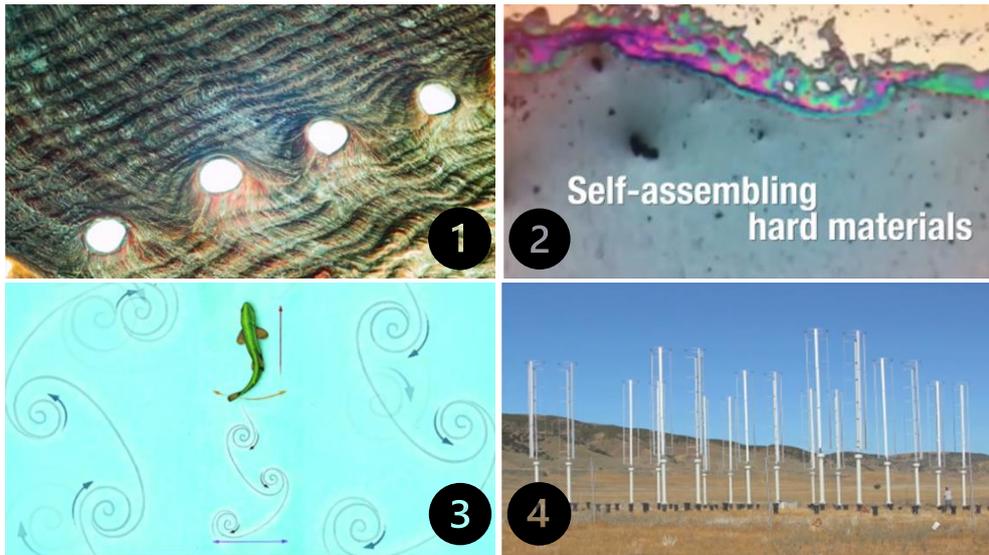


Good News Edition 14 – Can We Mimic Nature Part 2



BIOMIMICRY PART 2

I am following on from your interest from last week where we were introduced to Biomimicry which is a new approach to solving human problems by applying nature-inspired designs, engineering and science to innovation towards a sustainable future by mimicking life.

Life had adapted to every environment on earth. There is already in place in nature all the chemistry, design, construction and engineering for all life to prosper. Why not learn from these biological elders and go to nature's chemistry and science books for the recipes for our future.

I would like to introduce a video by Janine Benyus for those who would like to learn more. It is worth the 20mins of your time – you won't be disappointed. Below is the link follow by two excerpts.

<https://www.youtube.com/watch?v=sf4oW8OtaPY>

We have all enjoyed collecting shells on the beach but how do these ocean organisms create this hard shell? Did you know the shell of an abalone is twice as tough as our human made high tech ceramics. It doesn't use electricity to heat a kiln to over 1000 degrees Celsius, it uses calcium and carbonate found in seawater and uses chemistry at low temperatures in salt water. Further to that the abalone shell is that beautiful mother of pearl with the iridescent colours (Image 1). Like most sea life it is a soft bodied creature. It releases a protein into the seawater around itself to produce a template for the formation of the shell. On this template are (positive and negative) charged areas which act as landing sites to attract the calcium and carbonate from the seawater. This intern directs the formation of the calcium carbonate crystals that form the shell. This process is automatic and self-assembling. It is actually a self-healing material with beautiful architecture and incredibly benign manufacturing (Image 2). People are using this to figure out how to make ceramics without ever using a kiln. This has been

looked at for both reasons for the blueprint and for the recipe of how you self-assemble out of seawater hard materials.

At Caltech (Californian Institute of Technology) students have come up with a new kind of wind farm that's based on how fish move in a school. When fish are moving they group together and the ones in the front, through their movements throw off little spirals (whirlpools) in the water (vortices) (Image 3). The fish behind the front runners then move around those spirals and actually get propelled upstream saving a lot of energy. So, what these students thought, “why don't we take vertical axis wind turbines and instead of spreading them out over the landscape (like you would with traditional wind turbine's) why don't we pack them as closely as possible together”. They did this and found that when the first turbines turned they would create these spirals (whirlpools) of wind and the wind turbines behind them would start to turn even before the wind hit them (Image 4) Incredibly they received 10 times more wind power out of a wind farm this way for a with a lot less land use.

Happy viewing of Janine Benyus's video. Let me know what excites you or what you have observed from the life around you!