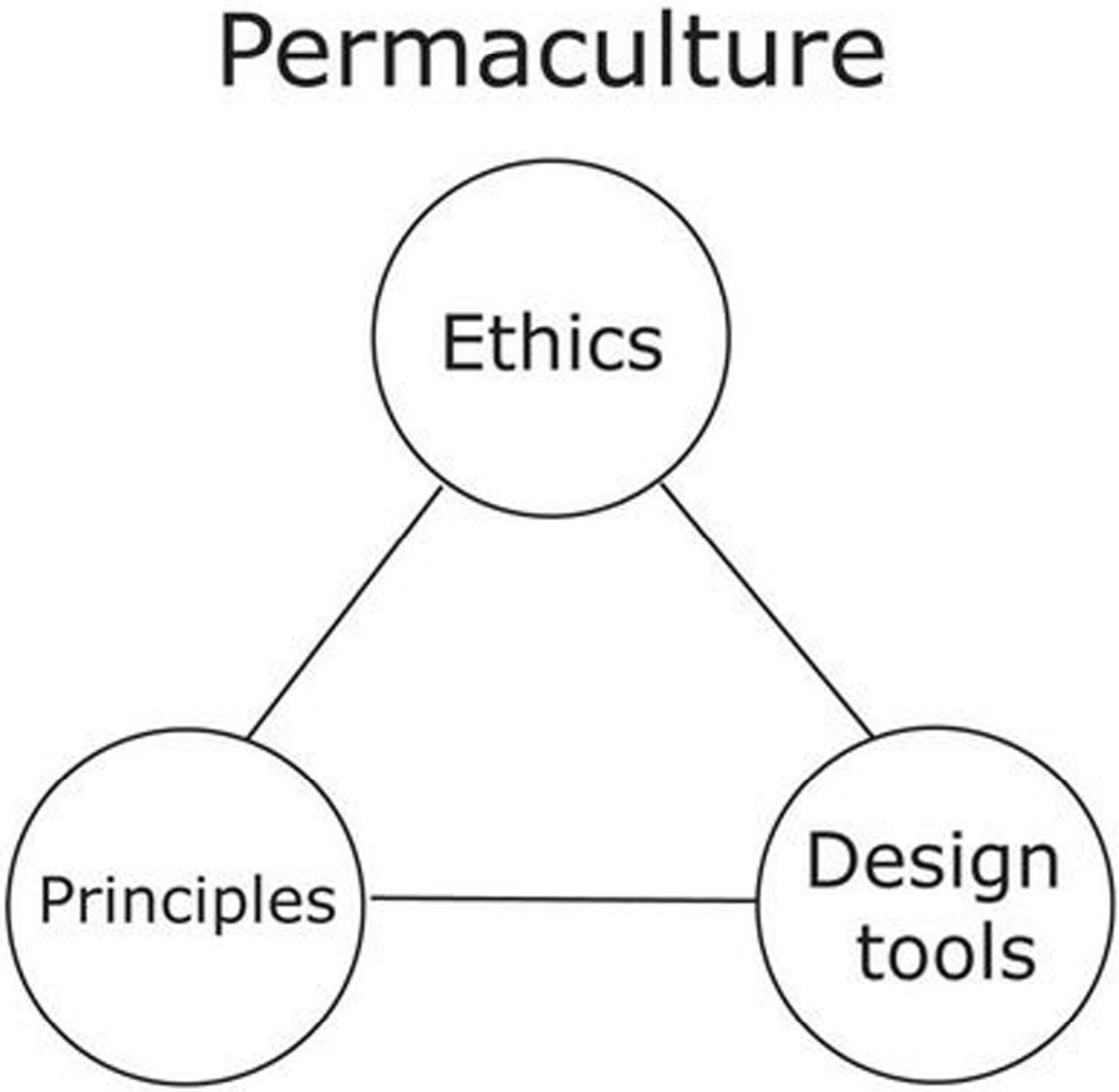
Permaculture defintions



Permaculture is a set of tools and strategies for solving problems.

Guided by a clear set of ethics.
Informed by a set of principles derived from obvervations of nature.
Activated by a practical set of design tools.

Permaculture ethics

Fair share
People care
Earth care

Set limits to your consumption
Meeting one's own needs comes first, but setting limits and using surplus as an investment is the most effective mechanism to create change. Re-invest surplus.

Care about people
Other people really matter. Recognise that other people are also striving to meet their own needs. If we can find ways to **meet our needs in ways that are mutually beneficial** then much more can be achieved.

Living Planet
We humans are part of a huge interconnected ecosytem called planet Earth. Every action we take has consequences for the natural world. Permaculture steers us to **work in harmony with nature**.

If we can meet our personal needs in a way that helps others to meet theirs, whilst working with and enhancing the natural world, then we can unleash limitless new possbilites.

This is the central idea for permaculture.

Permaculture ethics

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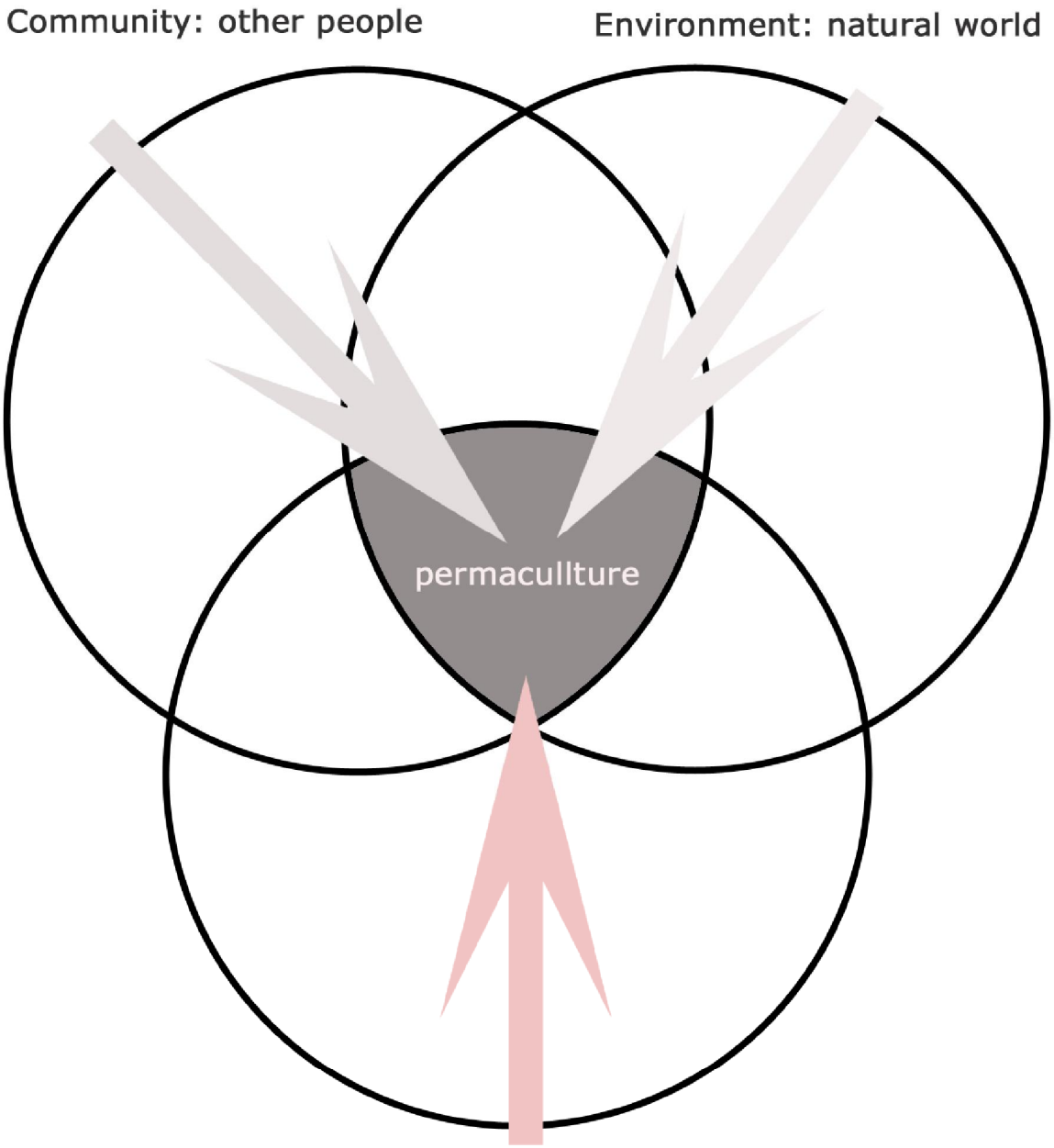

permaculture

Permaculture strategies guide us towards solutions which benefit both our selves, our community and the environment

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Permaculture Principles

1 Observe and Interact

Beauty is in the eye of the beholder

Good design depends on a free and harmonious relationship between nature and people.

Careful **observation** and thoughtful **interaction** provide the design inspiration, choices and patterns.

Good design is not something that is generated in isolation, but through continuous two-way interaction with the subject.

Permaculture reminds us that we can solve problems through design based on **experimentation** and careful **planning**.

Design to **fulfill functions** using **locally available resources and skills.**

The proverb 'beauty is in the eye of the beholder' reminds us that the process of observing influences reality, and that we must always understand that truths and values vary as to who is doing the observation.

Permaculture Principles

2 Catch and Store Energy

Make hay while the sun shines

Inappropriate concepts of wealth have led us to ignore opportunities to **capture local flows of both renewable and non-renewable forms of energy**.

Identifying & acting on these opportunities can provide the energy with which we can rebuild capital, as well as provide "i**ncome" for our immediate needs**.

Some of the sources of energy include;

- Sun, wind and run off water flows.
- Wasted resources from agricultural, industrial and commercial activities.
- Nature's annual surplus of twigs, grasses and leaves which easily be converted via compost into humus.

The most important stockpiles of future value include:

- Fertile soil with high humus content.
- Perennial vegetation systems, especially trees that yield food and other useful resources.
- Water bodies and tanks.
- Passive solar buildings

The proverb make hay when the sun shines reminds us that catching energy is **strategic** and **time based**. We must **make the most of opportunities** when they arise.

Permaculture Principles

3 Obtain a Yield

You can't work on an empty stomach

A yield, profit or income functions as a reward that encourages, maintains and or replicates the system that generated the yield.

In this way, successful systems spread.

In systems language these rewards are called 'positive feedback loops', which amplify the original process or signal.

If we are serious about sustainable design solutions, then we must be aiming for rewards that encourage success, growth and replication of those solutions.

The proverb reminds us that of the importance of creating a yield to sustain one's self. This relates to the permaculture ethic of setting limits to consumption: we can only be sustainable when we **meet our own needs whilst also creating a surplus** for reinvestment.

Our aim, as permaculture designers is to create solutions that can easily be copied and replicated.

Permaculture Principles

4 Apply Self-regulation and Accept Feedback

The sins of the fathers are visited on the children unto the seventh generation

Nature has limits. If we fail to regulate our actions and observe visible signs of stress then we risk causing long term damage.

Feedback is information coming back to us as a response to our actions, this is our chance to **learn** and **moderate actions** to gain insight.

It is essential to consider the short, medium and long term consquences of the design decicions we make.

Traditional societies recognised that the effects of external negative feedback controls are often slow to emerge. People needed explanations and warnings, such as "the sins of the fathers are visited on the children unto the seventh generation."

Think about how when we ride a bike the rider makes constant adjustments to compensate for an uneven road, or their shifting weight. Constant feedback and adjustment creates a **dynamic equilibrium** and stability in an ever changing environment.

Permaculture Principles

5 Use and Value Renewable Resources and Services

Let nature take it's course

Renewable resources are those that are **renewed and replaced by natural processes** over reasonable periods, without the need for non-renewable inputs.

In the language of business, renewable resources should be seen as our **sources of income**, while non-renewable resources can be thought of as capital assets. Spending our capital assets for day-to-day living is unsustainable in anyone's language.

Permaculture design should aim to make **best use of renewable natural resources** to manage and maintain yields, even if some use of non-renewable resources is needed in establishing systems.

The proverb, 'Let nature take its course' reminds us we can't hurry the natural cycle but must wait for the correct time to act.

Similarly, in design we should allow our designs to evolve over time and understand that nature allows time for elements to grow together to build effective systems.

Permaculture Principles

7 Design from Patterns to Details

Can't see the wood for the trees

The fist six principles tend to consider systems from the bottom-up perspective of elements, organisms, and individuals.

The second six principles tend to emphasise the top-down perspective of the patterns and relationships that tend to emerge by system self-organisation and co-evolution.

The commonality of patterns observable in nature and society allows us to not only make sense of what we see, but to use a pattern from one context and scale to design in another.

Pattern recognition is an outcome of the application of Principle 1: Observe and interact, and is the necessary precursor to the process of design.

Zones and sectors, seasons and climate types, soils and cultures are all patterns.

Recognising patterns gives us an overview to apply our own experiences and improve understanding.

Permaculture Principles

8 Integrate Rather than Segregate

Many hands make light work

By **correct placement of plants, animals, earthworks and other infrastructure** it is possible to develop a higher degree of **integration** and **self-regulation** without the need for constant human input.

For example, the scratching of poultry under forage forests can be used to harvest litter and regulate pests.

Herbaceous and woody weed species in animal pasture systems often contribute to soil improvement, biodiversity, medicinal and other special uses.

Appropriate rotationally grazed livestock can often control these weedy species without eliminating them and their values completely.

By developing an awareness of the importance of **relationships** in the design of **self-reliant systems**, two statements in permaculture literature and teaching have been central:

- Each element performs **many functions**.
- Each important function is supported by **many elements**.

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Permaculture Principles

9 Use Small and Slow Solutions

The bigger they are, the harder they fall
Slow and steady wins the race

Systems should be designed to **perform functions at the smallest scale** that is **practical** & **energy-efficient** for that function. Human scale and capacity should be the yardstick for a humane, democratic and sustainable society.

'Small is Beautiful.' Small and slow solutions mean **mistakes can be corrected** and become learning opportunities. Starting small also allows for the design to evolve and grow in proportion. **Incremental growth** is much more sustainable and allows for learning and reinvestment.

Permaculture designs must fulfill their function and return a surplus, the **reinvestment of surplus** allows for incremental growth. This is the key to succesful design. Start small, allow growth then seek to **replicate** the best examples.

The proverb 'the bigger they are, the harder they fall' is a reminder of one of the disadvantages of size and excessive growth. While the proverb 'slow and steady wins the race' is one of many that encourages **patience** while reflecting a common truth in nature and society.

Permaculture Principles

11 Use Edges and Value the Marginal

Don't think you are on the right track just because it is a well-beaten path

The icon of the sun coming up over the horizon with a river in the foreground shows us a **world composed of edges**.

Within every land based ecosystem, the living soil, which may only be a few centimetres deep, is **an edge or interface** between non-living mineral earth and the atmosphere. For all terrestrial life, including humanity, this is the most important edge of all. Only a limited number of hardy species can thrive in shallow, compacted and poorly drained soil, which has insuffiient interface. Deep, well-drained and aerated soil is like a sponge, a great interface that supports productive and healthy plant life.

Increasing the edge between field and pond **increases the productivity** of both. Alley farming and shelterbelt forestry can be seen as systems where increasing edge between field & forest has contributed to productivity.

The proverb 'don't think you are on the right track just because it is a well-beaten path' reminds us that the most common, obvious and popular is not necessarily the most signifiant or influential.

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Permaculture Principles

12 Creatively Use and Respond to Change

Vision is not seeing things as they are but as they will be

This principle has two threads: **designing** to make use of change in a **deliberate** and **cooperative** way, and **creatively responding** or **adapting** to large-scale system change which is beyond our control or inflence.

The acceleration of ecological succession is the most common expression of this principle in permaculture. For example, the use of fast growing nitrogen fixing trees to improve soil, and to provide shelter and shade for more valuable slow growing food trees, reflects an ecological succession process from pioneers to climax.

Change, in whatever form it comes is inevitable. **Change is the one constant in life**. Permaculture design is a way to successfully navigate the constantly shifting sands of time. Change can be frightening, destabalising & challenging but it is also represents **new opportunity**.

Permaculture challenges us to embrace change and to apply learning and design to create ways forward that make **best advantage of new condtions**.

For the very reason that things never stay the same, permaculture invites us to **observe & interact** to find creative ways to turn problems into solutions.

Permaculture Design Tools

Design is a process. In permaculture form always follows function.
The most important thing is that a design works, much more than what it looks like.
We can break the design process into a series of steps, and this can be seen as an open and ongoing process.

S

Survey
Good design begins with a **survey**.
Who is the client?
What are their objectives?
What are their resourses and limitations?
What are their values and long term goals?

A

Analysis
What are the components of your design?
List the functions and then list elements and systems that can help support the named functions of the design.

D

Design
How can we build relationship between each element placed in the design so that they **form a system** or have a some kind of relationship?
Does our design fulfill the goals and limitations identified in the survey?

I

Implementation
Sequence, **build infrastructure first**, create tools and train the team. Think of seasons, cash flow, availability and make your plan strategic.

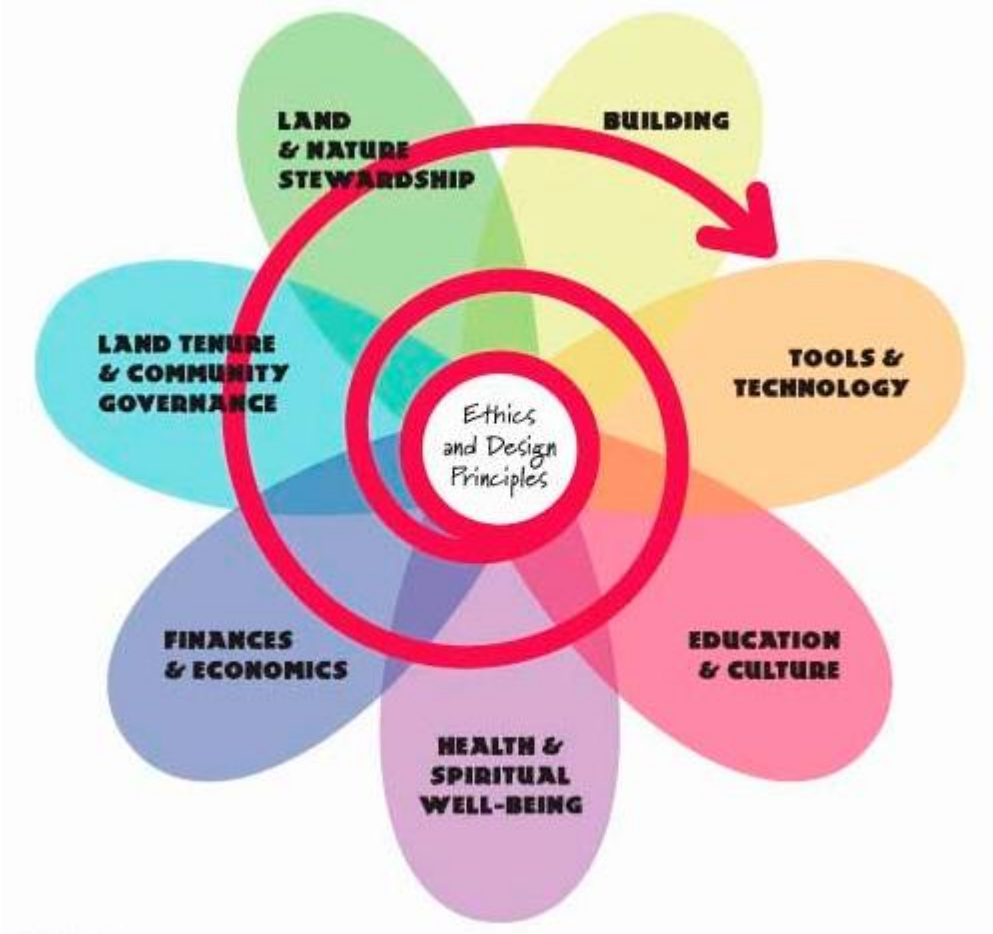
M

Maintenance
Before you implement consider how you wil mantain any new elements added to your design.
Plan a **maintenance strategy** from the outset.

ET

Evaluation and tweaks
No design is ever 100% correct, external conditions also change, permaculture is a process of **testing, feedback and adjustment.**
What is working well?
What is challenging?
What changes can we to make to improve it?

Permaculture Design Tools

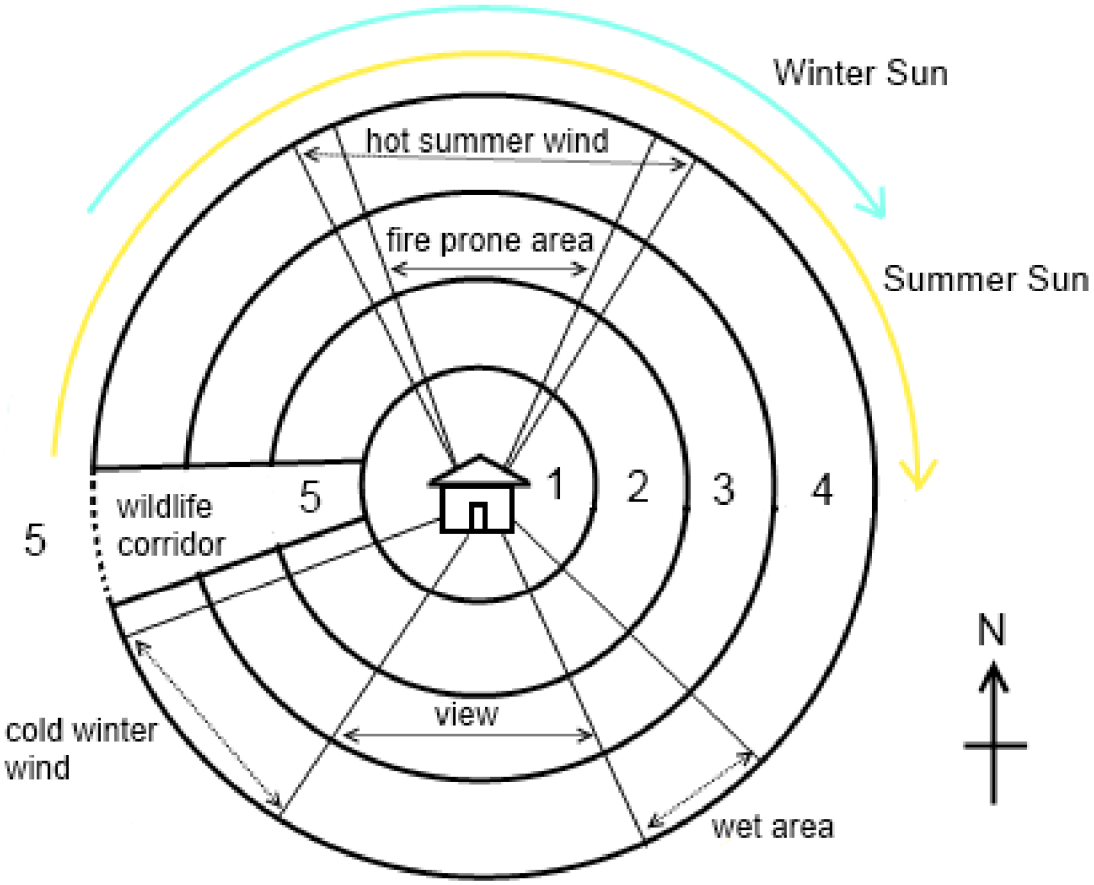


Design by increments

We can't reach where we need to go in a single step. **Begin with the self and how we make our income**. If we can better access land and manage it effectively then we have opportunity to **further invest in infrastructure**, learning more about tools and technology along the way.

Sharing what we have learned helps **build community and culture**, which in turn empowers and enables the individual. Permaculture Design is an ongoing process that **builds on successes** and **develops experience** along the way.

Permaculture Design Tools



Zones and sectors

Part of permaculture's pattern language is to see the zones and sectors that define any plot. The closer to home the easier things are to manage and the more we receive feedback. Whilst out in Zone 5's un-managed areas often new ideas and new associations form, which give us new insight and learning.

Sectors remind us there is always a windy side and a sheltered one, wetter areas and drier ones. Wildlife is as much a flow across a land-scape as water or traffic, all of these can be designed for and made the best from. Limitations can be minimised through **correct placement and planning.**

Start from the back door, make space for nature and arrange elements strategically according to their **function** and **relationship to other elements**.

Permaculture Design Tools

Input/ Output Anlanysis

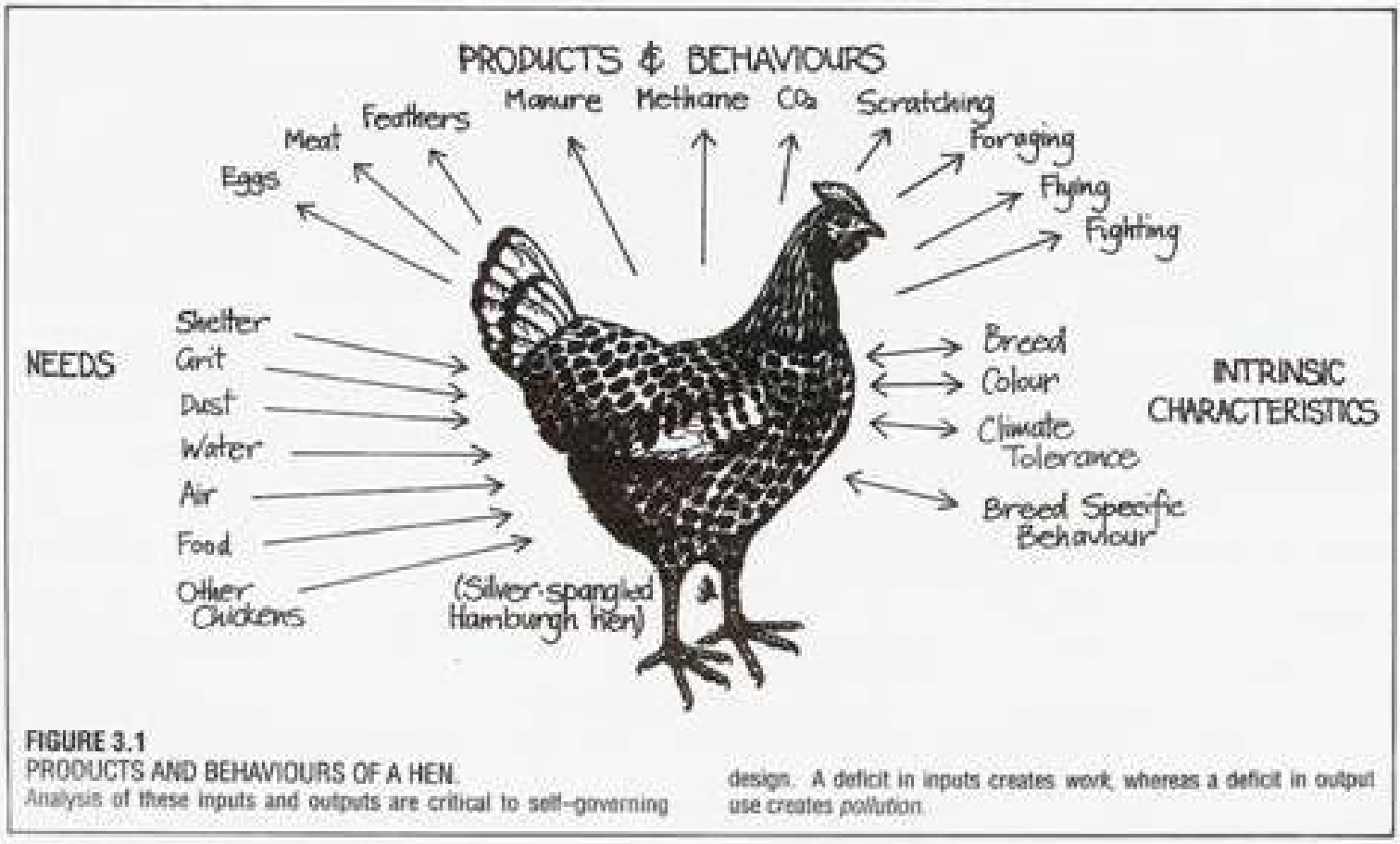


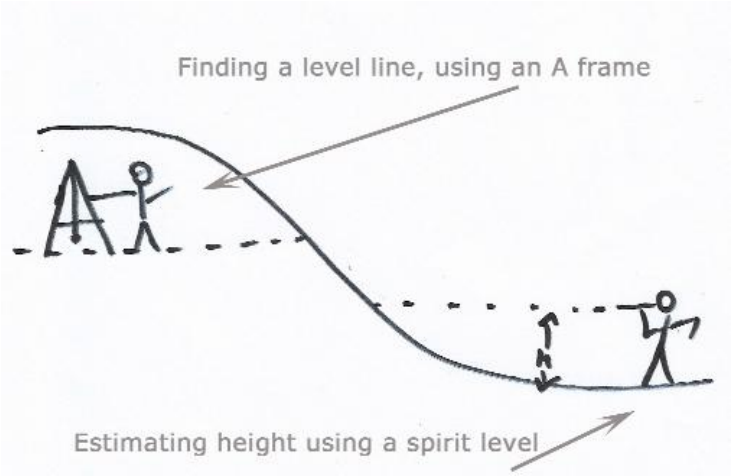
FIGURE 3.1
PRODUCTS AND BEHAVIOURS OF A HEN.
Analysis of these inputs and outputs are critical to self-governing design. A deficit in inputs creates work, whereas a deficit in output use creates pollution.

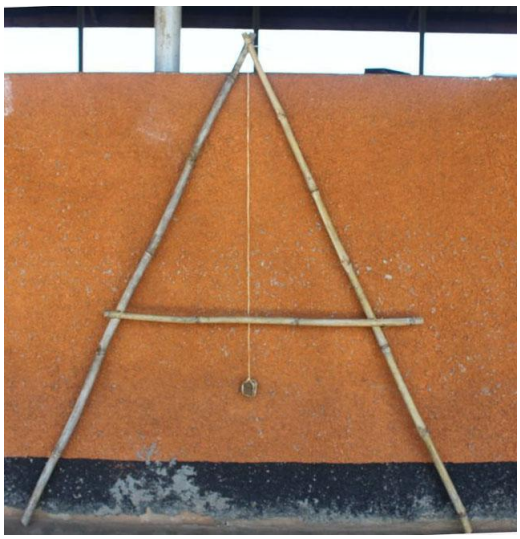
Nothing exists in isolation or performs one single task. Consider the needs, outputs, behaviours and characteristcs of each element in any system.

Good design links **each output** in such a way that it **becomes an input** somehwere else in the system. Every product can be potentially be harvested **eliminating waste**, and every behaviour if effectively managed can become a part of the overall output of the design.

Permaculture encourages the designer to see the **connections** and **relationships between elements** and how, if linked together, they might form a **system**.

Permaculture Design Tools



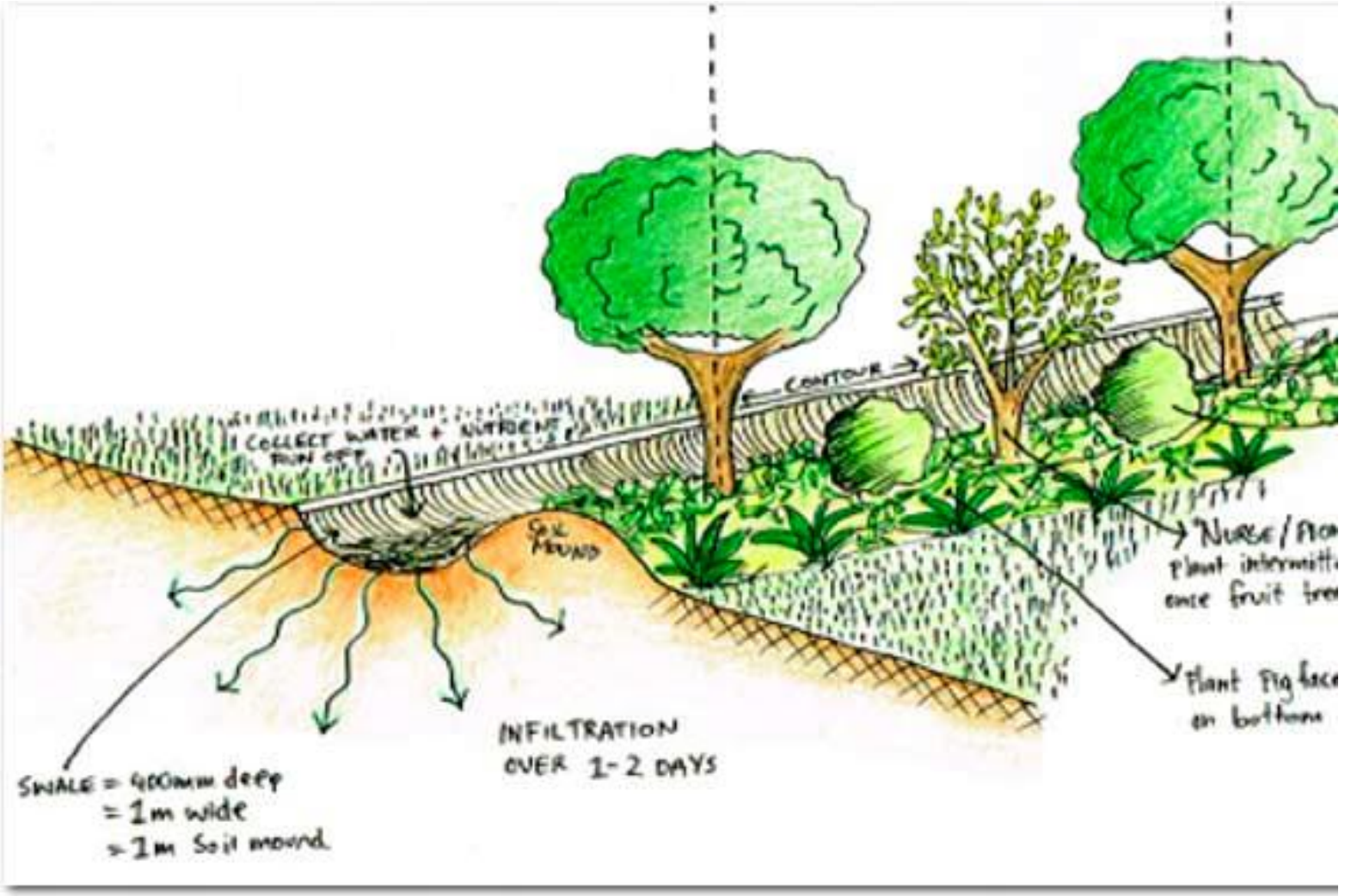


Survey

Finding a level line across land enables the construction of surface water trapping features such as **swales.**

Estimating height allows us to work out a suitable distance between swales and to undersand the steepness and shape of a piece of land.

Permaculture Design Tools

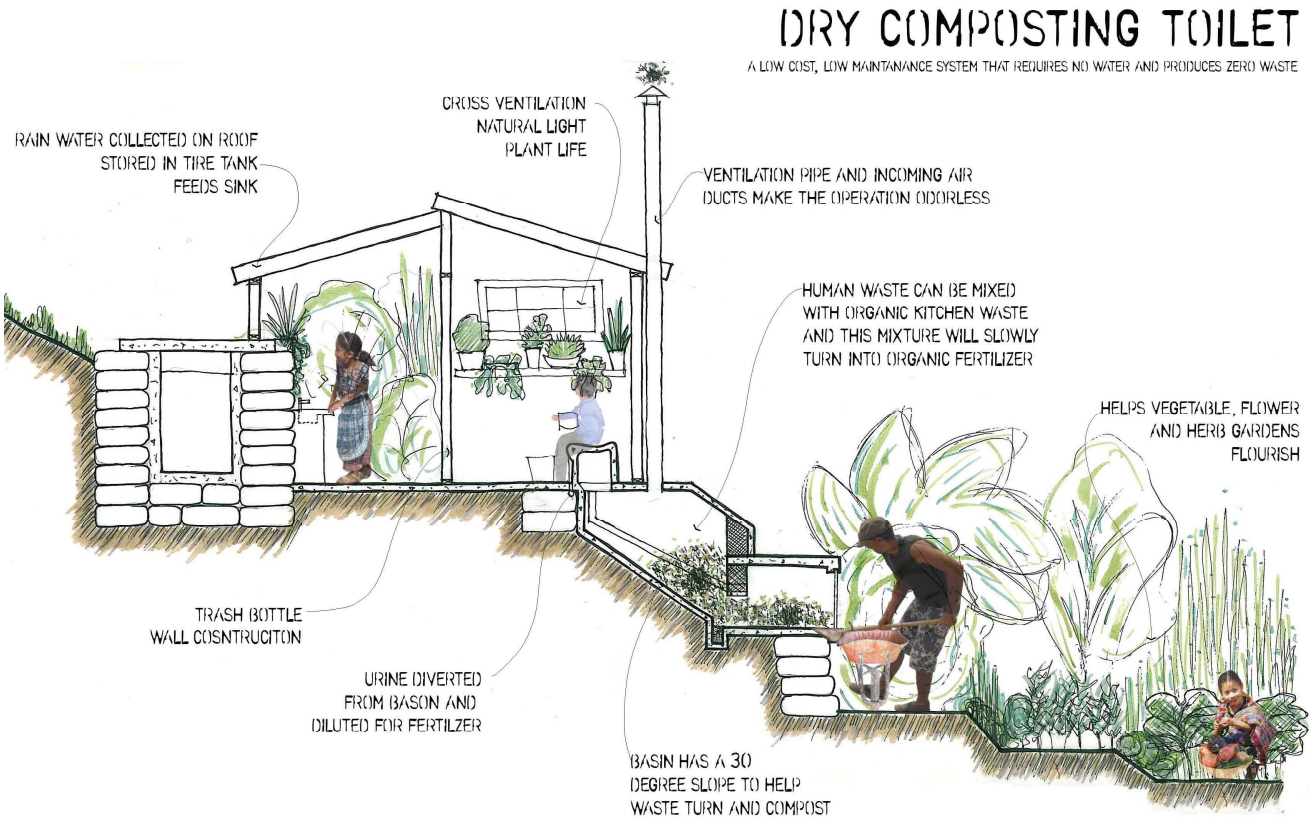


Elements Arranged to Fulfill Multiple Functions

Catching surface water runoff, preventing soil damage and increasing rain water percolation.

Nitrogen fixing trees that act as nurse plants, building soil, feeding beneficial insects and animals whilst providing shade for young higher value plants.
A managed succession over time that creates conditions suitable for a more diverse agriculture and increasing variety of yields.
A system that improves over time by trapping natural run offs and harvesting as much available energy as possible.

Permaculture Design Tools



Systems thinking

Food and nutirents, input and outputs
Veritcal flows, water and nutrients flow down hill, warm air rises and can be used to cool and ventilate a building. Nature cyles every-thing.

A carefully designed system can harvest the energy from natural flows and
convert it into useful outputs that nourish and support other parts of the
system.

Every instance is unique, every person has different priorites, tastes and skills. There is never a single or right solution, but a problem solving approach can help find the best combination to suit a specific location or circumstance.

5 Minute Lesson Plan - Effective Communication of Permaculture Principles

The Big Picture (e.g. Systems thinking...)

Objectives for the lesson (e.g. by the end of the lesson, students will know...)

*
*
*
*

Key Issues for the lesson (e.g. The main points to take away...)

*
*
*
*

Assessment for learning (e.g. How will you show that students have learned? What will the outputs be?)

Starter Activity
(Introduce the lesson)

Lesson Activity
(Main body of lesson)

Lesson Activity
(Main body of lesson)

Plenary Activity
(Summarise the lesson)