Summary of permaculture ethics, principles and design tools drawn from fieldwork and practical teaching experience

Permaculture field manual for teachers

About this manual

This handbook is the result of S39's work in Uganda –a 7 month pilot project to help refugees and host communities become self-sufficient, producing enough nutritious food for their families to eat (first priority) and have excess to sell (second priority); to conserve and regenerate the environment so that it can sustain human life for years .

Importantly our aim is to bring people together with a common purpose to reduce or avoid conflict and build strong social networks; enable people to cope with and mitigate challanges.

Permaculture is a design process, one that embraces the principles of ecology and takes a holistic and interconnected approach to design in all forms. The results are more robust, more productive and build in capacity over time. Permaculture is a design language for regenerative development.

Permaculture design generates many new approaches; such as regenerative farming, agro-ecology, agro-forestry, conservation agriculture, organic farming, sustainable livelihoods and attempts to address the deep failings in many other design approaches

The manual been designed for easy photo copying, sharing on line and by other means. I can work as both a manual for teachers or notes for students as it pulls

Eastern Uganda Permaculture Organization
Fair Share Earth Care People Care
EUPO
Nature Our Teacher
Landscape Our Textbook

thearkletontrust

Paramaethu CYMRU • WALES

This text is a paraphase from David Holmgren's original writing. Changes and adiditions reflect an evolution of how we have learned to communicate each of these 12 essential ideas and their application.

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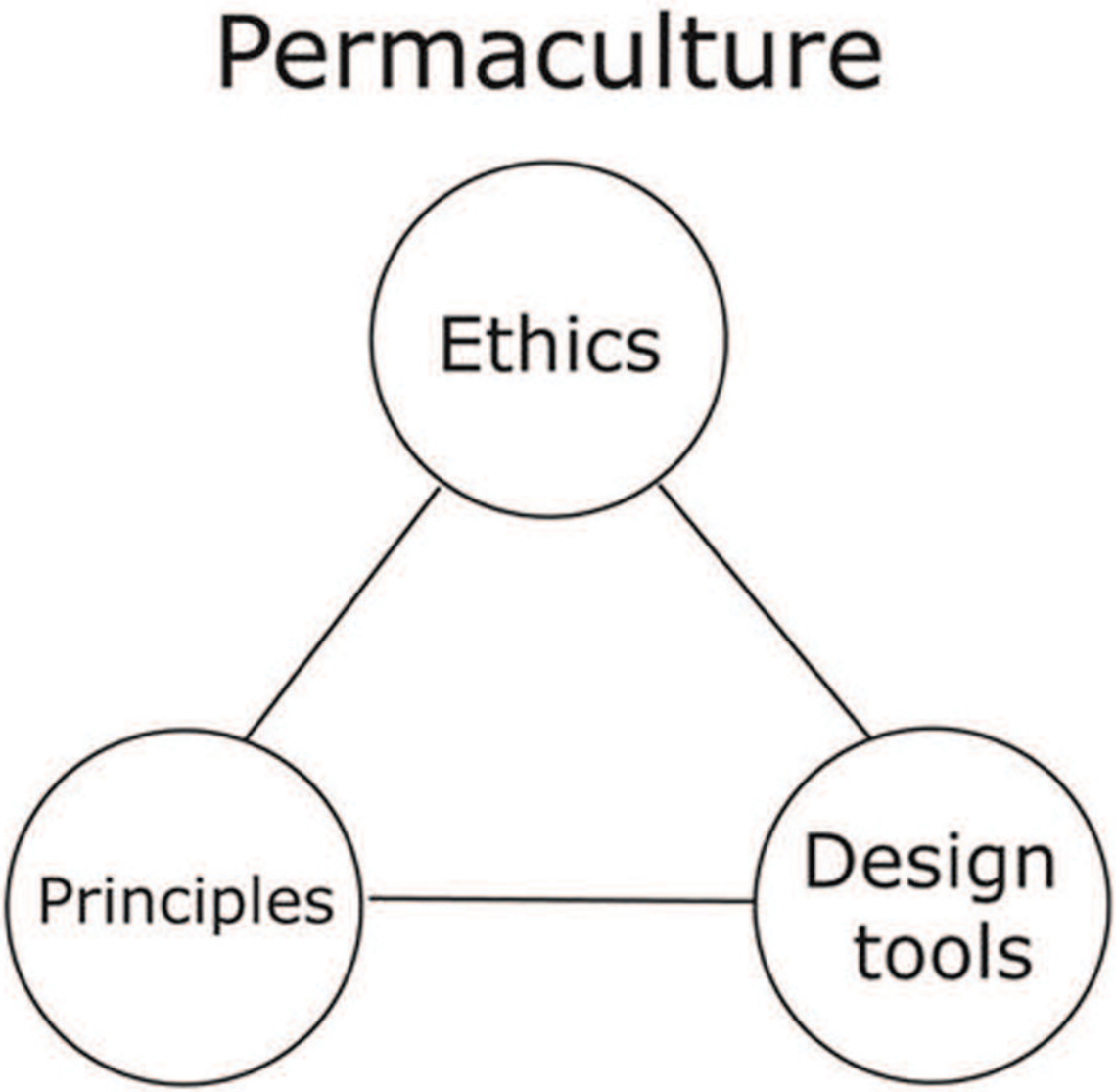
Permaculture Definition

definition

permaculture is design process

"Nature is the model for sustainability"



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.

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Permaculture Ethics

ethics

ethics and values define permaculture

"Care of the Earth, care for community whilst meeting ones own needs first"

Earth care

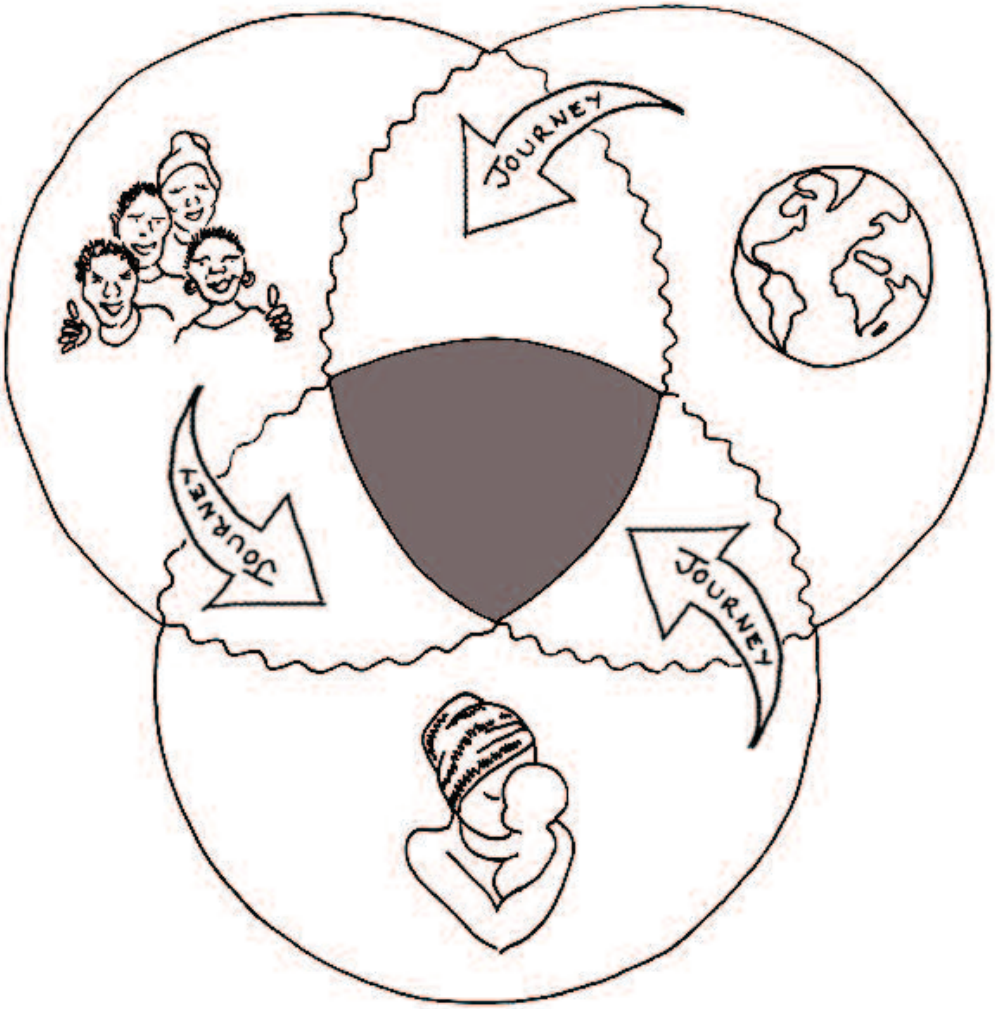
- we are part of a living planet, treat it as such

People care

- begins with ourselves and expands to include our families, neighbours & communities

Fair share

- take only what you need - reinvest the rest



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Permaculture Ethics

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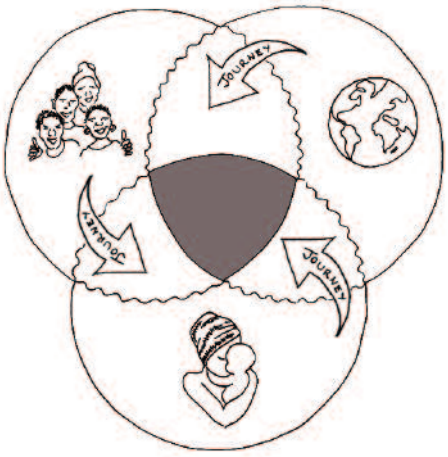

Set limits to your consumption

Greed is not good, there is such a thing as enough. So while we *can't work on an empty stomach* permaculture demands that creating new opportunities only happens when there is a surplus retained for investment. If there is no surplus then you need to redesign your enterprise and recognise that you can never be sustainable that way. It turns out what we chose to do with surplus is what defines us and also creates and future,. Returning it to community and long term environmental goals have long term benefits for all.

Care about People

Other people really matter. Recognise they are also striving to meet their needs the same as you are. Through collaboration there are many possibilities to meet each others needs with fewer inputs

Living Planet

We are part of a huge interconnected ecosystem, call planet earth. It contains minerals, plants, fungi, bacteria and a myriad of life that in some way is all connected together. Stop thinking in term of 'weeds and pests' and recognise we are all part of a huge family, in which everything plays an important part.

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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 fulfil 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.

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Permaculture Principles 2

catch and store energy

"make hay while 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 "income" 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

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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

Limits and feedback

"the sins of the father are visited unto the 7th 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 decisions 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 7th 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.

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Permaculture Principles 5

Natural resources and services

"let nature take its 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 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.

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Permaculture Principles 6

Produce no waste

"waste not want not"

The earthworm is a suitable icon for this principle because it lives by consuming plant litter (wastes), which it converts into humus that improves the soil environment for itself, for soil micro-organisms, and for the plants. Thus the earthworm, like all living things, is a part of a web where the outputs of one are the inputs for another.

The proverb 'waste not, want not' reminds us that it is easy to be wasteful when there is an abundance, but that this waste can be the cause of later hardship.

The opportunities to reduce waste, and in fact live from waste, are historically unprecedented.

In the past only the most destitute made a living from waste. Today we should acknowledge those who creatively reuse waste as the very essence of living lightly on the earth.

Opportunities often lie in the waste stream, spotting potential in those things others throw away creates huge advantage. 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 a 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.

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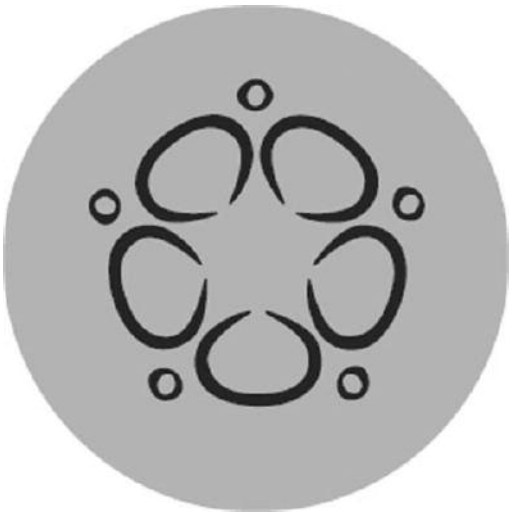
Permaculture Principles

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

small and slow solutions

"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 fulfil their function and return a surplus, the reinvestment of surplus allows for incremental growth. This is the key to successful 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.

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Permaculture Principles 10

Use and value diversity

"don't put all your eggs in one basket"

The great diversity of forms, functions and interactions in nature and humanity are the source of evolved complexity.

The role and value of diversity in nature, culture and permaculture is itself complex, dynamic, and at times apparently contradictory.

Diversity needs to be seen as a result of the balance and tension in nature between variety & possibility on the one hand, and productivity & power on the other.

It is now widely recognised that monoculture is a major cause of vulnerability to pests and diseases, and therefore of the widespread use of toxic chemicals and energy to control these.

Polyculture is one of the most important and widely recognised applications of the use of diversity to reduce vulnerability to pests, adverse seasons and market fluctuations. Polyculture also reduces reliance on market systems, and bolsters household & community self-reliance by providing a wider range of goods and services.

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Permaculture Principles 11

Use edges and value the marginal

"just because its a well beaten path doesn't mean you are on the right track"

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
Deep, well-drained and aerated soil is like a sponge, a great interface that supports productive and healthy plant life.

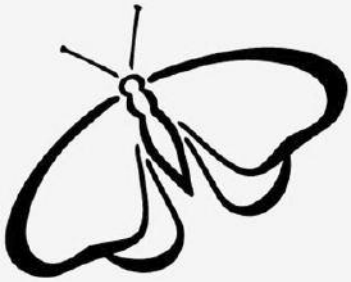
Increasing the edge between field and pond increases the productivity of both. Alley farming and shelterbelt forestry can be seen as systems where increasing edge between field & forest has contributed to productivity.

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 significant or influential.

Permaculture Principles 12

Creatively use and respond to change

"see things for what they can be not what they are "



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 influence.

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, destabilising & challenging but it is also represents new opportunity. Permaculture challenges us to embrace change and to apply learning to create ways forward that make best advantage of new conditions.

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.

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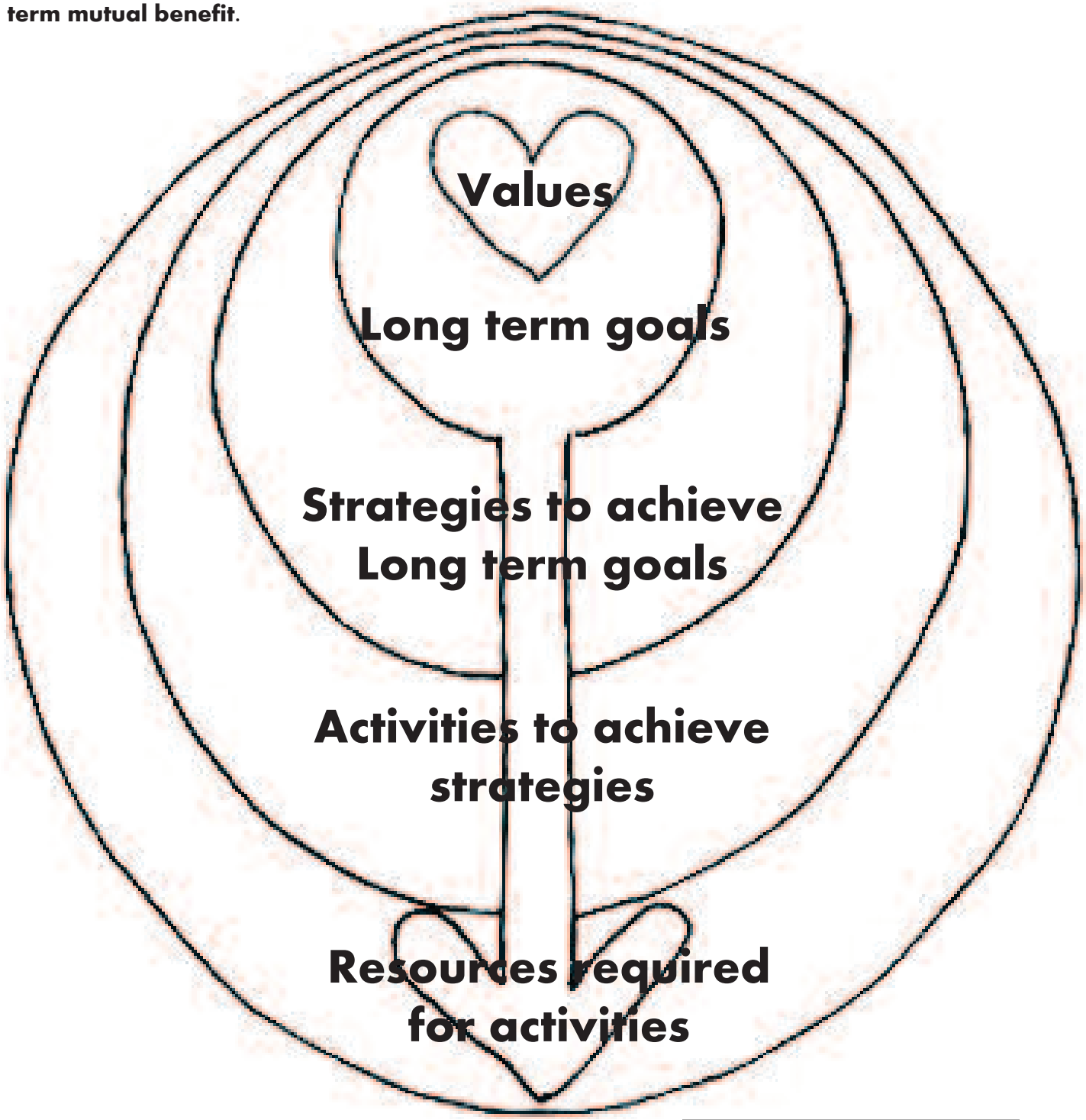
Permaculture Design Tools

consensus

permaculture design is a consensus building tool

" Once we can agree on core values, then we are half way there"

* **Permaculture's values and principles are the starting point for designing strategies to solve problems and meet people's needs.**
* **Groups can then make long term plans, based on this consensus..**
* **From there we break big tasks down into steps and begin to identify how we can achieve each step. This allows a diverse group to understand that they are all working for own long term mutual benefit.**



Permaculture Design Tools

process

Design is a process. SADIMET is a useful way to remember the key steps. In permaculture form always follows function.
The most important thing is that a design works, rather than what it looks like.
We can break the design process into a series of steps, which 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 resources 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 relationship? Does our design fulfill the goals & limitations identified in the survey?**

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

M **Maintenance: Before you implement consider how you will maintain any new elements added to your design. Plan a maintenance strategy from the outset. Design around limitation like time, seasons, water.**

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

Observation - Feedback - Modification

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Permaculture Design Tools

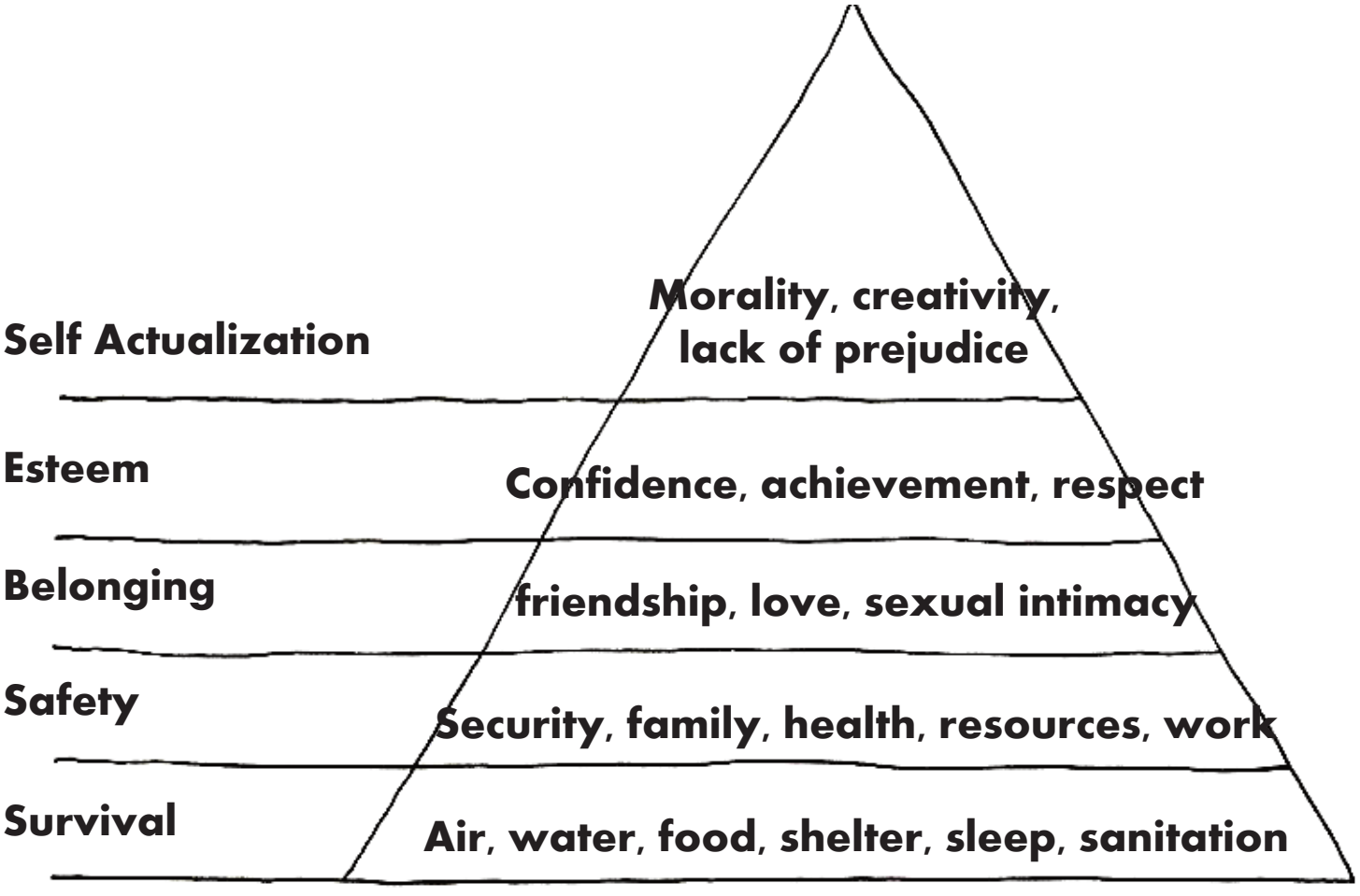
priority

permaculture design helps define priorities

"Maslows hierarchy of needs"

Self empowerment comes first

A psychologist called MASLOW came up with a hierarchy of needs which is a very useful way to consider such issues. He saw 5 distinct levels of priority: the first being about the self and our own basic survival needs. It has almost impossible to address other areas in your life if these key needs are not met first. The base layers of the pyramid reflect short term more immediate needs. The higher layers are the product of longer term planning and consistent actions.



Permaculture Design Tools

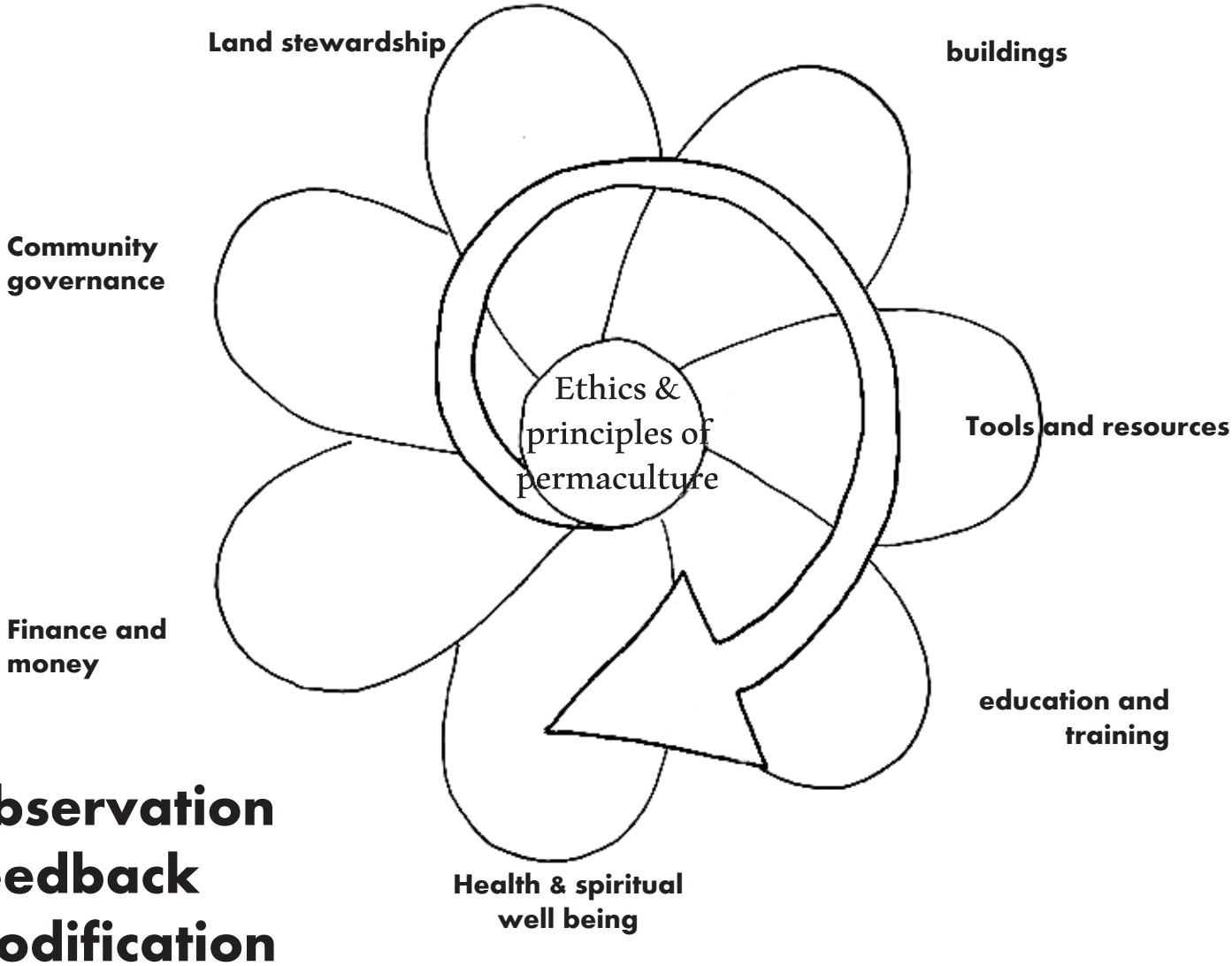
design

permaculture design evolves other time

"permaculture touches every area of our lives, building on itself it creates many benefits"

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.



Observation
Feedback
Modification

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Permaculture Design Tools

survey

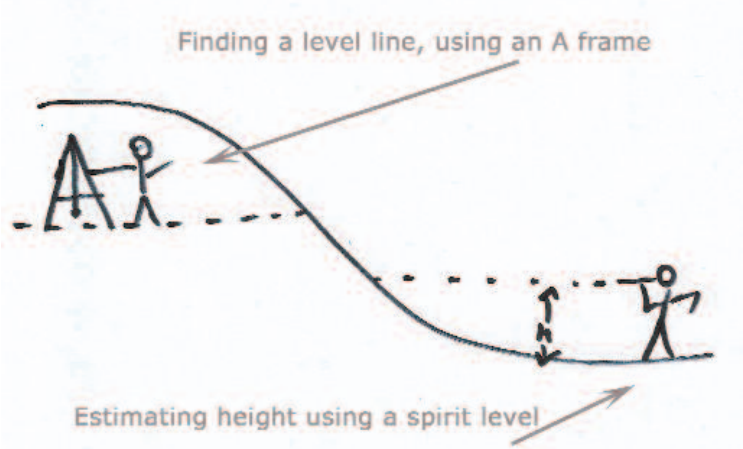
A spirit level can be used to estimate height

A frame uses gravity only to find level ground

mapping and observing landform with simple tools

"permaculture teaches to observe and experiment and to value local materials"

Swale being built using only these survey 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 understand the steepness and shape of a piece of land.

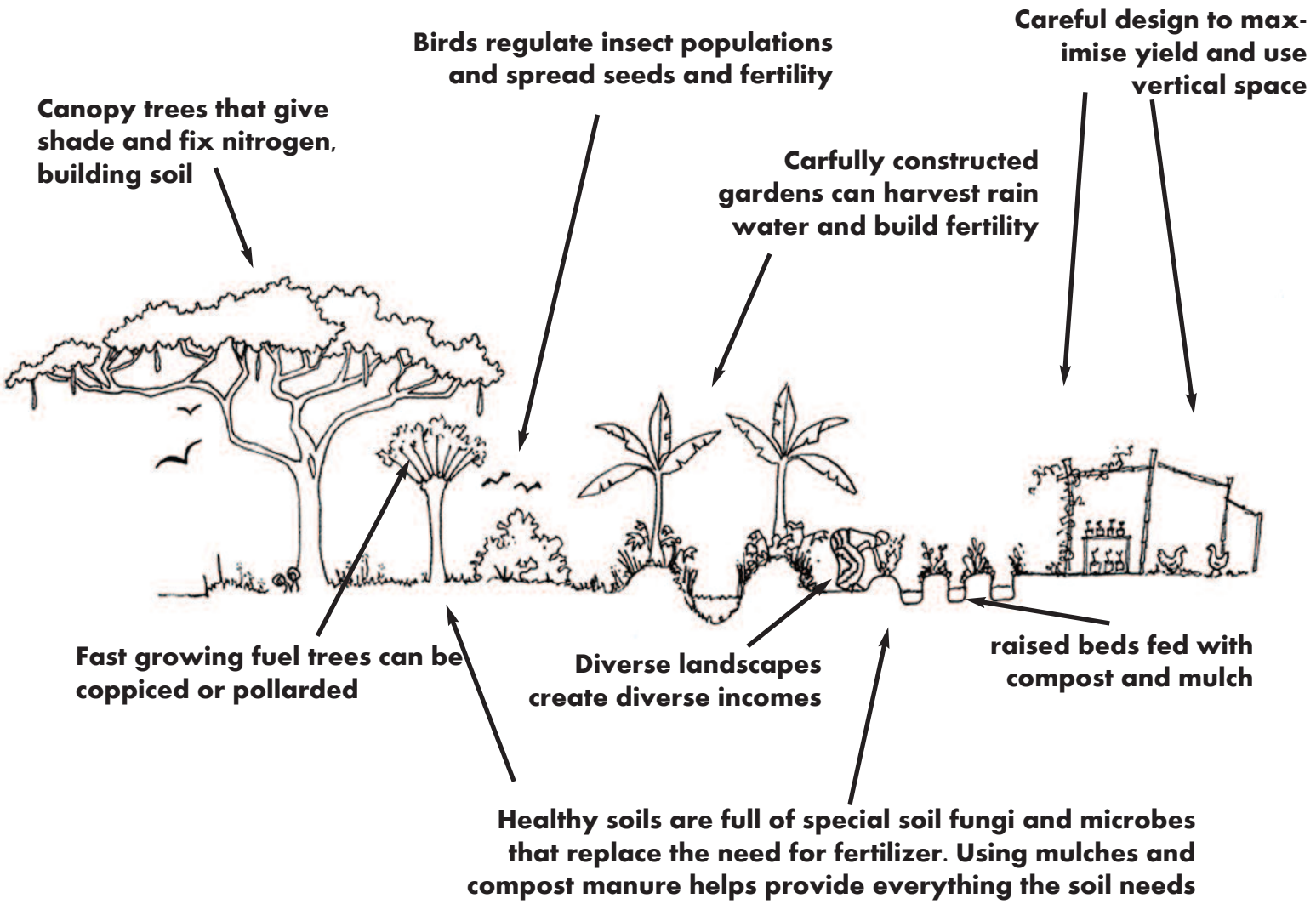
Permaculture Design Tools

analysis

permaculture design evolves other time

"permaculture teaches us everything is connected to everything else"

Plants, insects, fungi and animals live together as part of a guild or family of species



Permaculture gardens produce long term yields, build soil & fertility whilst breaking the reliance on external inputs.

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Permaculture Design Tools

analysis

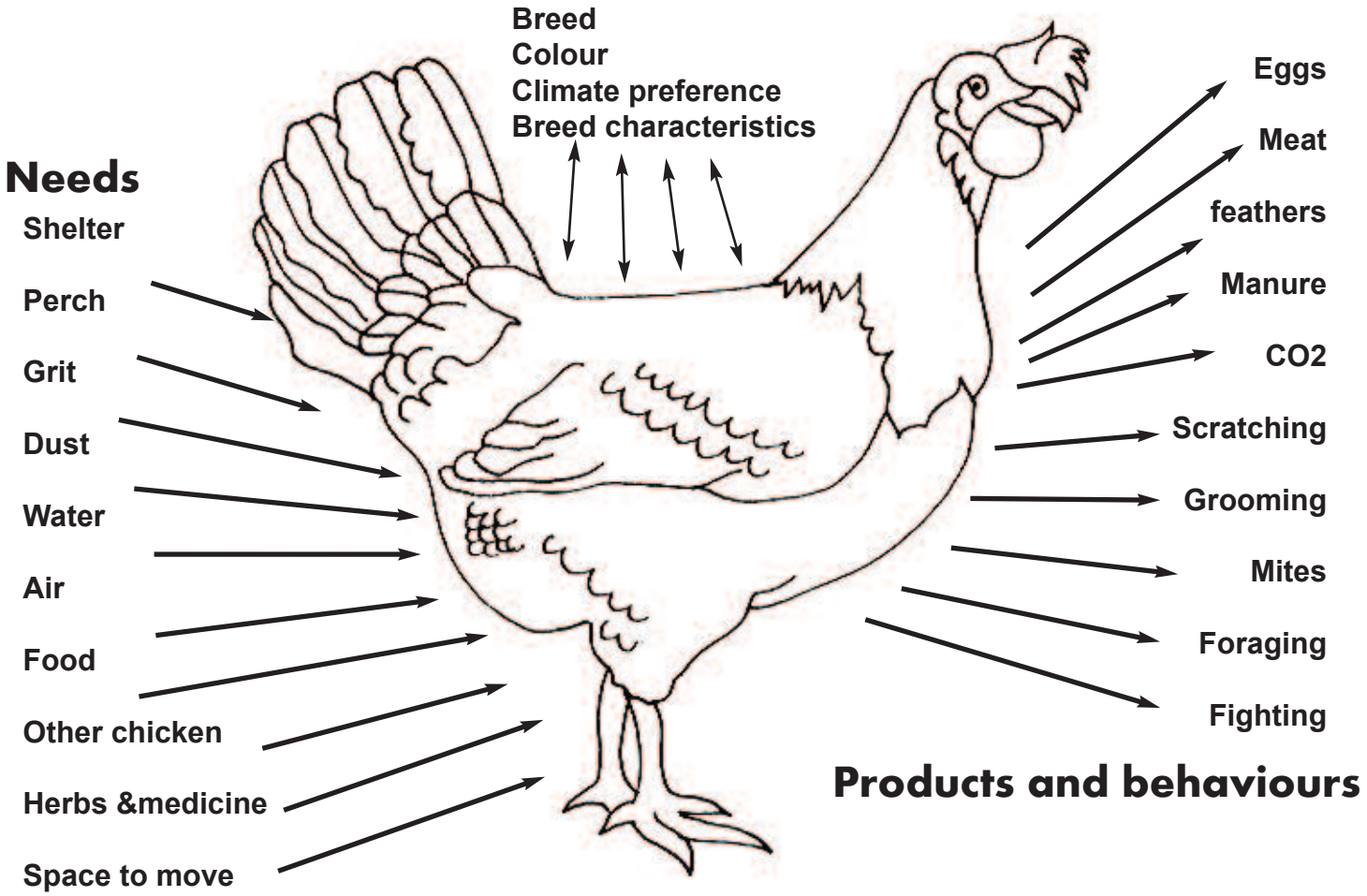
Input- output analysis, nothing exists in isolation

By spotting the connections between elements in a system we can learn how to value and how to harvest evey output

Unmet need = work. Unused output = pollutions.

Good design links **each output** in such a way that it **becomes an input** somewhere 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**.



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Permaculture Design Tools

design

permaculture invites us to see the patterns

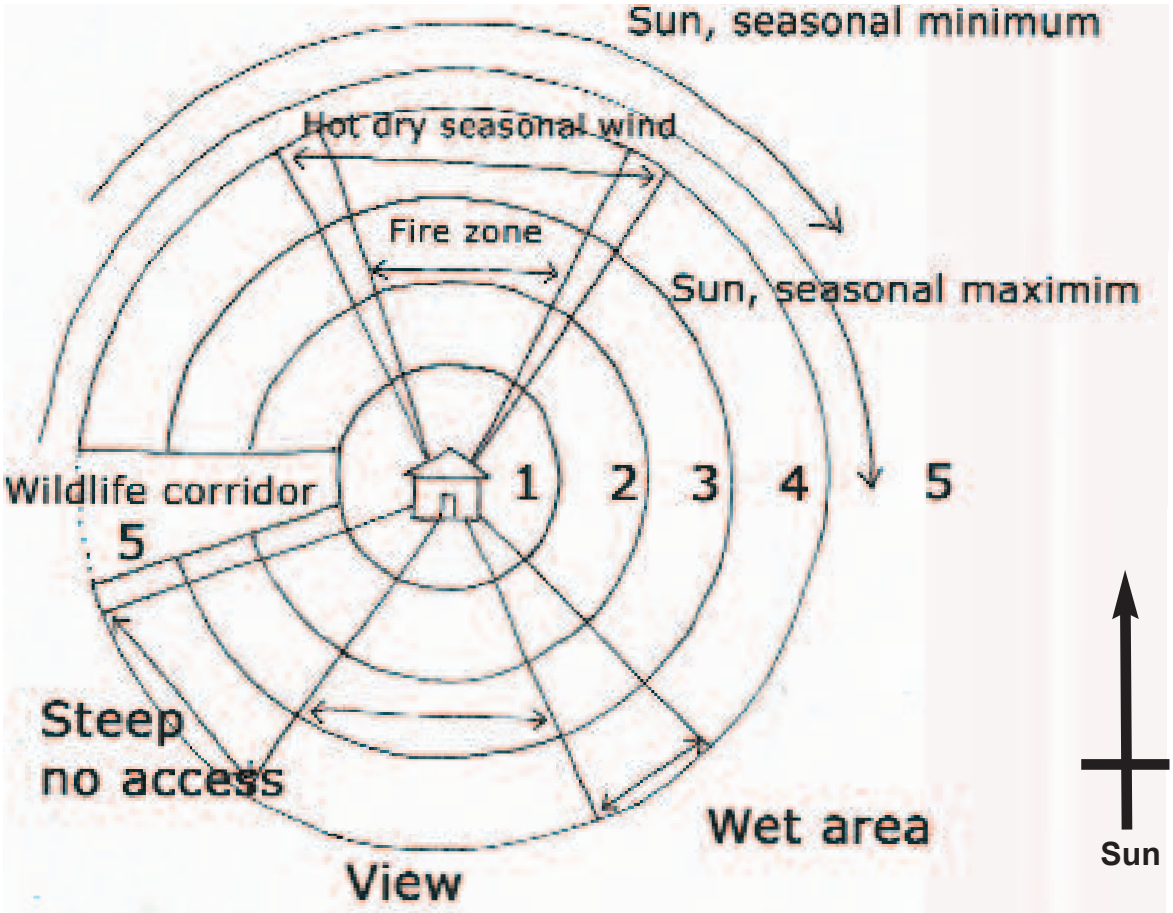
"Start from the big picture, the overview and the long term perspective"

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 unmanaged 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 landscape 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

design

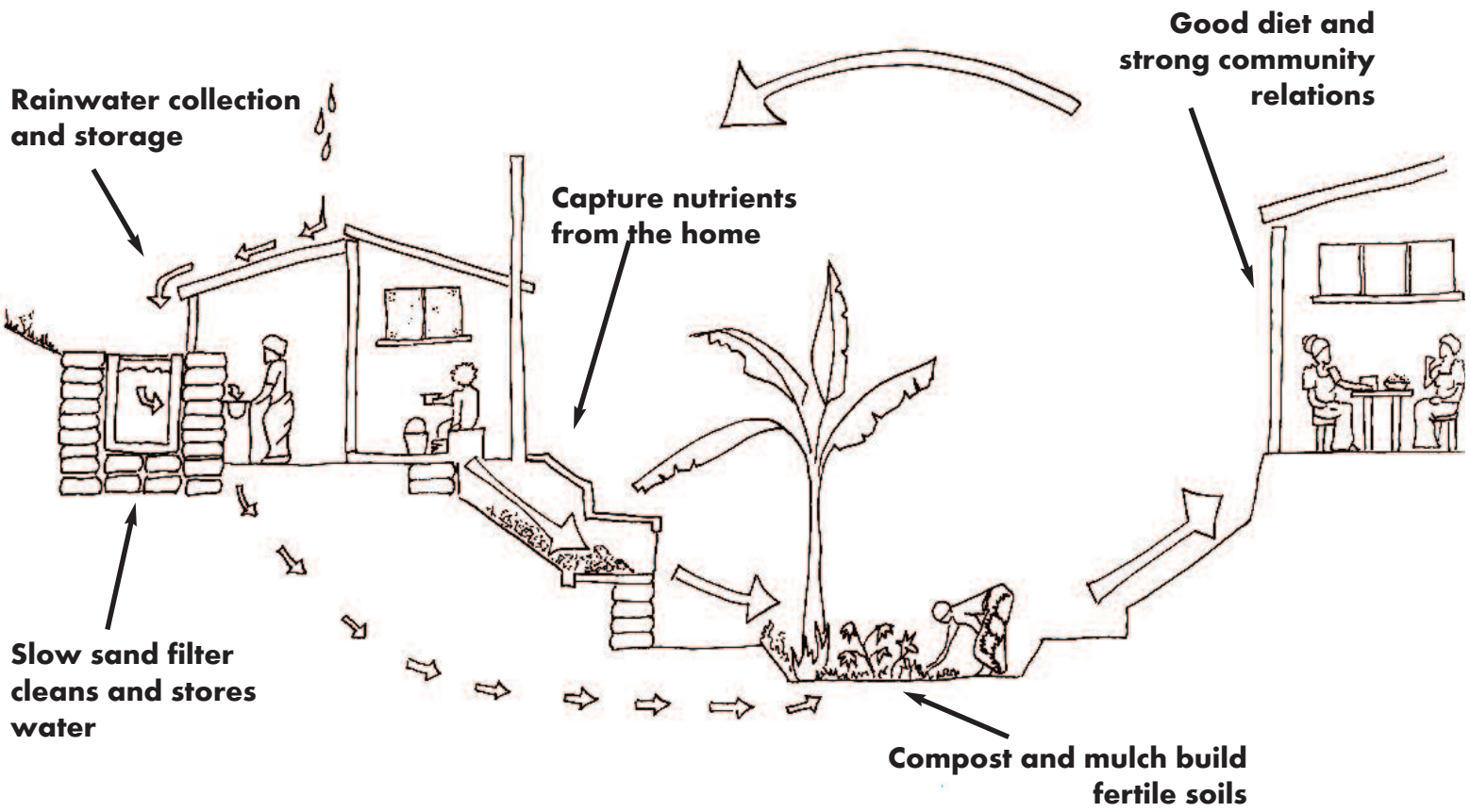
permaculture involves thinking in systems

"permaculture teaches us that everything is connected to everything else"

Systems thinking: design to link inputs and outputs

Vertical flows, water and nutrients flow down hill, warm air rises and can be used to cool and ventilate a building. Nature cycles everything.

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.



Permaculture Design Tools

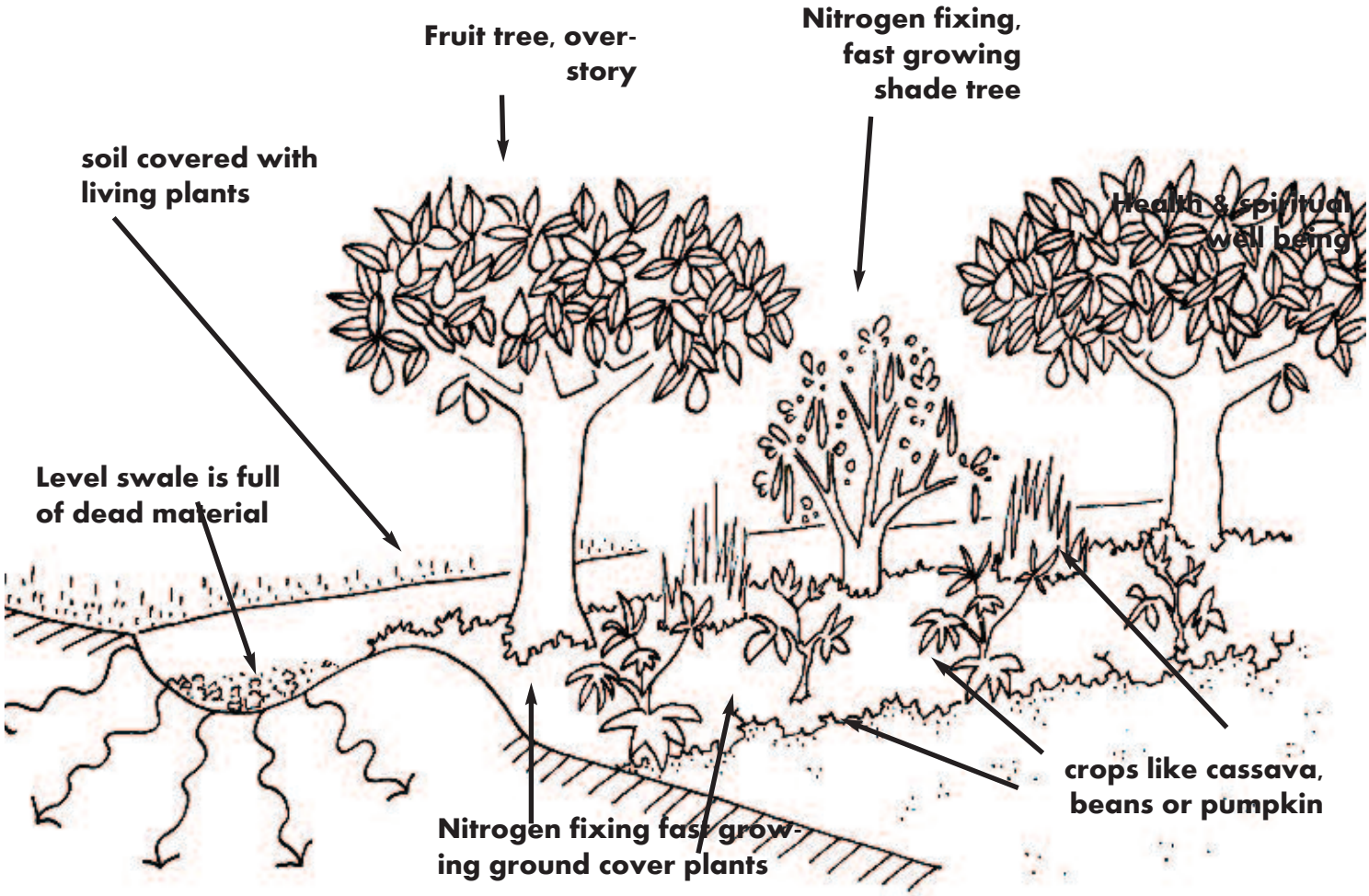
systems

Elements Arranged to Fulfill Multiple Functions

"Catching surface runoff, preventing soil damage & 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 in business

enterprise

permaculture enterprise values more than money

"Regenerative enterprise opens the door for an evolutionary approach to economics and profit"

8 forms of capital

Permaculture encourages an ethical, broader and regenerative approach to enterprise this genuinely creates new opportunitys. This broad approach values investment and profit in 8 different yet connected areas. Capital is not money, capital is what we use to create value, such as land, tools, skills, resources or the money to buy them. Modern entrepreneurs can gain significant advantage by seeing beyond money and the potentials of valuing human and environmental capital.

All forms potentially compliment in any combination

Social Capital

Contacts, friends, influence. If you have social capital you can communicate via social networks, and win support for your ideas

Financial capital

Money, bank deposits, gold, shares all included. Good business ideas attract investors. Lack on money does not have to be a barrier

Cultural capital

Those ideas and skills you learn just by growing up within a culture have a value that we often take for granted. Identify them.

Intellectual capital

Contacts, friends, influence. If you have social capital you can communicate via social networks, and win support for your ideas

Spiritual capital

Human compassion, caring, selfnessness, nurturing, plus our own inner strength all have a long term impact on ourselves. Karma if you will

Material capital

This is none living material objects that can be transformed into things of higher value. Stone, metal, timber, energy stores are examples

Living capital

Plant trees, build fertile soil, healthy animals, these are all forms of generating living capital. Permaculture design shows how to do this.

Human capital

Your experiences accumulate making your more valuable. Every project, growing season and build adds to you own human capital.

Profit and loss. Permaculture values healthy soil, vegetation and strong social connections as the real value of the system. Your farm is only really making a profit it can provide a yield whilst also accumulating and improving its soils and natural ecology. Long term instruments in the social and natural economies provide long term and stable returns.

This text is a paraphrase ideas from "8 forms and Capital" and "regenerative Enterprise" by Appleseed Permaculture http://www.appleseedpermaculture.com/8-forms-of-capital/

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)

Sector39 Permaculture Academy
www.sector39.co.uk

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