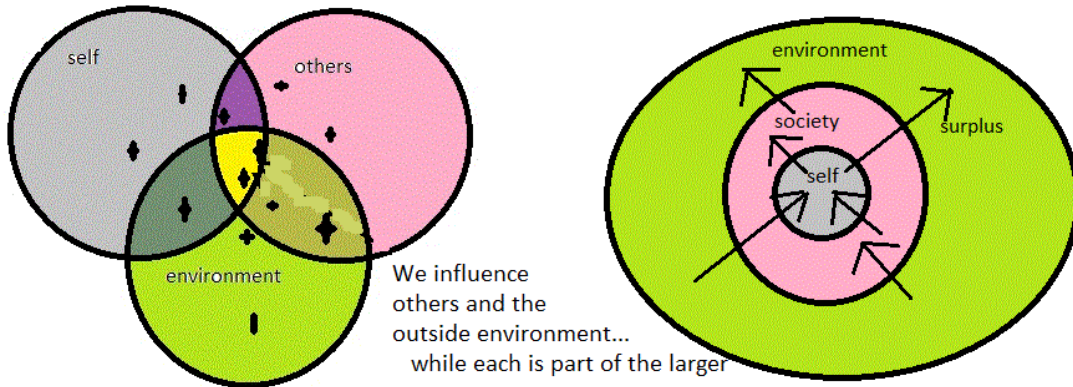


Design

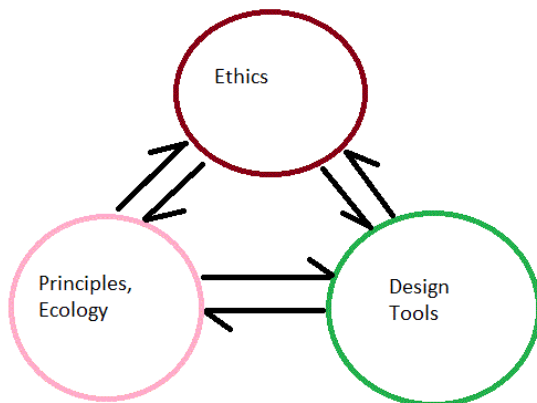
Design is a process of making dreams come true.

To change the World – you have to change it for the better. We have to see the feedback. Permaculture is Ethics. We are individual ecosystems. Society is an ecosystem. What is enough?

Your surpluses define who you are.



To change the world, we change ourselves



Now let's talk **Design**

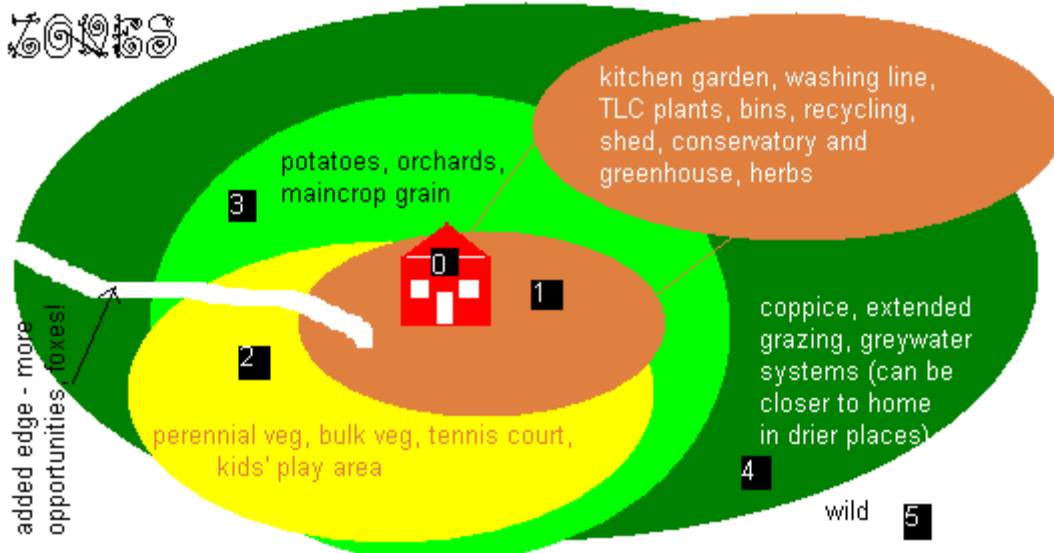
Start with a pattern, move to detail.

Bill Mollison was the salesman, David Holmgren went into the detail.

If designing – step back, what is the aim? What are the limitations, space, time, money, soil, aspect, climate, etc.

Observe – catch and store, obtain a yield, accept feedback.

Observations of traditional farms leads to the concept of **zoning**.



Zone 0 – any change gives maximum impact. The first 20% of work results in 80% of impact. In social terms, zone 1: family, 2: close friends, 3: colleagues, 4 acquaintances, 5 others. Zone 5 – wilderness. Any changes give no direct feedback. It will impact on me, but I won't know how.

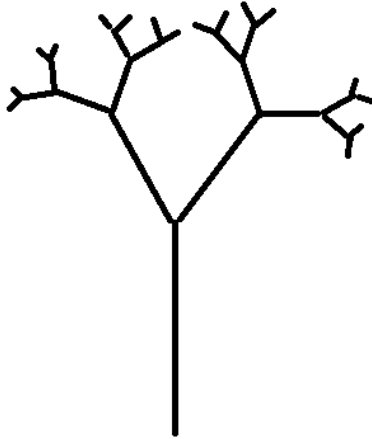
Janine Benyus:

- 9 basic principles of biomimicry
- Nature runs on sunlight
- Nature uses only the energy it needs
- Nature fits form to function
- Nature recycles everything
- Nature rewards cooperation
- Nature banks on diversity
- Nature demands local expertise
- Nature curbs excesses from within
- Nature taps the power of limits

A lack of sustainability means you get cold.

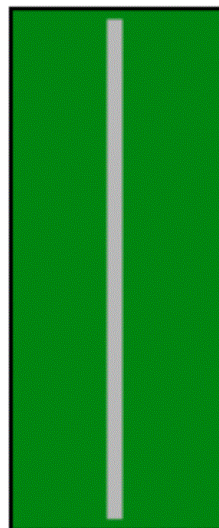
We're tuned to recognise patterns.

Slime Mould was used to design the Tokyo underground. They laid food in an arrangement matching transport demand. See Paul Stamets.

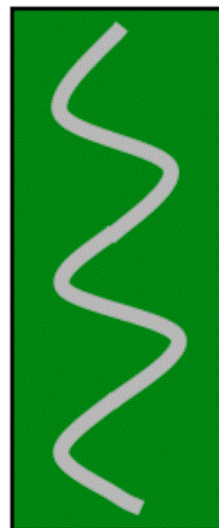


For the dragon tree, each bifurcation results in a branch half the length of the former. Look out for branches in deltas, and the circulatory system where the object is maximum contact with the body, maximum area. Simple ideas can create complexity and patterns. Patterns are repeated at different scales, as in branches and rivers and Romanesco. Ref Mandelbrot and his fractals, as in $Z \leftrightarrow Z^2 + C$ Chaos theory dictates that given the starting material, you can't predict the result.

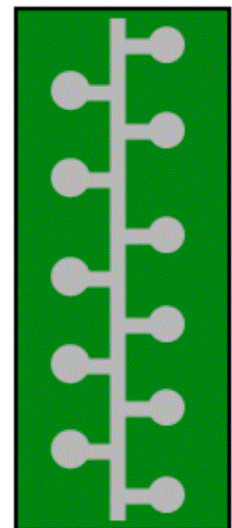
Straight Path



Curved Path



'Keyhole' Path



We let a design evolve, accepting feedback.

Interesting shapes happen in ecology.

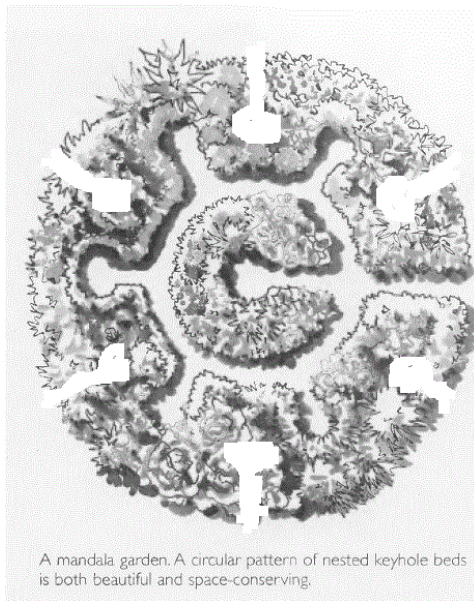
A straight path is great for a wheelbarrow. A wavy path gives enforced interaction with the edges. A keyhole path allows the wheelbarrow and interaction with edges.

Peace between the Moors and Christians in southern Spain gave great cultural development: Spain was a cultural edge.

Don't stand on soil, you'll have to dig it.

The smaller the farm, the more productive it can be per acre.

Reading's RISC (39 London Road, Reading) is a 70m x 15m roof garden, with 176 different species planted initially. There's a hard path, and a soft figure of 8 path. The soil is 30cm thick. Rainwater drains through, what comes out is pumped back up as drip irrigation.



A mandala garden. A circular pattern of nested keyhole beds is both beautiful and space-conserving.

Mediterranean vegetation may have been a better bet than temperate.

100 mins to spend on your garden a week? Spend 75 – you'll need contingencies, and time to appreciate and take feedback.

£100 to spend? Leave spare.

Exponential pattern. Even 2% growth won't work as an economic model.

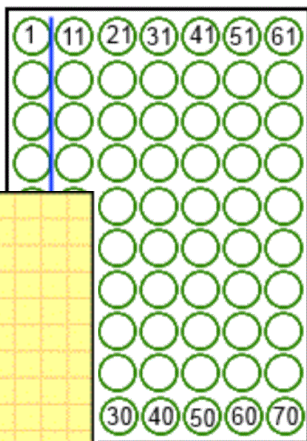
See Johan Rockström, 35 steps takes me out of this theatre, 35 exponential steps takes me to Mars.

<https://www.counterpunch.org/2017/10/02/the-great-acceleration-death-trap/>

See Jim Al-Khalili talking about 'The Secret Life of Chaos'. (1 hour, BBC or pirated)

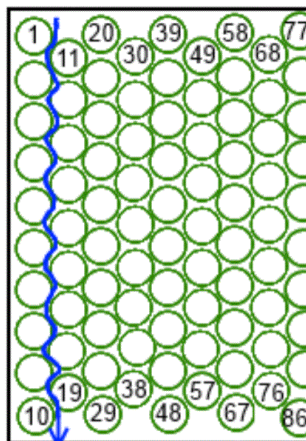
Exponentials – if doubling, 1, 2, 4, 8, 16, .. 10 doublings to 1000, 20 doublings to 1 million.

Straight Line Planting



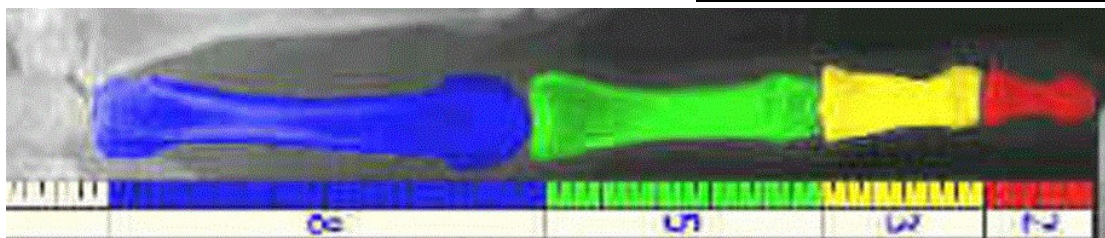
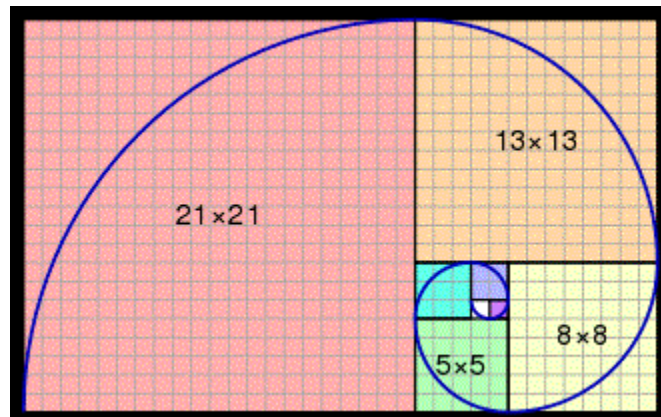
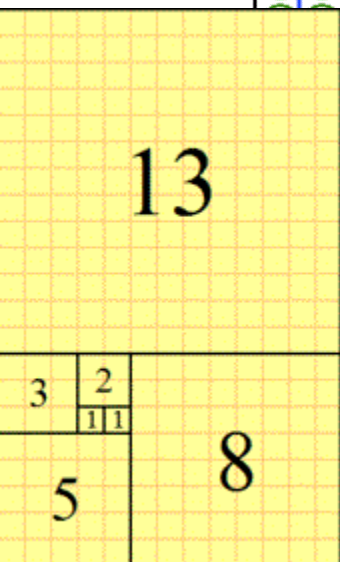
Total Plants = 70

Staggered Planting



Total Plants = 86

The [Fibonacci](#) series – 0, 1, 1, 2, 3, 5, 8, 13, 21, 34. Applies to snail shells and finger phalanges, and to the arrangements of sunflower florets and romanesco broccoli.





The herb spiral features high place for dry, south for sunny, north for cooler.



Net: spider web, mycelium, telephone junctions, internet, weaving.
 Scatter: how nature gardens. Polyculture vegetable bed – sow random seeds
 Waves: peg loom, sine wave, heartbeat
 Geometric: Giant's Causeway, snowflakes, apple core, geodesic dome, fullerene, National Museum's roof, sea-break wall (of hexagons), chickenwire.

In these diagrams, the caterpillar would suffer if any of the core parts are separated. The other network would survive nicely.
 The mycelial network can also be considered in 3 dimensions, multi-layered.
 In woodland soil, 1 cubic inch contains 8 miles of mycelium.

Field trip weekends: 13-15 April and 22-24 June, £30 each weekend. Look out for the housing coop and Steve's birthday bash (in June?)

