

Suggestions for Post-Petroleum Living

...things which are caused by nature are in a right condition and are kept in their best organization....

Nicolaus Copernicus (Translated)

Over-arching Ideas

- **Start with where you are – We all have a world view that must be addressed when making changes**
- epistemology, your metaphysics, your cosmology, your teleology, your theology, your anthropology, and your axiology
- Work with neighbors to find solutions
- Optimize your Ecological Footprint – that will lead to personal sustainability
- Read the environment – There is much to learn from it

Food

- Grow some food: from a small plot in the yard to a large market garden, it all helps.
- Learn how to pickle, can, freeze, and dry food products from your new garden.
- Share what you grow with neighbors.
- Learn about Permaculture, Organic Agriculture, Apiculture, etc...
- Support CSA (Community Supported Agriculture).
- Shop at farmers markets.
- Use a woven basket or bag for shopping instead of paper or plastic.
- Build a root cellar – in your basement if you have one.
- Save seeds to plant the next spring if you are growing Heirloom Seeds

Buildings (Residential, Commercial, Industrial)

- Build your house as small as possible – Use “The Not So Big House” mentality.
- Build for replacement and maintenance – nothing lasts forever.
- Natural materials are renewable – use those that are nearby.
- Retrofit for low-energy use.
- Have an energy audit done on your building
- Check your home every year for wear.
- Make your living arrangements denser in the winter.
- Make roofs functional – water harvesting, energy producing, light reflecting.

Transportation

- Live closer to other people, “community” centers, and places of work.
- Carpool as much as possible – design a system for it (red card / green card).
- Develop and support mass transit projects.

- Start bicycling and hitch-biking; support others who bike by carrying a bike rack in your auto.
- Walk everywhere you can – good for you and good for the planet.
- Find or form a walk-able community to live in.
- Put panniers and/or a bike trailer on your bike for carrying loads.
- Have good headlights on your bike for night riding.
- Manage time for low-energy activities.

Education

- Support community-based schooling; busing will become more expensive.
- Live near a local school – kids should be able to walk to school in a safe environment.
- Remember that education also happens outside of school.
- Support life-long learning endeavors.
- Learn a useful craft and use it.

Health

- Start with a healthy diet.
- Add local low-tech medicinals & treatments.
- Use walking as exercise AND transportation.
- Choose manual labor over machines.
- Laugh a lot. Be with friends.
- Find fun activities where everything is win-win. Give and accept hugs.

Industry

- Develop cottage industry that supports the community.
- Tie industry to local ecology.
- Create niche-industry plans.
- Look for local replacements to long-distance products.
- Turn waste into a resource
- Learn about and utilize principles of Industrial Ecology.
- Focus on value-added economies.
- Create centralized market places that are cooperatively based.
- Learn about bio-mimicry.
- Learn about Natural Capitalism

Commerce

- Use Rail for bulk commodities.
- Support multi-modal transport for regional and local products.
- Be critical in accepting new products; many are not necessary.
- Remember that we all pay for trade in the cost of living (in tax subsidies, price of goods, etc.).

Energy

- Democratize energy sources.
- Design small scale energy sources.
- Develop an energy plan.
- Learn about living machines.
- Build point-of-use energy systems.
- Use micro-hydro, wind turbine, and solar panels.
- Use bicycle power for appliances and get some exercise at the same time.

Some Resources

www.biomimicry.org

Industrial Ecology: www.is4ie.org

Transportation: www.transalt.org

Food Production: www.mofga.org

Send feedback to: Nomadic Waxwing's email: waxwing40@yahoo.com or karl.watkins@gmail.com

Focus: Principles of Permaculture

Permaculture is a system designed for creating sustainable environments suitable for human co-existence

Principles:

- Relative location – for a design component to work correctly, we must put it in the right place. Connection is the key.
- Each element performs many functions – placement of the element maximizes its functionality.
- Each Important Function is supported by many elements – redundancy is built into the system
- Efficient Energy Planning – Use zone and sector layout to maximize energy use
- Zone Planning: place elements according to how much we use them or how often we need to manage them. The elements that you need the most are also closest to the house
- Sector Planning: Use sectors to manage dynamic energies – sun/ light/ wind/ rain/ wildlife/ water flow
- Use Biological Resources – Plants and Animals can do the work of the system and save energy in the process
- Energy Cycling – matter and energy are cycled within the system to attain maximum

return on “investment.”

- Small-scale intensive systems – designed for hand tools and small machines
- Plant stacking – different tiers of vegetation
- Time stacking – place pioneers, young trees, shrubs, ground cover and annual beds together and at the same time. Succession will manage product yields
- Diversity – create a semi-ordered collection of plants in their right relationship to each other; developing multiple products results in market stability and nutritional stability (self-reliance)
- Edge Effects – edge is the interface between two mediums (e.g. water & air, grassland & forest, etc.); edge increases productivity and therefore yield. Edge is maximized by creating crenellations. Crenellations are wavy edges.

Focus: Industrial Ecology (IE)

Industrial Ecology models industrial processes after ecological processes.

- Waste is a resource
- Materials flow is cyclical
- Industrial processes are linked across time, distance, and economic sectors
- Landfills contain future resource and should be designed as storage units
- Design for Environment (DfE) and Design for Life Cycle (LCD)
- Compounds store energy in their bonds
- Industrial processes tighten up on materials use
- Life cycle is continuous as products are always reused in different forms
- Product stewardship is implemented in IE
- Much work still remains to develop the concept of IE.
- Economic hurdles of IE will diminish as energy becomes more scarce

Focus: Eco-Machines

Eco-Machine Systems® filter wastewater and create useable products in the process (e.g. fish, vegetation, clean water).

- Eco-machines were developed by Dr. John Todd following 1981
- Capacities to date range from 80,000 – 200,000 gallons per day
- The process uses an aerobic digester, plants like duck weed, and Ecological Fluidized Beds (EFB's) to break down waste products and filter them out of the water
- Can provide tertiary treatment standards
- Can lessen municipal waste disposal costs
- Are found in places such as Northern Vermont, Australia, and Nevada

Focus: Biomimicry

Biomimicry – The study of nature for innovation that is adaptive, evolving, and sustainable

- Model Nature: we can model our designs based on examples in nature

- Nature the Mentor: nature can act as judge for ecological correctness
- Nature as Measure: we can learn from nature instead of extracting from it
- Non-human Organisms are constrained by their environment
- Humans have diverged from this constraint
- We can use biological laws as prescription
- Indigenous people traditionally mimicked nature to survive
- Learn from trees how to pump water hundreds of feet through transpiration
- Model Mangroves for desalination
- Thermo-regulate our buildings structurally like the termite
- Biomimicry was coined by Janine Benyus in a book by the same title
- We need a way to transcribe laws of nature to human systems

Focus: Natural Capitalism

Natural Capitalism is a business model that values natural resources in their role of sustaining life on earth

- Natural Capitalism re-balances an abundance of human resource with a scarcity of natural resource
- Natural Capital refers to the Earth's resources and services
- Principles:
- Radically increase the productivity of resource use
- Shift to biologically inspired resource use with closed loops, no waste, and no toxicity
- Shift the business model away from the *making and selling* of "things" to *providing the service* the "thing" delivers
- Reinvest in natural and human capital
- Natural resources are considered extremely valuable or priceless; some have no recognizable replacement

Acknowledgements

Eco Machines: John Todd Ecological Design

Permaculture: Mollison, Bill et al, *Introduction to Permaculture*, Tagari 1991, pp 5 – 28

Biomimicry: www.biomimicry.net

Natural Capitalism: www.naturalcapitalism.org

IE: National Pollution Prevention Center for Higher Education