

## What is Permaculture?

The every day behavior of human beings is at the core of environmental problems surrounding the degradation of Earth's resources and habitat pollution.<sup>8,9</sup> Originally conceptualized as a vision of permanent (sustainable) agriculture, permaculture provides a wholistic framework of knowledge for achieving a much needed collective sustainability, or a *permanent culture*.<sup>2</sup> Grounded in the observation and mimicry of natural systems, permaculture can be considered an applied *ethical philosophy*, *systems theory*, and *design toolkit* in one.

*Permaculture is a revolution disguised as organic gardening*  
- Graham Bell, *Permaculture - A Beginner's Guide*

### History

In the mid 1970s, Australian biologist Bill Morrison and student David Holmgren developed the permaculture concept as an academic response to the modern environmental crisis of population expansion and energy decent.<sup>3</sup> In 1978 their book, *Permaculture One*, spurred a grass roots movement of followers throughout Australia. The 1988 publication of Morrison's essential *Permaculture: A Designer's Manual* and beginning of trainings through certification based Permaculture Design Courses further expanded the permaculture network worldwide.<sup>2</sup>

### An Ethical Philosophy

When one chooses a life of voluntary simplicity, his or her individual levels of consumption are considered with integrity, to align with the planet's resource capacity.<sup>1</sup> Permaculturists practice this integrity by applying three core values, or moral principles, to all practices.<sup>3,5</sup>

**Earth Care:** Of primary importance is the understanding that *all* life systems have the right to live and multiply. By working with rather than against nature, we can rebuild and protect earth's forests, water, living soil, and overall biodiversity.

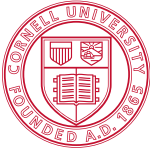
**People Care:** Access to adequate provisions such as food, water, and shelter are fundamental needs in which all humans are entitled. Self care, self reliance and a sense of personal responsibility to community are necessary to achieve contribution to the wider good.

**Fair Share:** Reproduction and consumption must be limited and earth's resources

### An Ecological Framework

The application of permaculture ethical values and design principles extends beyond the landscape, encompassing the following local to global domains<sup>2</sup>

- Built Environment
- Tools & Technology
- Culture & Education
- Health & Spiritual Wellbeing
- Finance & Economics
- Land Tenure & Community Governance
- Land Nature & Stewardship



## A Design Toolkit

In 2002, Holmgren published *Permaculture Principles & Pathways Beyond Sustainability*, outlining 12 design principles approachable to a wide range of audiences.

**1. Observe & Interact:**

*Beauty is in the eye of the beholder*

**3. Obtain a Yield:**

*You can't work on an empty stomach*

**4. Self-Regulate & Accept Feedback:**

*The sins of the father are visited on the children unto the seventh generation*

**5. Use & Value Renewable Resources & Services:**

*Let nature take its course*

**6. Produce No Waste:**

*Waste not, want not*

**7. Design from Patterns to Details:**

*Can't see the Woods for the Trees*

**9. Use Small & Slow Solutions:**

*Slow & steady wins the race*

**10. Use & Value Diversity:**

*Don't put all your eggs in one basket*

**11. Use Edges & Value the Marginal**

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



**2. Catch & Store Energy**

*Make hay while the sun shines*

*Hockerton Housing: Nottinghamshire, England*

A five-house terrace building utilizes passive-solar & energy-efficient design techniques such as south facing windows, solar water heating, photovoltaic panels & wind turbines as well as a heat-retaining earth-backed north wall & thick concrete material construction.<sup>7</sup>



**8. Integrate Rather than Segregate**

*Many hands make light work*

*Lammas: Pembrokeshire, Wales*

A 76 acre ecovillage community in which residents retain personal freedom by residing in nine separate housing units yet keep individual ecological footprints low by communal sharing of tools, labor, and transport.<sup>4</sup>



**12. Use & Respond to Change**

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

*Landmatters: Devon, England*

The use of temporary, self-constructed & modular dwellings in a seven-household community allows for adaptation of small-scale lifestyles changes such as a growing family to large-scale shifts in climate change.<sup>6</sup>

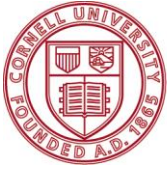
## References

1. Elgin, D (1993). *Voluntary Simplicity*. William Morrow: New York. "Simplicity and Consumption" 147-152
2. Holmgren, D. (2002). *Permaculture principles and pathways beyond sustainability*. Petersfield: Permanent Publications.
3. Holmgren, D. & Mollison, B. C. (1982). *Permaculture one: A perennial agriculture for human settlements*. Stanley, Tasmania: Tagari
4. Macnamara, L. (2009) *Permaculture reports for Lammas Low Impact Initiatives Ltd*. Designed Visions
5. Mollison, B. C. (1988). *Permaculture: A designer's manual*. Tyalgum, Australia: Tagari Publications.
6. Pickerill, J. (2010). *Permaculture in practice: Low impact development in Britain*. Leicester: University of Leicester, Dept. of Geography
7. Pickerill, J., & Maxey, L. (2009). *Low impact development: The future in our hands*. Leicester: University of Leicester, Dept. of Geography
8. Stern, P.C. (2000). Psychology and the science of human-environment interactions. *American Psychologist*, 55(5), 523-526
9. Winter, D.D.N. & Kroger, S.M. (2004). The psychology of environmental problems. Mahwah NJ: Lawrence Erlbaum Associates. Chapter 1: What on Earth are we doing? Pp. 1-26

**Author:** Jen Mackall, jim55@cornell.edu & Steve Gabriel, sfg@cornell.edu, 04.11.2012

**Building Strong and Vibrant New York Communities**

Cornell Cooperative Extension provides equal program and employment opportunities



## Forest Gardening

### What is a Forest Garden?

A forest garden is a low-maintenance approach to home gardening, an edible ecosystem consciously designed to mimic the structure, diversity, and self-maintaining features of a natural forest. A forest garden can also be thought of as a perennial polyculture, a mutualistic community of plants that re-grow each year.<sup>2</sup>

### History & Origins

Indigenous people in tropical climates have been creating forest-mimicking gardens for centuries; however, the term ‘forest garden’ was pioneered by Robert Hart, author of *Forest Gardens: Cultivating an Edible Landscape*. After applying similar principles to temperate climates in Britain in 1981, Hart’s garden in Shropshire, England became the oldest known temperate climate forest garden in the world.<sup>1</sup>

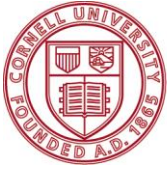
### A Seven Layer Structure

Mature forest ecosystems consist of a complex network of relationships between each individual plant, animal, insect, and organism. In temperate forest gardens, a seven-layer structure can be used to visualize how each plant may fit into the overall ecosystem.<sup>1</sup>

1. *Canopy*: Tall fruit & nut trees (sugar maple, walnut, white oak)
2. *Understory*: Dwarf fruit trees & large shrubs (apple, plum, cherry)
3. *Shrub*: Currants & berries (Blackberry, raspberry, hazelnut)
4. *Herbaceous*: Beets & herbs (onions, arugula, garlic, dill, spinach)
5. *Underground*: Root vegetables (carrot, radish, potato)
6. *Ground Cover*: Soil surface & creepers (strawberries, violets)
7. *Vertical*: Vines & climbers (grape, hops, wisteria)
- (8. *Fungi*: Mushrooms. Optional, but provide additional medicinal value)



The Forest Garden by Robert Hart, *Forest Gardening: Cultivating an Edible Landscape*



### Creating your own Garden of Eden

Akin to many pre-industrial cultures, your garden can be considered a source of wealth for you and your family;<sup>3</sup> however, a lot of time and effort must be invested initially. The selection, timing, and placement of each plant are crucial for a successful high-yield, self-maintaining forest garden. The following outline provides a brief overview of the design process.<sup>2</sup>

1. Conceptualize your goals: Decide what yield types would you like to harvest as well as the yield-to-labor balance that will best suit your needs. Gather information on climate-specific plants for each of the seven forest garden layers. A free online database of temperate climate plants can be found at [www.pfaf.org](http://www.pfaf.org)
2. Assess & analyze the site: Gather as much information as possible on existing site conditions including climate, landform, water, access and circulation, vegetation and wildlife, buildings & infrastructure, zones, and soil fertility. A separate factsheet (*Soil Testing you can do at Home*) covers soil fertility testing.
3. Map it out: It is recommended that you begin designing on paper before planting; however, on-site design techniques can aid in the visualization process. Be sure not to plant too closely together, it is the most common novice mistake!
4. Prepare the site: Use your site analysis to decide whether to adapt or alter the existing site. Ideally, you should start with a fairly flat landscape with high quality soil and habitat diversity. This may include multiple soil types, microclimates, or changes in moisture levels across the site. Unwanted plants should be minimized.
5. Planting: A general guideline is to plant woody species (trees) first, then add sheet mulch, followed by perennial plants, and finally more sheet mulch to fill in the gaps. If you are new to planting, you may want to start with a small area to gauge time, effort, and materials before moving to a larger area. Maintain the groundline and soil profile as you dig, as well as properly label, stalk, prune and add a protective surround to each plant as necessary.
6. Maintenance, Harvest, & Coevolution: You will need to monitor, water, fertilize mulch and weed your new garden until it is established, at which time it will be largely self-regulating. A successfully designed forest garden will be able to withstand many weeds, pests and disease without human interference.

### References

1. Hart, R. A. J. (1996). *Forest gardening: Cultivating an edible landscape*. White River Junction, Vt: Chelsea Green Pub. Co.
2. Jacke, D., & Toensmeier, E. (2005). *Edible forest gardens*. White River Junction, Vt: Chelsea Green Pub. Co.
3. Miller, T. (1995). How to want what you have. Avon Books. Ch 3 "Human Nature" 54-152.

**Author:** Jen Mackall, [jim55@cornell.edu](mailto:jim55@cornell.edu) & Steve Gabriel, [sfg@cornell.edu](mailto:sfg@cornell.edu), 04.11.2012