulate the climate







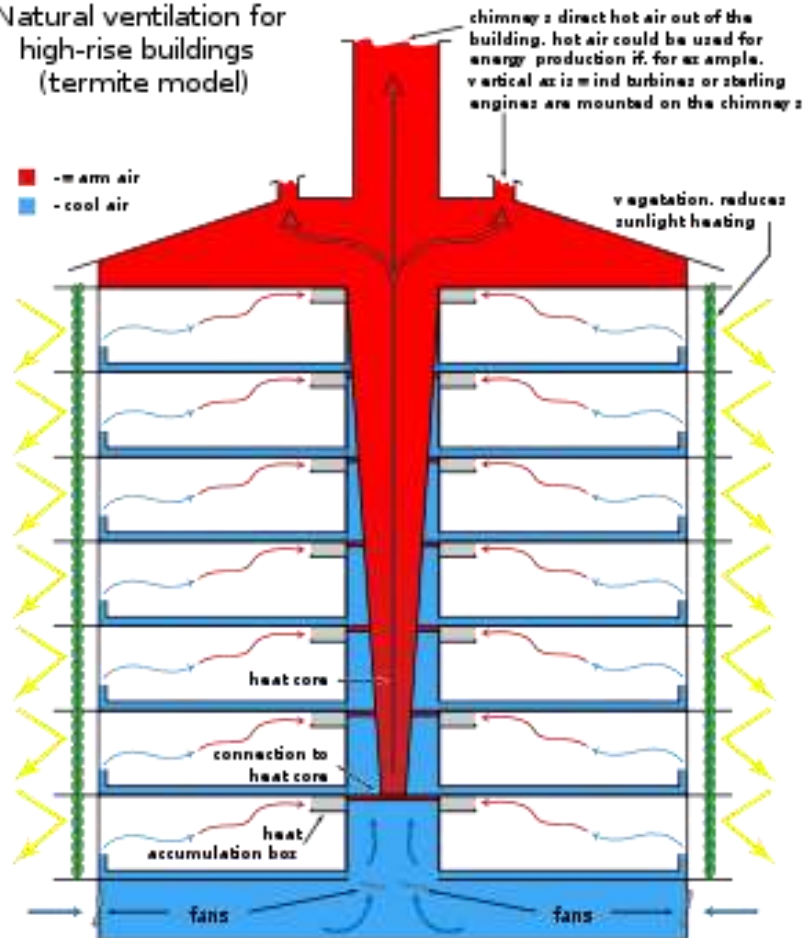


Control temperature  
like termites?



# Eastgate Centre, Zimbabwe

Natural ventilation for high-rise buildings (termite model)





Vox

+

99%

INVISIBLE

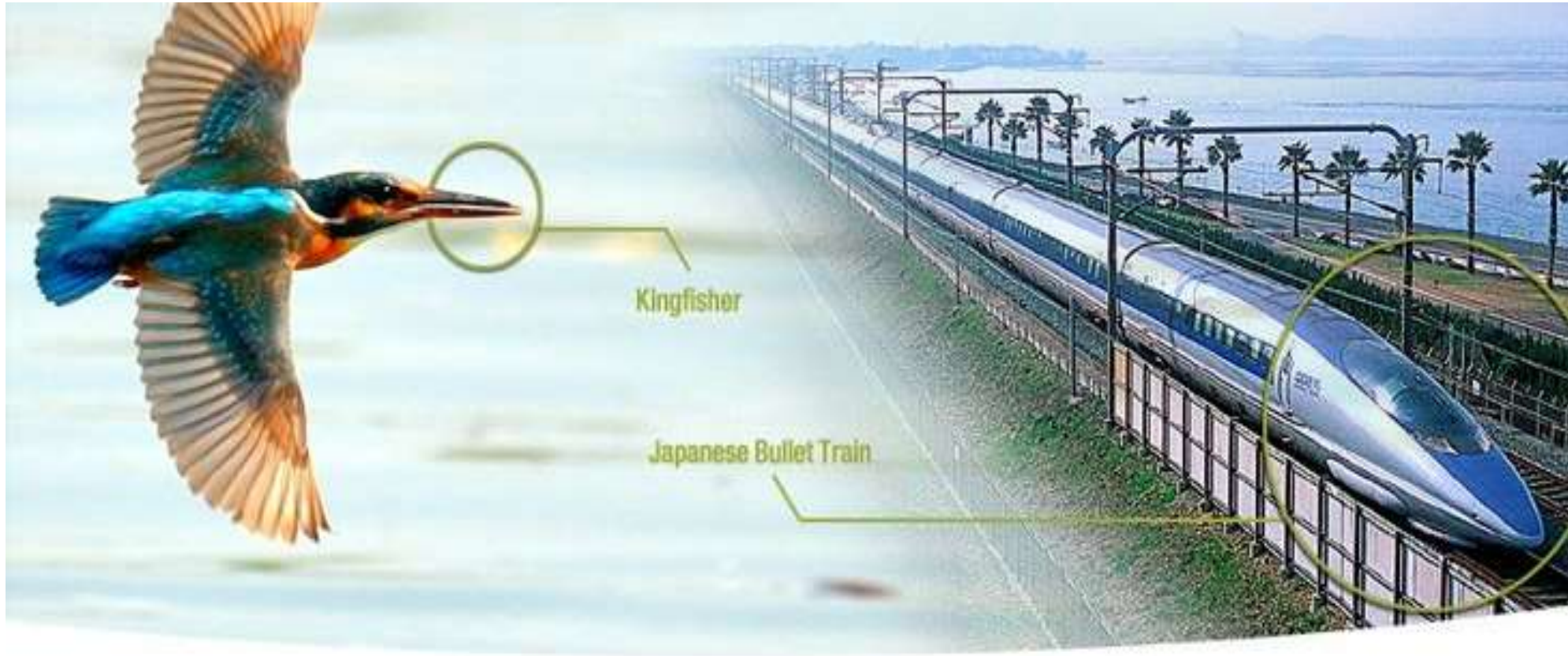




Little resistance like  
a kingfisher?



# Shinkansen Train



# Biomimicry

- Bios = Life
- Mimesis = Imitate



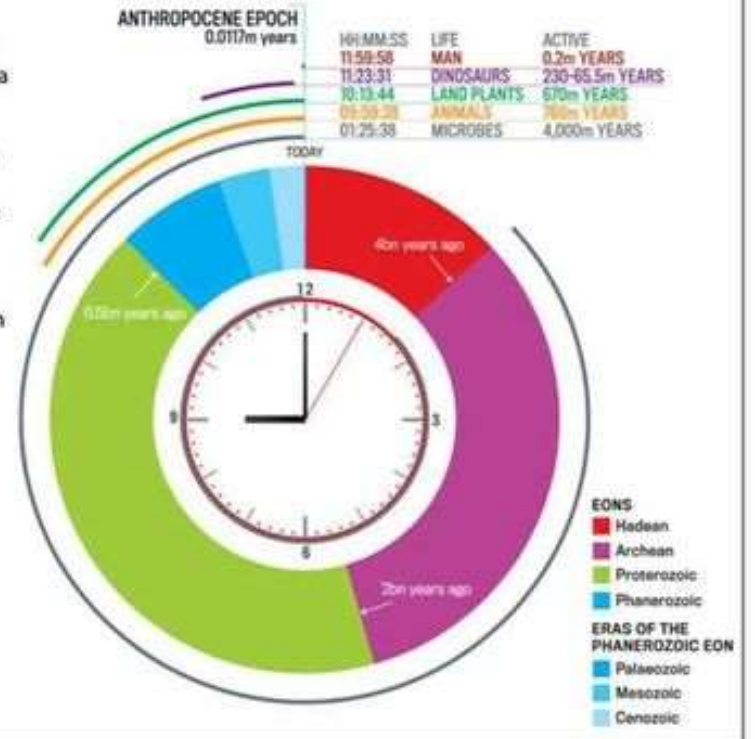


# WHAT IF EARTH ONLY EXISTED FOR 24 HOURS?

After 3.8 billion years, nature knows what works

## THE HISTORY OF THE EARTH IN 12 HOURS

If the history of our planet were condensed into a 12-hour period, *Homo sapiens* would appear in the last two seconds and the Anthropocene epoch, when mankind starts leaving a mark in the geological record, would begin around one-tenth of a second ago.





What can we learn  
from spiders?

---



Spider silk – 5 times stronger than steel





**ZERO**

pigments and dyes used to create these brilliant colors

**750,000**

metric tons of textile dyes used annually to color our fabrics



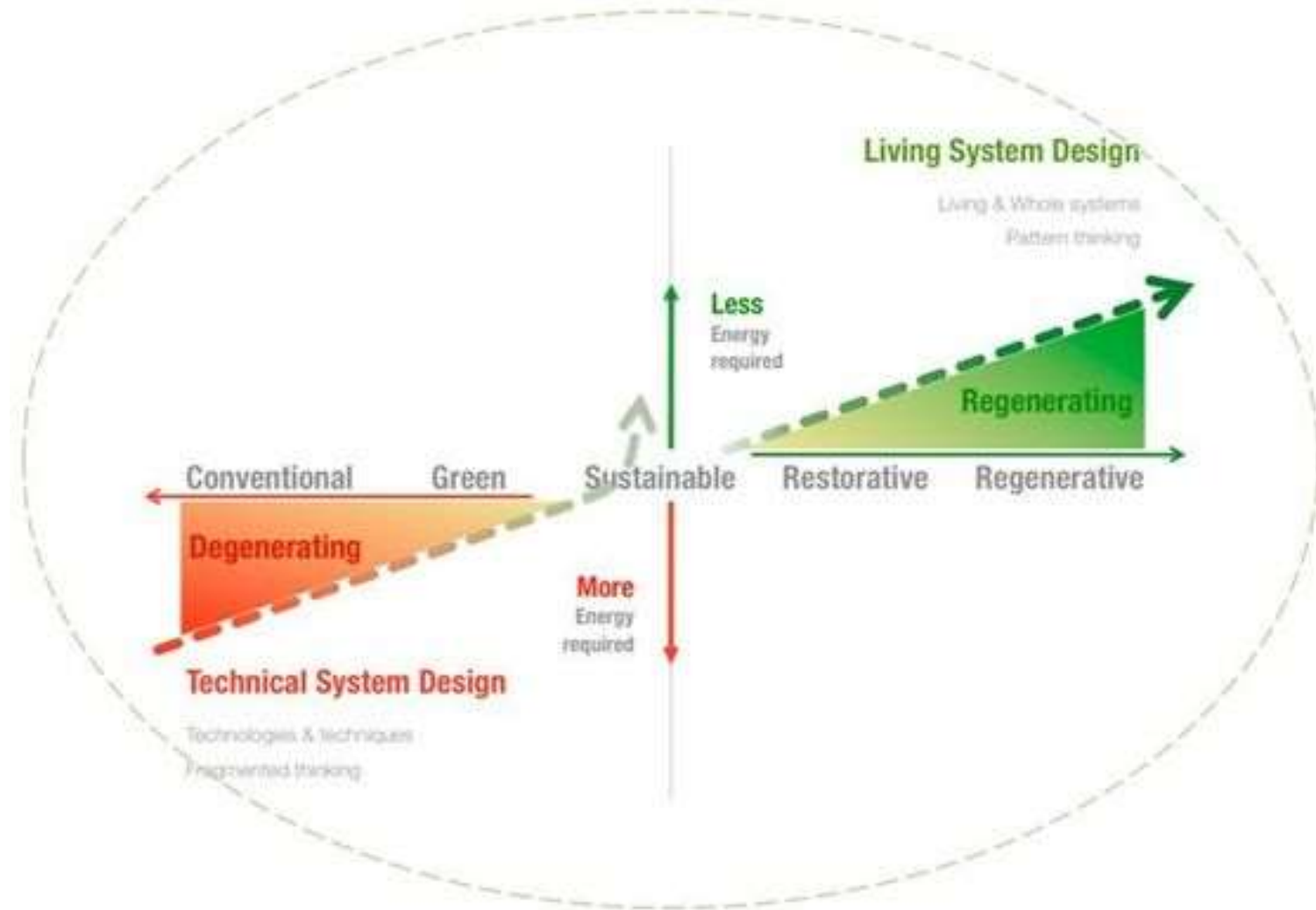
**BIOMIMICRY**  
INSTITUTE

Nature is always sustainable

# Linear versus circular economy




# Sustainable versus regenerative



*“The answers to how to live sustainably on our planet are all around us.”*

Janine Benyus



JANINE M. BENYUS —

## 9 basic principles of biomimicry

- 1 Nature runs on sunlight
- 2 Nature uses only the energy it needs
- 3 Nature fits form to function
- 4 Nature recycles everything
- 5 Nature rewards cooperation
- 6 Nature banks on diversity
- 7 Nature demands local expertise
- 8 Nature curbs excesses from within
- 9 Nature taps the power of limits

# Nine basic principles of Biomimicry



# Six Principles of Life



# Identifying functions



A function of the polar bear's fur is to **isolate**.

A function of a snail's shell is to **protect**.



A function of a leaf is to **collect sunlight**.



Identifying functions – practice!