

# The Essence of Permaculture

extracts of book

**Permaculture: Principles and Pathways To Sustainability**

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## The Permaculture Design System Flower

Starting with ethics and principles focused on the critical domain of land and nature stewardship (gardening, agriculture etc) permaculture is evolving as a design system by progressive application and integration of all seven domains necessary for a sustainable culture.

## **From the Introduction.....**

### **Permaculture Principles**

In Permaculture One (1978) Bill Mollison and I outlined the theory and some initial applications of permaculture design without explicitly listing a clear set of permaculture principles. The permaculture tree<sup>1</sup> presents the concept as analogous to the germinating tree seed giving rise to interdependent root and aerial structures. The germination of the idea generates both the physical reality of holistic sustainable human support systems and the holistic conceptual framework of knowledge. In Permaculture: A Designers Manual (1985) Bill Mollison provided an encyclopaedic coverage of the scope and possibilities of permaculture design as well as an enlargement of the theory and design principles which underlie the applications. The chapters (2&3) which deal with these conceptual foundations are multifaceted and insightful but hardly provide a clear list of principles.

In Introduction To Permaculture (1991) Bill Mollison and Reny Slay present design principles in a much simpler format, attributed to American permaculture teacher John Quinney, which has since been widely used or adapted by many permaculture teachers.

### **The value and use of principles**

The idea behind permaculture principles is that generalised principles can be derived from the study of both the natural world and pre-industrial sustainable societies and that these will be universally applicable to “fast track” the post industrial development of sustainable land and resource use.

The process of providing for people’s needs in more sustainable ways, requires a cultural revolution. Inevitably such a revolution is fraught with many confusions, false leads, risks and inefficiencies. We appear to have little time to achieve this revolution. In this historical context, the idea of a simple set of guiding principles which have wide, even universal application is attractive.

Permaculture principles are brief statements or slogans which can be remembered as a checklist when considering the inevitably complex options for design and evolution of sustainable systems. These principles are seen as universal although the methods which express them will vary greatly from one place and situation to another. By still developing extension, these principles are also applicable to our personal, economic, social and political reorganisation as illustrated in the Permaculture Flower.

These principles can be divided into ethical principles<sup>2</sup> and design principles.

Permaculture ethical principles were distilled from “research of community ethics as adopted by older religious and co-operative groups”<sup>3</sup>.

Since the emergence of permaculture, ethics and especially environmental ethics have become very active fields of academic and wider study in recognition of the ethical problems which lie at the heart of the manifold crisis facing humanity at the end of the second Christian millennium. Permaculture itself has become a subject for study within the field of environmental ethics.<sup>4</sup>

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<sup>1</sup> reproduced in Introduction To Permaculture (1991)

<sup>2</sup> generally called ethics in most permaculture literature

<sup>3</sup> Mollison Permaculture: A Designers Manual page 2 Tagari1988

<sup>4</sup> Freya Mathews Monash environmental ethisist pers. comm.

## Design Principles

The scientific foundation for permaculture design principles lies generally within the modern science of ecology and more particularly within the branch of ecology called systems ecology although other intellectual disciplines, most particularly landscape geography and ethnobiology have contributed concepts which have been adapted to design principles.

Perhaps most fundamentally, permaculture design principles arise from a way of perceiving the world which is often described as “(whole) systems thinking” and “design thinking” (See Principle 1. Observe and Interact).

The Whole Earth Review and its better known Whole Earth Catalogues, edited by that doyen of the counter culture Stewart Brand did much to publicise systems and design thinking as a central tool in the cultural revolution to which permaculture is a contribution.

The very widely know and applied ideas of Edward De Bono<sup>5</sup> fall under the broad rubric of systems and design thinking.

As the academic discipline of Cybernetics<sup>6</sup>, systems thinking has been an almost esoteric and difficult to fathom subject closely associated with the emergence of computing and communication networks and a whole raft of other applications.

Despite the powerful applications of systems thinking in the modern world, it has been slow to change many of the fundamental and everyday aspects of our thinking patterns. Recently I was quizzed about my approach to teaching systems thinking in a permaculture context by an American academic nearing retirement after a career spanning labouring, mining engineering and academia. His experience in teaching systems thinking mostly as it applied to organisations, had led him to wondering whether systems thinking was an almost innate ability to which teaching, at least in academia, could contribute little. His experience was that most people seem stuck in simplistic understandings and reactive responses to complexity, unable to grasp to the broader understandings of systemic thinking which he saw both enlightening and empowering.

For me, apart from the ecological energetics of Howard Odum, the influence of systems thinking in the development of permaculture and its design principles has not come through extensive study of the literature, but more through an osmotic absorption of ideas in the “cultural ether” which strike a cord with my own experience of permaculture design. Further I believe many of the insights of systems thinking which have been difficult to grasp abstractions were truths embodied in many stories and myths of indigenous cultures.

Permaculture principles, both ethical and design, may be observed operating in modern industrial culture but their absence or contradiction does not invalidate their universal relevance to a low energy future.

Although the idea of a simple set of ethical and design principles has been central to permaculture teaching, any review of texts, teaching and web sites about Permaculture show a diversity of approaches and even confusion about ethical and design principles and their application. Permaculture inspired projects and processes frequently illustrate a difficulty in using principles in any more than illustrative and literal way.

<sup>5</sup> Best known for coining the term “lateral thinking”

<sup>6</sup> Wiener, Norbet Cybernetics: Control and Communication in the Animal and the Machine 1948. is the foundation text. Gall, John. General Systematics Harper & Row 1977 provides an easily accessible and useful guide for permaculture designers.

It could be argued that permaculture has contributed to the spread of some innovative design solutions which illustrate permaculture principles but that it has been less effective in the spread of systems and design thinking which underlie those solutions.

Inevitably any set of principles which has been found useful, needs constant questioning and further articulation to help us to recognise the creative solutions more clearly. This book represents a culmination of my own efforts to explain the thinking behind permaculture solutions over the last 25 years.

I organise the diversity of permaculture thinking under 12 design principles. My set of design principles varies significantly from those used by most other permaculture teachers. Some of this is simply a matter of emphasis and organisation, in a few cases it may indicate difference of substance which is not surprising giving the new and still emerging nature of permaculture.

Another way to describe the new emerging sustainable culture is by a set of general system characteristics which can be seen as biased in one of two directions. My characterisation of Industrial and Sustainable Cultures using this set of bipolar biases is inevitably artificial but it quickly identifies the fundamental and universal nature of the cultural shift to which permaculture is contributing. The dynamic balance between these polarised pairs of characteristics is a theme which can be found running through my explanation of permaculture principles.

In *Small and Slow Solutions* I use the image of the beam balance to explore the asymmetrical and dynamic balance between fast and slow systems in industrial and sustainable cultures.

In *Use and Respond to Change Creatively* the pulsing model of ecosystem dynamics provides another graphical way to see these balances. Those images can be useful in understanding the other polarities listed here.

### **The format of the book**

The format of the book is a chapter on the ethical principles and one on each of the 12 Design Principles more or less following the format used on our residential Permaculture Design Courses over the last 5 years.

Each design principle takes the form of a brief action statement with associated icon and proverb or saying which exemplified the principle. Each principle is explained by how it can be seen and understood through design observable in

- the wider world of nature and
- pre-industrial traditional societies use of land and natural resources.

The ways in which the principle has been transformed or ignored or apparently overturned in our high energy industrial society is discussed, especially where it is relevant to the claim of universality for these design principles.

Included in each chapter are examples of the application of the principle to help create a sustainable post-industrial culture. The applications of the principle start with gardening, landuse and built environment examples as the most concrete and widely understood but include the more vexed and complex issues of personal behaviour and social and economic organisation.

I use our own property documented in the book Hepburn Permaculture Gardens and a CD of the same name to illustrate each principle. Where possible I have made reference to published and

other sources for the great diversity of concepts and ideas which I condense under each principle.

As always when trying to use the inevitably linear logic of writing to convey holistic concepts, the division between the issues and perspectives covered under each principle is arbitrary. My choices and therefore even the principles themselves are simply tools to help us with multiple perspectives on whole systems thinking. Multiple references to the other principles are used to point out a selection of the more important cross linkages. In this sense each principle can be thought of as a door into the labyrinth of whole systems thinking.

## **From Ethics**

### **Ethical Principles of Permaculture**

Ethics are the moral principles which are used to guide action toward good and right outcomes and away from bad and wrong outcomes.

Ethics act as constraints on survival instincts and other personal and social constructs of self interest which are natural drivers of human behaviour in any society. They are culturally evolved mechanisms for more enlightened self interest, a more inclusive view of who and what constitutes “us” and a longer term understanding of good and bad outcomes. The greater the power of human civilization (due to energy availability) and the greater the concentration and scale of power within society, then the more critical ethics becomes in ensuring long term cultural and even biological survival. This ecologically functional view of ethics makes them central in the development of a post industrial sustainable culture.

Like design principles, ethical principles were not explicitly listed in early permaculture literature, and since the development of the Permaculture Design Course, ethics have generally been covered by three broad maxims or principles

- Care for the Earth
- Care for People and
- Distribute Surplus and Set Limits to Consumption and Reproduction.

These principles were distilled from research of community ethics as adopted by older religious and cooperative groups. The third and even second ethical principles can be further seen as derived from the first.

These have taught and used as simple and relatively unquestioned ethical foundations for permaculture design within the movement and the notion of a wider “global nation” of like minded people following these ethical principles. More broadly these ethical principles can be seen as being common to all indigenous tribal peoples although their conception of “people” may have been more limited than modern notions which have emerged in recent millenia (see Article x Beyond Tribal Conflict). This focus in permaculture on what we can learn from indigenous tribal culture is based on the evidence that these cultures have existed in relative balance with their environment and survived for longer than any of our more recent experiments in civilization.

This does not mean that we should ignore the teachings of the great spiritual and philosophical traditions of literate civilizations or the great thinkers of and since the European Enlightenment in the attempt to live an ethical life. It simply means that we need to consider, and attempt to understand, a broader canvas of values and concepts as guides in the transition to a sustainable culture than those delivered to us by recent cultural history.

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# PERMACULTURE DESIGN PRINCIPLES

## Principle 1. OBSERVE AND INTERACT

*Observation is interaction*

*Beauty is in the eye of the beholder*



The symbol for this principle is a person as tree emphasising ourselves in nature and transformed by it. It can also be seen as the keyhole in nature through which one sees the solution.

Permaculture Design depends on observation and thoughtful interaction within a free and harmonious relationship to nature to design our way towards a sustainable future of low energy and resource use. To maintain productivity and stability, permaculture designed systems aim to make more use of observation and thoughtful interaction and less of either repetitive manual labour or non renewably energy and high technology.

In hunter gatherer and low density agricultural societies the natural environment provided all needs with human effort mainly required for harvesting. In pre industrial societies with high population densities, agricultural productivity depended on large and continuous input of human labour<sup>7</sup>. Industrial society depends on large and continuous inputs of fossil fuel energy to provide its food and other goods and services. The total energy involved is far greater than in pre-industrial systems making modern systems far less efficient in energy terms despite the prodigious increases in productivity per unit of labour. Making much more efficient use of energy and more creative use of human labour is essential in the transition from growth in energy and population to descent towards a low energy future of fewer people and less energy use. This seemingly unlikely scenario will depend more on creative adaptation of nature's design solutions than brave new conquests by the armies of science and technology of new fields of specialised knowledge.

Creativity and design, can only arise from careful observation of the natural and human worlds in a context of continuous interaction.

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<sup>7</sup> See FH King *Farmers Of Forty Centuries* for a description of Chinese agriculture at the turn of the 20th century as an example of a sustainable low energy society dependent on maximum use of human labour.

## Principle 2. CATCH AND STORE ENERGY

*“make hay while the sun shines”*



We live in a world of unprecedented wealth from the harvesting of the enormous storages of non renewable energy and resources created by the earth over billions of years. We have used some of this wealth to increase our harvest of the earth renewable resources to a life threatening extent.

In financial language we have been living by consuming global capital in a reckless manner which would send any business bankrupt.

We need to learn how to save and reinvest most of the wealth we are currently consuming or wasting so that our children and descendants might have a reasonable life. The ethical foundation for this principle could hardly be clearer. Unfortunately conventional notions of value, capital, investment and wealth are not useful in this task.

Inappropriate concepts of wealth has led us to ignore opportunities to capture local flows of both renewable and non renewable forms of energy. Identifying and acting on these opportunities can provide the energy by which we can rebuild capital as well as provide for us with an “income” for our immediate needs.

This principle deals with the energy capture and longer term storage, ie savings and investment to build natural and human capital while the income generation (for immediate needs) is dealt with in Principle 3 *Obtain A Yield*.

## Principle 3. OBTAIN A YIELD

*“You can’t work on an empty stomach”*



The icon of the vegetable with a bite taken is a good symbol for this principle about producing something which gives us an immediate yield but could also be a reminder of the other creatures who are attempting to obtain a yield from our efforts.

The previous principle (*Catch and Store Energy*) focused our attention on the need to use existing wealth to make long term investments in natural capital . But there is no point in attempting to plant a forest for the grandchildren if we haven’t got enough to eat today.

This principle reminds us that we should design any system to provide for self reliance at all levels (including ourselves) by using captured and stored energy effectively to maintain the system and capture more energy. Flexibility and creativity in new ways to obtain a yield will be critical in the transition from growth to descent but the original permaculture vision promoted by Bill Mollison of growing gardens of food and useful plants rather useless ornamentals is still an important example of how we should apply this principle.

Without immediate and truly useful yields, whatever we design and develop will tend to wither while ones which do generate immediate yield will proliferate. Whether we attribute it to nature, market forces or human greed, *systems which most effectively obtain a yield and use it must effectively to meet the needs of survival, tend to prevail over alternative choices*<sup>8</sup> . A yield, profit or income functions as a reward which 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 amplifies the original process or signal. If we are serious about sustainable design solutions then we must be aiming for rewards which encourage success, growth and replication of those solutions.

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<sup>8</sup> This is a rephrasing of Lotka’s Maximum Power Principle. Howard Odum has suggested the Maximum Power Principle (or at least his EMERGY based version of it) should be recognised as another Energy Law.

## **Principle 4.**

# **APPLY SELF REGULATION AND ACCEPT FEEDBACK**

*“Take Personal Responsibility”*



The Gaia hypothesis of the earth as a self regulating system analogous to a living organism makes the whole earth a suitable image to represent this principle. Self maintaining and regulating systems might be said to be the “holy grail” of permaculture: an ideal which we strive for but which might never be fully achieved. Scientific evidence of the Earth’s remarkable homeostasis over hundreds of millions of years highlights the earth as the archetypical self regulating whole system which both nurtures the continuity, and stimulated the evolution of its constituent lifeforms and subsystems.

This principle deals with self regulatory aspect of self reliant design which limit or discourage inappropriate designs or behaviour rather than relying on larger scale external controls. While positive feedback can be thought of as an accelerator to push the system towards freely available energy, negative feedback is the brake which prevents to system falling into holes of scarcity and instability from over or misuse of energy.

In traditional societies it was recognised that external negative feedback effects are often slow to emerge and people needed explanations and warnings such as those about “the sins of the fathers being visited onto the seventh generation” or “laws of karma which operate in a world of reincarnated souls”.

In modern society, we have come to take for granted an enormous degree of dependence on large scale, often remote systems for provision of our needs while expecting a huge degree of freedom in what we do without external control. In a sense our whole society is like a teenager who wants to “have”, without consequences.

Much of the ecologically dysfunctional aspects of our systems result from this denial of the need for self regulation and feedback systems which control inappropriate behaviour by simply delivering the consequences of that behaviour back to us. John Lennon’s song Instant Karma suggests that we will reap what we sow much faster than we think. The speed of change and increasing connectivity of globalisation may be the realisation of this vision.

## **Principle 5.**

# **USE AND VALUE RENEWABLE RESOURCES AND SERVICES**

*"Nature knows best"*



Renewable resources providing direct yields are those which are renewed and replaced by natural processes over reasonable periods of time, without the need for major non renewable inputs.

Renewable Services (or passive functions) are those we gain from plants, animals and living soil and water without them being consumed. For example when we use a tree for wood we are using a renewable resource, but when we use for a tree for shade and shelter we gain benefits from the living tree which is non consuming and requires no harvesting energy. This simple understanding is both obvious and yet powerful in redesigning human systems where many simple functions have become dependent on non renewable and unsustainable resource use.

There could hardly be a more important example from history of how people have prospered by making non consuming use of nature's services than our domestication and use of the horse for transport, soil cultivation and general power plant for a myriad of uses. Intimate relationships to domestic animals such as the horse also provide an empathetic context for the extension of human ethical concerns to include nature.

Permaculture design should aim is make best use of renewable natural resources for management and maintenance of yield even if some use of non renewable resources are needed for system establishment. Further it should make best use of non consuming natural services to minimise our consumptive demands on resources and emphasis the harmonious possibilities of human nature interaction.

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.

Restoring the balance between renewable and non renewable resource use in society will require that these abstract concepts become embedded in our understanding if we are to have a more holistic view of the diverse issues which confront us in using natural resources. What is so often forgotten is that these new ways were the norm not so long ago. The joke about the environmentally aware person using a solar clothes dryer (washing line) is funny because it works on the very recent nature of much of this take over of functions by technology and fossil fuels.

## Principle 6. PRODUCE NO WASTE

*“Waste not - want not”*



The earthworm is a suitable icon for this principle because it lives by consuming the plant litter (wastes) which it converts into humus which improves the soil environment for both itself, soil micro-organisms and the plants.

This principle brings together traditional values of frugality and care for material assets, the mainstream concern about pollution and the more radical perspective which sees wastes as resources and opportunities.

Bill Mollison defines a pollutant as “an output of any system component that is not being used productively by any other component of the system.”<sup>9</sup> The definition encourages us to look for ways to minimise pollution and waste through designing systems to make use of all outputs. In response to the question about plagues of snails in gardens dominated by perennials, Mollison was in the habit of replying that there was not an excess of snails but a deficiency of ducks.

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<sup>9</sup> Permaculture: A Designer's Manual

## Principle 7. DESIGN FROM PATTERNS TO DETAILS

*"Don't reinvent the wheel"*

*"See the forest before the trees"*



The first 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 which tend to emerge by system self organisation and co-evolution. These principles can help us better design communities of plants, animals and people for self reliance and energy efficiency.

The spider on its web with its concentric and radial design is a suitable icon for this principle because it is evocative of permaculture zone and sector site planning, the best known and perhaps most widely applied aspect of permaculture design. The design pattern of the web is clear but the details always vary.

Modernity has tended to scramble any systemic common sense or intuition which can order the jumble of design possibilities and options which confront us in all fields. The proverb about not being able to see the wood (forest) for all the trees reminds us that the details tend to distract our awareness of the nature of the system. This problem of focus on detail complexity leads to designs of white elephants which are large and impressive but don't work or juggernauts which consume all our energy and resources while always threatening to run out of control. Complex systems that work, tend to evolve from simple ones which work, so finding the appropriate pattern for that design is more important than understanding all the details of the elements in the system. Pattern recognition discussed in *Observe and Interact* is the necessary precursor to the process of design.

## Principle 8. INTEGRATE RATHER THAN SEGREGATE

*“Together We Achieve More”*



In every aspect of nature from the internal workings of organisms to whole ecosystems, we find the connections between things are as important as the things themselves. Thus “The purpose of a functional and self regulating design is to place elements in such a way that each serves the needs and accepts the products of other elements”<sup>10</sup>

The icon of this principle can be seen as a top down view of a circle of people/elements forming an integrated system. The apparently empty hole represents the abstract whole system which both arises from the organisation of the elements but also gives them form and character.

In permaculture literature and teaching two statements have been central in developing an awareness of the importance of relationships in design of self reliant systems.

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

The linkages and relationships between elements of an integrated system can vary greatly. Some may be predatory or competitive while others are co-operative or even symbiotic. All these types of relationships can be beneficial in building a strong integrated system or community but in permaculture, there is a strong emphasis on building mutually beneficial and symbiotic relationships based on the beliefs that;

- our cultural disposition to see and believe in predation and competition and discount co-operative and symbiotic relationships in nature and culture.
- co-operative and symbiotic relationships will be more adaptive in a future of declining energy.

Permaculture can be seen as part of a long tradition of concepts in the modern world emphasising mutualistic and symbiotic relationships over competitive and predatory ones. Declining energy availability will shift the general perception of these concepts from romantic idealism to practical necessity.

<sup>10</sup> Mollison B. Permaculture - A Designers' Manual 1988

## Principle 9. USE SMALL AND SLOW SOLUTIONS

*“Small is beautiful, slow is sane”*

*“slow and steady wins the race”*



The spiral designed house of the snail is small enough to be carried on its back and yet capable of incremental growth. With its lubricated foot the snail easily and deliberately traverses any terrain. Despite it being the bane of gardeners the snail is an appropriate icon for this principle about small scale and slow speed.

Systems should be designed to perform functions at the smallest scale which is practical and energy efficient for that function. Speed of movement of materials, people (and other living things) between systems should be minimised. By reducing speed, total movement is reduced increasing energy available for system self reliance and autonomy.

Human scale and capacity should be the yardstick for a humane, democratic and sustainable society. Whenever we do anything of a self reliant nature from growing food, to fixing a broken appliance to maintaining our health we are making very powerful and effective use of this principle. Whenever we purchase from small and local business or contribute to local community and environmental issues we are also applying this principle.

## Principle 10. USE AND VALUE DIVERSITY

*“Don’t put all your eggs in one basket”*

*“The key to intelligent tinkering is to save all the pieces”*  
Aldo Leopold



The long beak and the capacity to hover of the spinebill and humming bird are perfect for sipping nectar from long narrow flowers. This remarkable co-evolutionary adaptation symbolises the specialisation of form and function in nature.

It is the great diversity of forms, functions and interactions in nature and humanity which are the source for evolved systemic 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 towards, variety and possibility on the one hand and productivity and power on the other hand.

There is now widespread recognition that monoculture, (the growing of agricultural and forestry crops in large stands of a single variety of a single species), is a major cause of vulnerability to pests and diseases and therefore the widespread use of toxic chemicals and energy to control these. Poly culture (the cultivation of many plant and/or animal species and varieties within an integrated system) in contrast to monoculture, is one of the most important and widely recognised applications of the use of diversity, but is by no means the only one.

Diversity between cultivated systems to reflect the unique nature of site, situation and cultural context and diversity of structures, both living and built are important aspects of this principle as is the diversity within species and populations including human communities.

## Principle 11. USE EDGES AND VALUE THE MARGINAL

*"The action is at the edge"*



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

In the eastern spiritual traditions and martial arts the peripheral vision is a critical sense which connects us to the world in ways quite different to focused vision. This principle reminds us to maintain awareness of and make use of edges and margins at all scales in all systems. Whatever is the object of our attention we need to remember that it is at the EDGE of any thing, system or medium that the most interesting events take place and that design which sees edge as opportunity rather than problem is more likely to be successful and adaptable. In the process we discard the negative connotations associated with the word marginal to see the value in elements which only peripherally contribute to a function or system.

## Principle 12. USE AND RESPOND TO CHANGE CREATIVELY

*“Everything evolves, is succeeded but comes around (again)”*



The butterfly which is the transformation of a caterpillar is a suitable icon for the idea of adaptive change which is uplifting rather than threatening.

The acceleration of ecological succession within cultivated systems is the most common expression of this principle in permaculture literature and practise. These concepts have also been applied to understanding how organisational and social change can be creatively encouraged. As well as using a broader range of ecological models for how we might make use of succession I now see this in the wider context about our use and response to change.

This principle is about both how we design to make use of change in a deliberate and co-operative way and creatively respond or adapt to larger scale system change which is beyond our control or influence. In Permaculture One we stated that although stability was an important aspect of permaculture, evolutionary change was essential. Permaculture is about permanence and durability of natural living systems and human culture, but this durability paradoxically depends in large measure on flexibility and change.

The idea that within the greatest stability lie the seeds of change is a theme which comes to us from many stories and traditions. Science has shown us that the apparently solid and permanent is, at the cellular and atomic level, a seething mass of energy and change, similar to in the way described in various spiritual traditions.

While it is important to integrate this understanding of impermanence and continuous change into our daily consciousness, the apparent illusion of stability, permanence and sustainability is resolved by recognising the scale dependent nature of change discussed in Principle 7 Design From Patterns To Details. For any particular system, the small scale and fast short lived changes of the elements, actually contribute to higher order system stability. The fact that we live and design in a historical context of turnover and change in systems at multiple larger scales is generating a new illusion of endless change with no possibility of stability or sustainability. A contextual and systemic sense of the dynamic balance between stability and change contributes to design which is evolutionary rather than random.

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