Permaculture Principles and related lists for ecological designers and Earth activists: a literary chronology

compiled by Heather Jo Flores, for students in the yearlong free course at www.freepermaculture.com

Rachel Carson, *Silent Spring* (1962)

The Environmental Ethic:
1. Live in harmony with nature;
2. Preserve and learn from the natural places of the world;
3. Minimize the impact of man-made chemicals on natural systems;
4.Consider the implications of all human actions on the global web of life.

Charles Birch and John Cobb, *The Liberation of Life: From the Cell to the Community* (1984)

Six Principles of Natural Systems
1. Nothing in nature grows forever. There is a constant cycle of decay and rebirth.
2. Continuation of life depends on the maintenance of the global biogeochemical cycles of essential elements, in particular carbon, oxygen, nitrogen, sulphur, and phosphorus.
3. The probability of extinction of populations or a species is greatest when the density is very high or very low. Both crowding and too few Individuals of a species may reach thresholds of extinction.
4. The chance that a species has to survive and reproduce is dependent primarily upon one or two key factors in the complex web of relations of the organism to its environment.
5. Our ability to change the face of the earth increases at a faster rate than our ability to foresee the consequence of change.

6. Living organisms are not only means but ends. In addition to their instrumental value to humans and other living organisms, they have an intrinsic worth.

Bill Mollison, *Permaculture: a Designer's Manual* (1985)

The Prime Directive of Permaculture: the only ethical decision is to take responsibility for our own existence and that of our children's.

Principle of Cooperation: cooperation, not competition, is the very basis of future survival and of existing life systems.

The Ethical Basis of Permaculture:

- CARE OF THE EARTH: Provision for all life systems to continue and increase.
- CARE OF PEOPLE: Provision for people to access those resources necessary to their existence.
- SETTING OUR OWN LIMITS TO POPULATION AND CONSUMPTION: By governing our own needs, we can set resources aside to further the above principles.

Rules of Use of Natural Resources:

- Reduce waste, hence pollution;
- Thoroughly replace lost minerals;
- Do a careful energy accounting; and
- Make a biosocial impact assessment for long term effects on society, and act to buffer or eliminate any negative impacts.

Life Intervention Principle: In chaos lies unparalleled opportunity for imposing creative order.

Law of Return: Whatever we take, we must return, or Nature demands a return for every gift received, or The user must pay.

Directive of Return: Every object must responsibly provide for its replacement. Society must, as a conditions of use, replace an equal or greater resource than that used.

A Policy of Responsibility (to relinquish power):
The role of beneficial authority is to return function and responsibility to life and to people; if successful, no further authority is needed. The role of successful design is to create a self-managed system.

Categories of Resources:

- Those which increase by modest use.
- Those unaffected by use.
- Those which disappear or degrade if not used.
- Those reduced by use.
- Those which pollute or destroy other resources if used.

Policy of Resource Management:
A responsible human society bans the use of resources which permanently reduce yields of sustainable resources, e.g. pollutants, persistent poisons, radioactives, large areas of concrete and highways, sewers from city to sea.

Principle of Disorder:
Order and harmony produce energy for other uses. Disorder consumes energy to no useful end. Neatness, tidiness, uniformity, and straightness signify an energy-maintained disorder in natural systems.

Law of Entropy (Asimov): The total energy of the universe is constant and the total entropy is increasing.

The Basic Law of Thermodynamics (Watt): Energy can be transferred from one form to another, but it cannot disappear, or be destroyed, or created. No energy conversion system is ever completely efficient.

Principle of Cyclic Opportunity: Every cyclic event increases the opportunity for yield. To increase cycling is to increase yield. Cycles in nature are diversion routes away from entropic ends-life itself cycles nutrients-giving opportunities for yield, and thus opportunities for species to occupy time niches.

Types of Niches:

- Niche in space, or "territory" (nest and forage sites).
- Niche in time (cycles of opportunity).
- Niche in space-time (schedules)

Principle of Stress and Harmony: Stress may be defined as either prevention of natural function, or of forced function; and (conversely) harmony as the permission of chosen and natural functions and the supply of essential needs.

Principle of Stability: It is not the number of diverse things in a design that leads to stability, it is the number of beneficial connections between these components.

Set of Ethics on Natural Systems:

- Implacable and uncompromising opposition to further disturbance of any remaining natural forests;
- Vigorous rehabilitation of degraded and damaged natural systems to a stable state;
- Establishment of plant systems for our own use on the least amount of land we can use for our existence; and
- Establishment of plant and animal refuges for rare or threatened species.

Information as a Resource: Information is the critical potential resource. It becomes a resource only when obtained and acted upon.

Practical Design Considerations:

- The systems we construct should last as long as possible, and take least maintenance.
- These systems, fuelled -by the sun, should produce not only their own needs, but the needs of the people creating or controlling them. Thus, they are sustainable, as they sustain both themselves and those who construct them.
- We can use energy to construct these systems, providing that in their lifetime, they store or conserve more energy than we use to construct them or to maintain them.

Definition of System Yield:
System yield is the sum total of surplus energy produced by, stored, conserved, reused, or converted by the design. Energy is in surplus once the system itself has available all its needs for growth, reproduction, and maintenance.

The Role of Life in Yield:
Living things, including people, are the only effective intervening systems to capture resources on this planet, and to produce a yield. Thus, it is the sum and capacity of life forms which decide total system yield and surplus.

Limits to Yield:
Yield is not a fixed sum in any design system. It is the measure of the comprehension, understanding, and ability of the designers and managers of that design.

Undistributed Surplus is Pollution:
Any system or organism can accept only that quantity of a resource which can be used productively. Any resource input beyond that point throws the system or organism into disorder; oversupply of a resource is a form of chronic pollution.

Bill Mollison and Remy Slay, *Introduction to Permaculture* (1991)

Principles of Permaculture

- Work with nature, rather than against the natural elements, forces, pressures, processes, agencies, and evolutions, so that we assist rather than impede natural developments.
- The problem is the solution; everything works both ways. It is only how we see things that makes them advantageous or not (if the wind blows cold, let us use both its strength and its coolness to advantage).
- Make the least change for the greatest possible effect.
- Everything gardens, or has an effect on its environment.
- The Yield of a System is Theoretically Unlimited: the only limit is the
- knowledge, information, imagination and creativity of the designer.
- Relative Location: Elements in a system are viewed, not in isolation, but for the multitude of functional interconnections that they can have with the other elements of the design to enhance harmony.
- Each Element Performs Many Functions: By stacking functions, the designer has the forethought against the failure of one or more elements.
- Each Function is Supported by Many Elements: Maximizing beneficial connections between elements creates stability.
- Energy Efficient Planning: Through thoughtful design, we can make the most from the least. (zone planning, sector planning, slope)
- Use Biological Resources: By including a plant or animal in our design, we can increase our opportunities to save energy and increase yield.
- Energy Cycling: Each cyclical opportunity in the system increases the opportunity for yield.

- Small-Scale Intensive Systems: It's all about scale. Smaller systems are easier to respond to.
- Accelerating Succession & Evolution: Natural ecosystems develop and change over time. By observing these systems, we can design for effective restoration and productivity.
- Diversity: Functional relationships between elements creates stability and design opportunities.

Robyn Francis, *Permaculture Design Course Handbook* (1991)

1. Everything works both ways – see the duality in things; positive & negative
2. Everything works in many ways - diversity of functions, yields, relationships
3. See solutions not problems – look for opportunities / re-adjust relationships
4. To co-operate and not compete – this applies to natural and human systems
and relationships between different elements
5. To make things pay - i.e. everything contributes to something else - "there's no
such thing as a free lunch"
6. To work where it counts - minimum input for maximum benefit
7. To use everything to its highest capacity
8. To bring food production back to the cities
9. To help make people self-reliant - individuals & communities
10. To minimise maintenance and energy input while maximising yield

Rosemary Morrow *Earth User's Guide to Permaculture* (1993)

Attitudinal Principles

- Work with Nature, Not Against It

- Value Edges and Marginal and Small
- See Solutions Inherent in Problems
- Produce No Waste
- Value People and their Skills and Work
- Respect for all Life
- Use Public Transport and Renewable Fuels
- Calculate Food Miles
- Reduce Your Ecological Footprint

Design Principles

- Preserve, Regenerate, and Extend all Natural and Traditional Permanent Landscapes
- Water: Conserve and Increase all Sources and Supplies of Water, and Maintain and Ensure Water Purity
- Energy: Catch and Store Energy by All Non-polluting and Renewable Means
- Biodiversity: Preserve and Increase Biodiversity of all Types

Strategic Principles

- Focus on Long-term Sustainability
- Cooperate, don't compete
- Design from Patterns to Details
- Start Small and Learn From Change
- Make the Least Change For the Largest Result
- Make a Priority of Renewable Resources and Services
- Bring Food Production Back to the Cities

Sim Van Der Rym and Stuart Cowen, *Ecological Design* (1997)

- Solutions grow from place
- Ecological Accounting informs design
- Design with Nature
- Everyone is a Designer
- Make Nature Visible

Toby Hemenway, *Gaia's Garden*, (2000)

Core Principles for Ecological Design

1. Observe. Use protracted and thoughtful observation rather than prolonged and thoughtless action. Observe the site and its elements in all seasons. Design for specific sites, clients, and cultures.
2. Connect. Use relative location, that is, place the elements of your design in ways that create useful relationships and time-saving connections among all parts. The number of connections among elements creates a healthy, diverse ecosystem, not the number of elements.
3. Catch and store energy and materials. Identify, collect, and hold useful flows. Every cycle is an opportunity for yield, every gradient (in slope, charge, temperature, and the like) can produce energy. Reinvesting resources builds capacity to capture yet more resources.
4. Each element performs multiple functions. Choose and place each element in a design to perform as many functions as possible. Beneficial connections between diverse components create a stable whole. Stack elements in both space and time.
5. Each function is supported by multiple elements. Use multiple methods to achieve important functions and to create synergies. Redundancy protects when one or more elements fail.
6. Make the least change for the greatest effect. Understand the system you are working with well enough to find its "leverage points" and intervene there, where the least work accomplishes the most change.
7. Use small-scale, intensive systems. Start at your doorstep with the smallest systems that will do the job and build on your successes.
8. Optimize edge. The edge—the intersection of two environments—is the most diverse place in a system and is where energy and materials accumulate or are translated. Increase or decrease edge as appropriate.
9. Collaborate with succession. Living systems usually advance from immaturity to maturity, and if we accept this trend and align our

designs with it instead of fighting it, we save work and energy. Mature ecosystems are more diverse and productive than young ones.
10. Use biological and renewable resources. Renewable resources (usually living beings and their products) reproduce and build up over time, store energy, assist yield, and interact with other elements. Favor these over nonrenewable resources.

Principles Based on Attitudes
11. Turn problems into solutions. Constraints can inspire creative design, and most problems usually carry not just the seeds of their own solution within them but also the inspiration for simultaneously solving other problems.
12. Get a yield. Design for both immediate and long-term returns from your efforts: "You can't work on an empty stomach." Set up positive feedback loops to build the system and repay your investment.
13. The biggest limit to abundance is creativity. The designer's imagination and skill usually limit productivity and diversity before any physical limits are reached.
14. Mistakes are tools for learning. Evaluate your trials. Making mistakes is a sign you're trying to do things better. There is usually little penalty for mistakes if you learn from them.

David Holmgren, *Permaculture Principles and Pathways Beyond Sustainability* (2002)
1. Observe and Interact: "Beauty is in the eye of the beholder"
2. Catch and Store Energy: "Make hay while the sun shines"
3. Obtain a Yield: "You can't work on an empty stomach"
4. Apply Self-Regulation and Accept Feedback: "The sins of the fathers are visited on the children unto the seventh generation"5. Use and Value Renewable Resources and Services: "Let nature take its course"
6. Produce No Waste: "A stitch in time, saves nine"
7. Design from Patterns to Details: "Can't see the wood for the trees"

8. Integrate Rather Than Segregate: “Many hands make light work”
9. Use Small and Slow Solutions: “The bigger they are, the harder they fall,” “Slow and steady wins the race”
10. Use and Value Diversity: “Don’t put all your eggs in one basket”
11. Use Edges and Value the Marginal: “Don’t think you are on the right track, just because it is a well-beaten path”
12. Creatively Use and Respond to Change: “Vision is not seeing things as they are, but as they will be”

Heather Jo Flores, *Food Not Lawns: How to Turn Your Yard into a Garden and Your Neighborhood into a Community* (2006)

- Look Deep
- Emphasize Diversity on All Scales
- Recognize and Respond to Natural Patterns
- Be Specific
- Put Everyone to Work
- Prohibit Waste
- Use It, Move It or Lose It
- Replace Consumption with Creativity
- Let Autonomy Reign
- Keep Your Chin Up
- Cyclic Considerations: waste, water, soil, seeds, cosmos, society, wilderness, self, and chaos.

Starhawk, *Common Sense Permaculture Principles* (2011)

- Everything is connected.
- Nature Moves in Circles.
- Energy is abundant but not unlimited,
- Do more with less.
- Resilience is true security.
- Build from the ground up.
- Take responsibility: feed what you want to grow.

- Get some! Obtain a yield.
- Creativity is an unlimited resource.

Jessi Bloom and Dave Boehnlein, *Practical Permaculture* (2015)

Ethics:
Earth Care
People Care
Careful process
Transitional ethic

Principles:
- anticipate limiting factors
- develop a holistic context
- design systems with closed loops
- make use of by-products
- avoid shifting the burden to the intervener
- maximize positive emergent properties
- locate elements for functional interconnection
- choose elements that have multiple functions
- design for resilience
- obtain a yield
- look for small-scale, intensive solutions
- mimic nature and use biological resources
- strive for diversity
- solve problems creatively
- make sure an element's use is in harmony with its nature
- manage edges
- catch and recycle energy