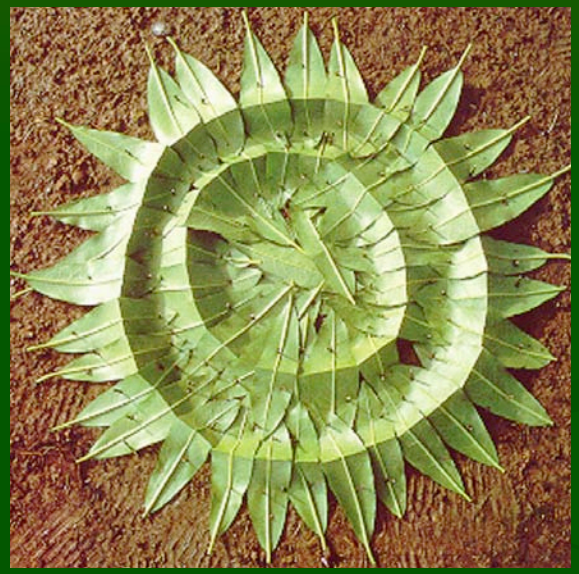
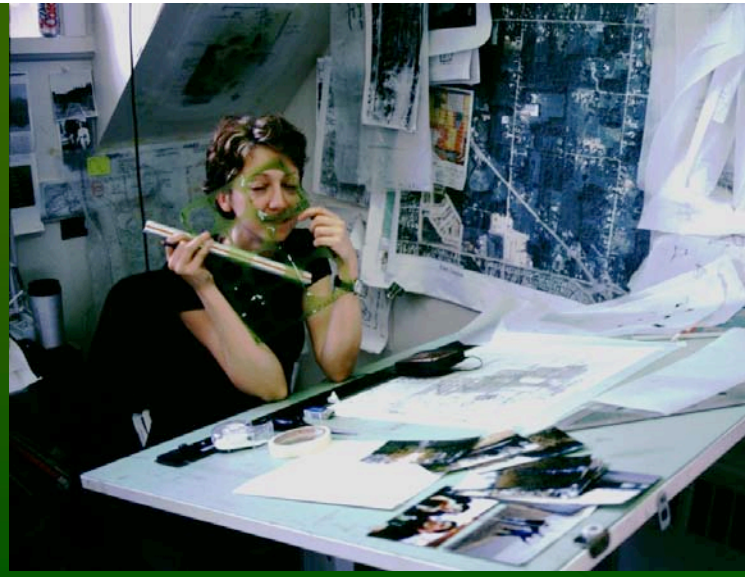
INTRODUCTION TO AGROECOLOGICAL DESIGN



Spring Organic Conference, Victoria, BC
April 3rd, 2004

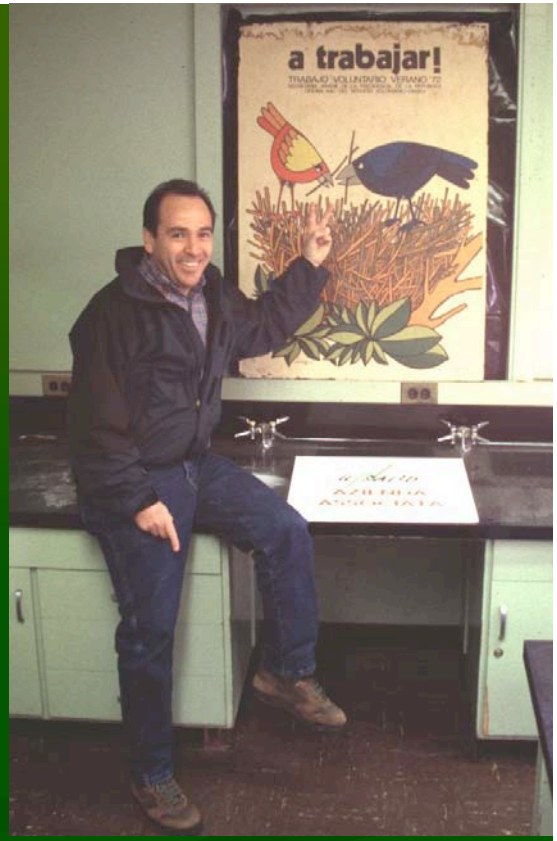
Learning objectives



At the end of this session you should have a better understanding of…

- Agroecology
- Agroecological design
- The benefits of design
- How agroecological design might be applied to your garden or farm system

What is agroecology?



agroecosystems

"Communities of plants & animals interacting with their physical & chemical environments that have been modified by people to produce food, fibre, fuel & other products for human consumption & processing."

Miguel Altieri 2004

agroecology

Is an ecological approach to the study, design, management & evaluation of agroecological systems.

What is sustainable agriculture?

sustainable agriculture =
sustainable agroecosystem mgmt.

"It involves whole system approach to food, feed & fibre production that balances environmental health, social equity & economic viability among all sectors of the public across space & time."

Steve Gliessman 1998

What is design?

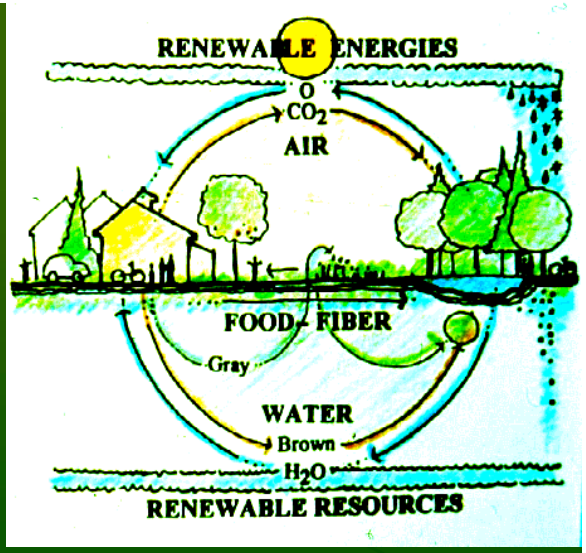
design

- To intend, as for a specific purpose; plan.
- To form or conceive in the mind; invent.
- To plan & make artistically or skillfully.

ecological design

"Is any from of design that maximizes environmental health through the effective adaptation to & integration with nature's process."

What's our goal?



sustainable agroecosystems

- Maintain their natural resource base
- Require minimal off-farm inputs
- Manage pests & diseases through internal regulating mechanisms
- Resilient - recover from disturbances caused by cultivation & harvest
- Utilize, support & promote local knowledge & practices

Motivation

"If we are to have an accurate picture of the world, even in its present diseased condition, we must interpose between the unused landscape & the misused landscape a landscape that humans have used well."

Wendell Berry 1995

Appreciating tradition

traditional agroecosystems generally

- Do not depend on purchased inputs
- Make use of locally available & renewable resources
- Benefit on & off-farm environments
- Respect & adapt to local conditions
- Fully utilize microenvironments
- Maximize yield while sustaining productive capacity.
- Maintain spatial & temporal diversity & continuity
- Meet local needs first
- Rely on & conserve local genetic diversity
- Rely on & conserve indigenous knowledge & culture

Different approaches

- Organic agriculture
- Sustainable agriculture/ development
- Ecological agriculture
- Whole Farm Planning
- Permaculture
- Biodynamic agriculture
- Others??

An agroecological design approach can be taken with all of these

Agroecology design basics

- Principled approach - establishes guidelines/goals
- Looks to nature - nature as measure & mentor
  - Use renewable resources
  - Minimize toxics
  - Conserve resources
  - Manage ecological relationships
  - Appreciate context - adjust to local environments
  - Diversify
- Includes & empowers people
- Considers & manages whole systems
- Maximizes long-term benefits
- Values health

Ecological goals

- Enhance the recycling of biomass
- Provide favourable conditions for plant growth
- Minimize losses of energy & other growth factors
- Diversify species & genetic resources
- Enhance beneficial biological interactions & synergies

Social goals

- Ensure the involvement of local people & communities
- Foster & promote a sense of place
- Use indigenous knowledge
- Allow for adaptation & change
- Maximize diversity
- Improve health
- Strengthen the local community
- Design with children in mind
- Educate

Economic goals

- Ensure economic viability
- Long-term economic focus
  - Maximize intergenerational benefits
  - Facilitate generational transfers
- Maximize livelihoods & quality of life
- Maximize diversity (crops, markets, etc.)
- Contribute to the economic health of the local community
- Promote cooperation not competition
- Provide quality labour opportunities

Simplified design process

1. Site selection
2. Program development
3. Site appreciation
4. Establish design approach
5. Site analysis
6. Conceptual design development
7. Plan selection & detailing
8. Application
9. Evaluation
10. Modification

1. Site selection

- Establish site location
- If possible establish the context, size & basic features

This step can be made more difficult if you have more than one site to choose from

The establishment of a general program can make things easier

2. Program development

- Establish a basic site program
- Ask probing questions
- Identify any major challenges
- Establish operational principles.
- Think of this as the 'spirit' of your design

Listen carefully - Never assume - Ask good questions
An iterative process & should be done with all involved
Use examples or precedents

3. Site appreciation

- Develop a good understanding of the site through passive & active observation

Observe & record

This is an iterative & incremental process

The more time taken, the better

4. Establish a design approach

- Identify goals & potential design strategies that support your operational principles
- Focus on critical elements i.e. water, nutrients, soil, air, energy, community
- Think of this as the 'body' of your design

Be explicit

Be idealistic - Set the bar high

Be imaginative - Let your creative juices flow!

5. Site analysis

- Analyze collected site information
  - Simple - Sector & zone analyses, concept mapping
  - Complex - GIS, computer modeling
- Combine qualitative & quantitative information
- A good site analysis generates design ideas that can enrich the overall design response
- Analysis can influence/determine the program

The challenge during this phase is to assess both quantitative & qualitative site information

6. Conceptual design development

- Begin to articulate potential design solutions
- Detail dependent on time available & size of site
- Should address & expand on the program
- Should incorporate principles & design strategies

Be expressive

Don't get hung up on details but be accurate

Concentrate on generating options

7. Plan selection & detailing

- Select plan for implementation
- Plan detail dependent on your needs
  - To direct those responsible for implementation
  - To convince investors, municipal planners, family members
- Depending on level of detail required should explicitly reveal principles & design strategies

Refer to the established principles & design strategies

Don't be afraid to make changes

Tailor the final plan to your needs

8. Implementation

- Begin the process of bringing your design to life
- Take as much time as possible
- Focus on quality - 'God is in the details'

Refer to your established principles & design strategies
Don't be afraid to make changes on the ground
Consider the advice of other 'experts'

9. Evaluation

- Should happen throughout design process
- Set aside time for reflection & assessment
- Utilize other available "opinions"
- Opportunity to share your experience with others
- Opportunity to check on the expression of the principles & design strategies

Not very sexy but very important step

Very easy to be critical - Concentrate on generating solutions

10. Adjustment

- Opportunity to make corrections to process
- Very important - often left too late
- Should happen throughout design process
- Very critical during the implementation step

Incorporate changes as soon as possible
Don't get hung too tied to a completion schedule
Don't get too attached
Don't get flustered - Be creative!

Example - UBC Farm

Site selection

Program development

Establish a student-driven model farm that integrates sustainable land management & food production practices with basic & applied research, innovation, education & community outreach.

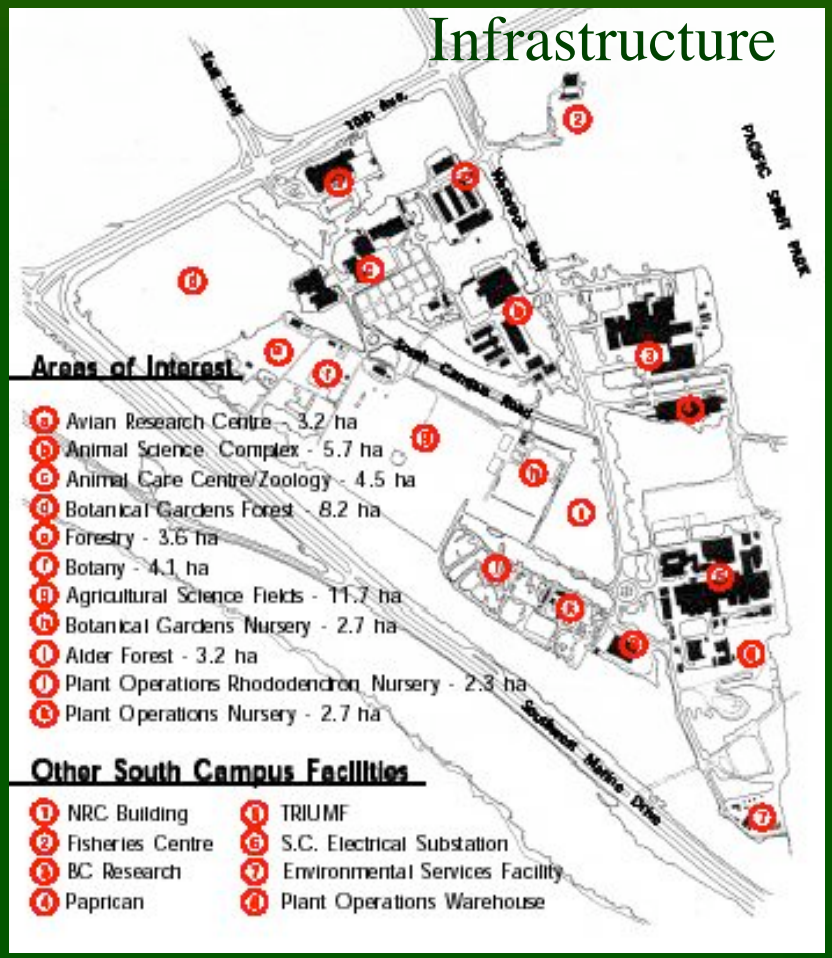
Site appreciation

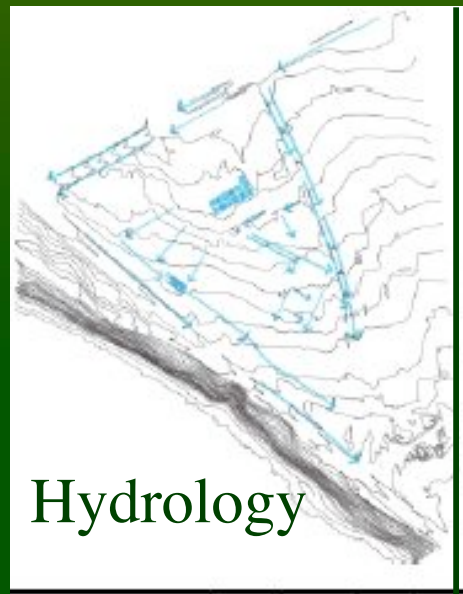
Major challenges

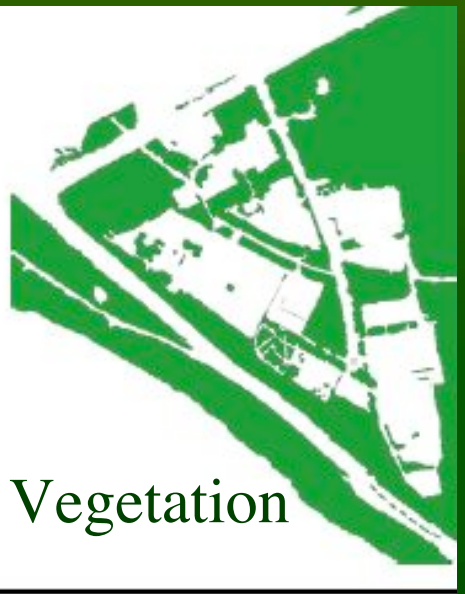
- Aging & outdated facilities
- Condition & management of site
- Existing site uses
- Limited accessibility
- High land values
- Lack of community involvement

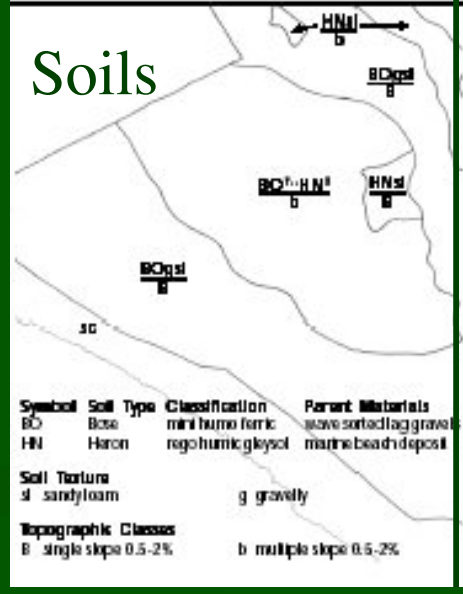
In short… unkempt, disconnected, isolated, & threatened

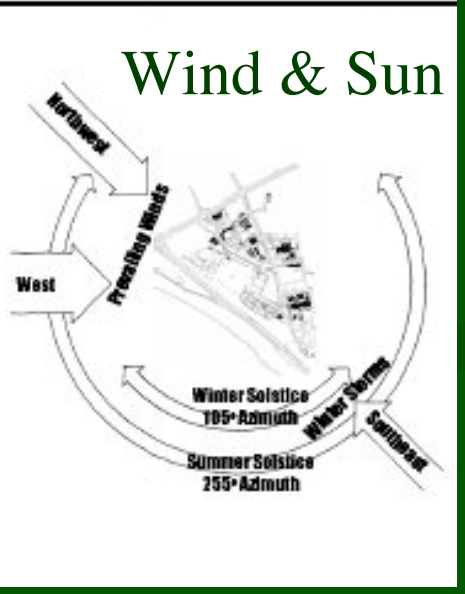
Data collection











Design approach - the 'spirit'

General operational principles

Ecology – *environment & education*

Economics – *effective management*

Integrity – *values & leadership*

Beauty – *depth of character*

‘Spirit’ specifics

Beauty

- Inspiration behind principle
- Defined & explained using precedents
- Challenge:

  To fuse & transform the ecological, economic & integral framework in a way that captures the eye, inspires the mind & touches the heart.

- Approach
  - *Create no ugliness*
  - *Demonstrate the meaning of quality, care, respect & attention*
  - *Reveal the beauty of the everyday*
  - *Investigate & promote the idea of a sustainable aesthetic*
  - *Reveal & respect the genus loci*

Design approach - the 'body'

Areas of focus

Nutrients

Water

Air

Energy

Food & Fibre

Community

‘Body’ specifics

Water

Protect, conserve, enhance & cleanse

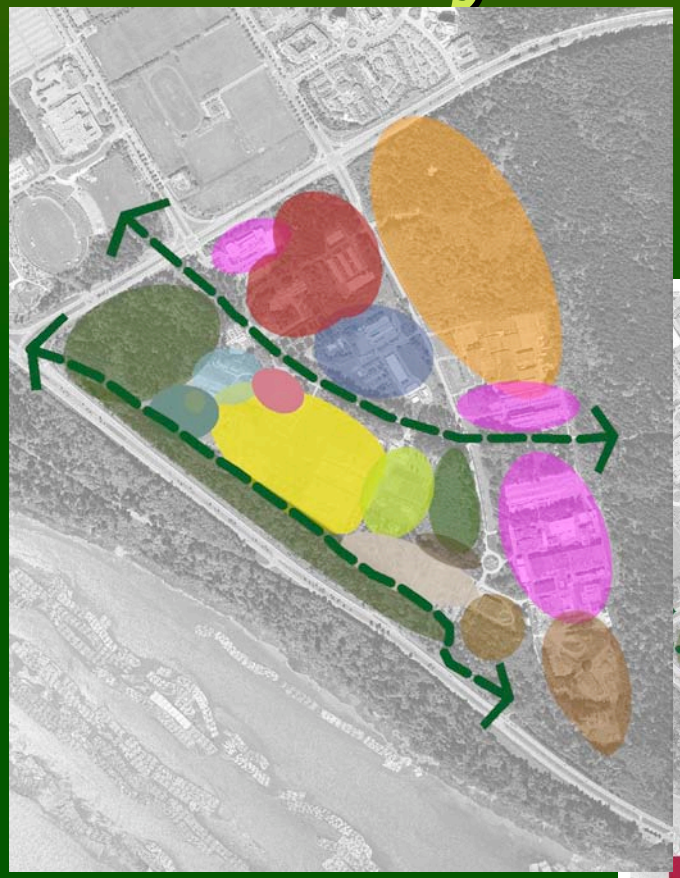
Goals:

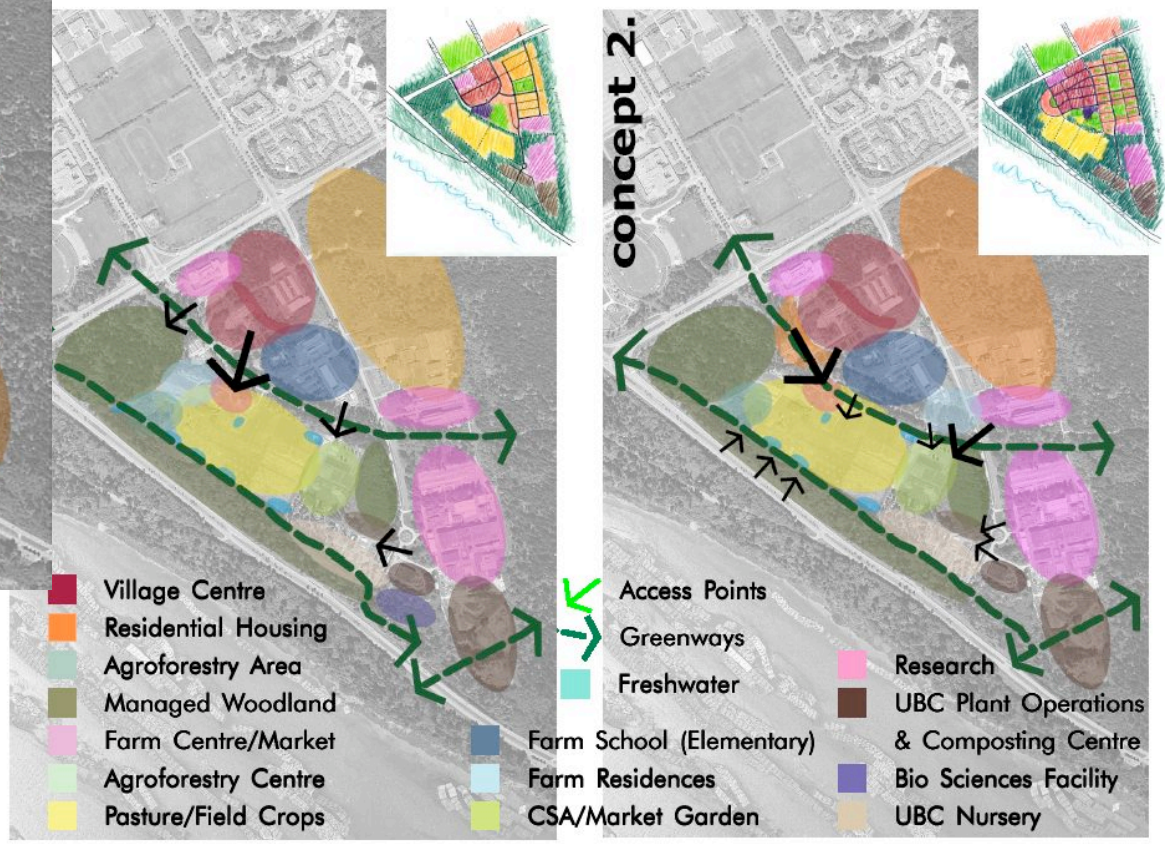
- Reduce water consumption
- Utilize on-site water storage
- Maximize water conservation, collection, storage, recycling & multiple use.
- Eliminate off-site discharge of untreated wastewater

Physical Design Strategies:

- On-site water retention
- Water cleansing & reuse
- Water conservation
- Passive delivery systems

Site analysis





Conceptual design development

Implementation

Key aspects of this process

- Iterative
- Explicit
- Principled
- Inclusive
- Applied
- Flexible

Most critical of all…

ECOLOGICAL & FUN!

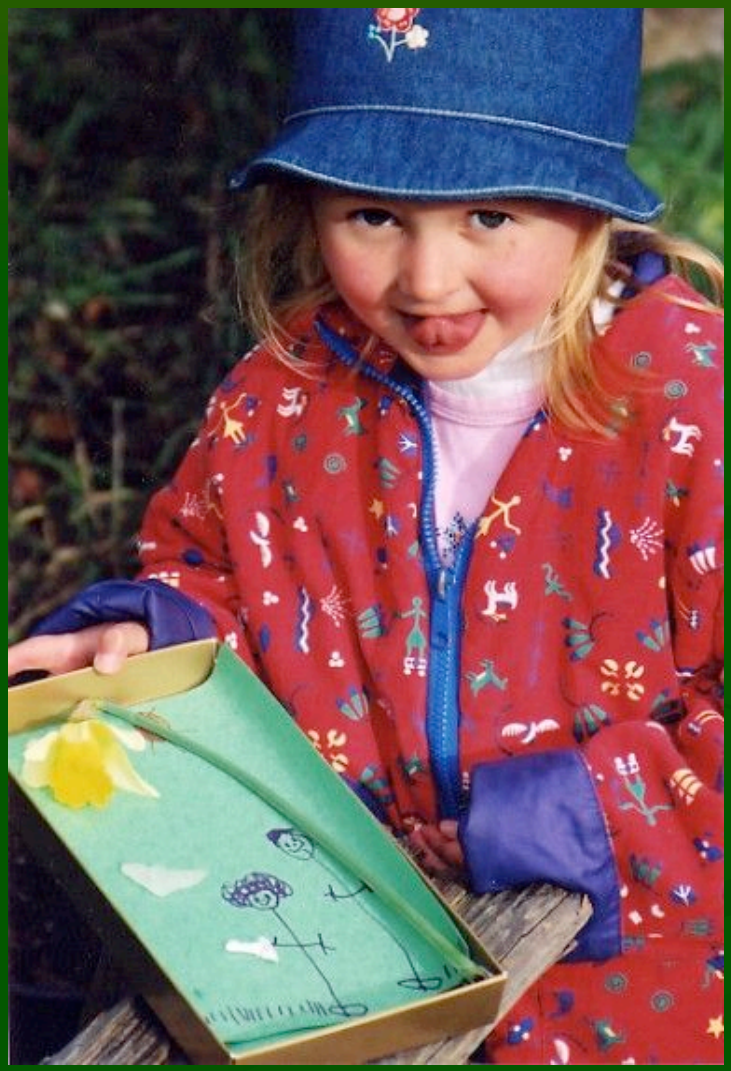
Why do this?

- Requires one to be explicit
- Grounds ‘dreamy’ ideas in reality
- Allows for the testing of ideas
- Facilitates the communication of your vision with others
- Can save you time, resources & money
- It’s fun!

What makes a good ecological designer?

- Observant - eye for details
- Good listener
- Life-long learner
- Good communicator
- Respectful - of people, site & situation
- Affinity for the natural environment
- Bold yet humble
- 'Out-of-the-box' thinker - i.e. creative

Everyone is a designer!



Web resources

agroecology

- www.agroecology.org *Agroecology Home*
- agroeco.org *Agroecology in Action*

ecological design

- www.ecodesign.org/edi/ *Ecological design Institute*