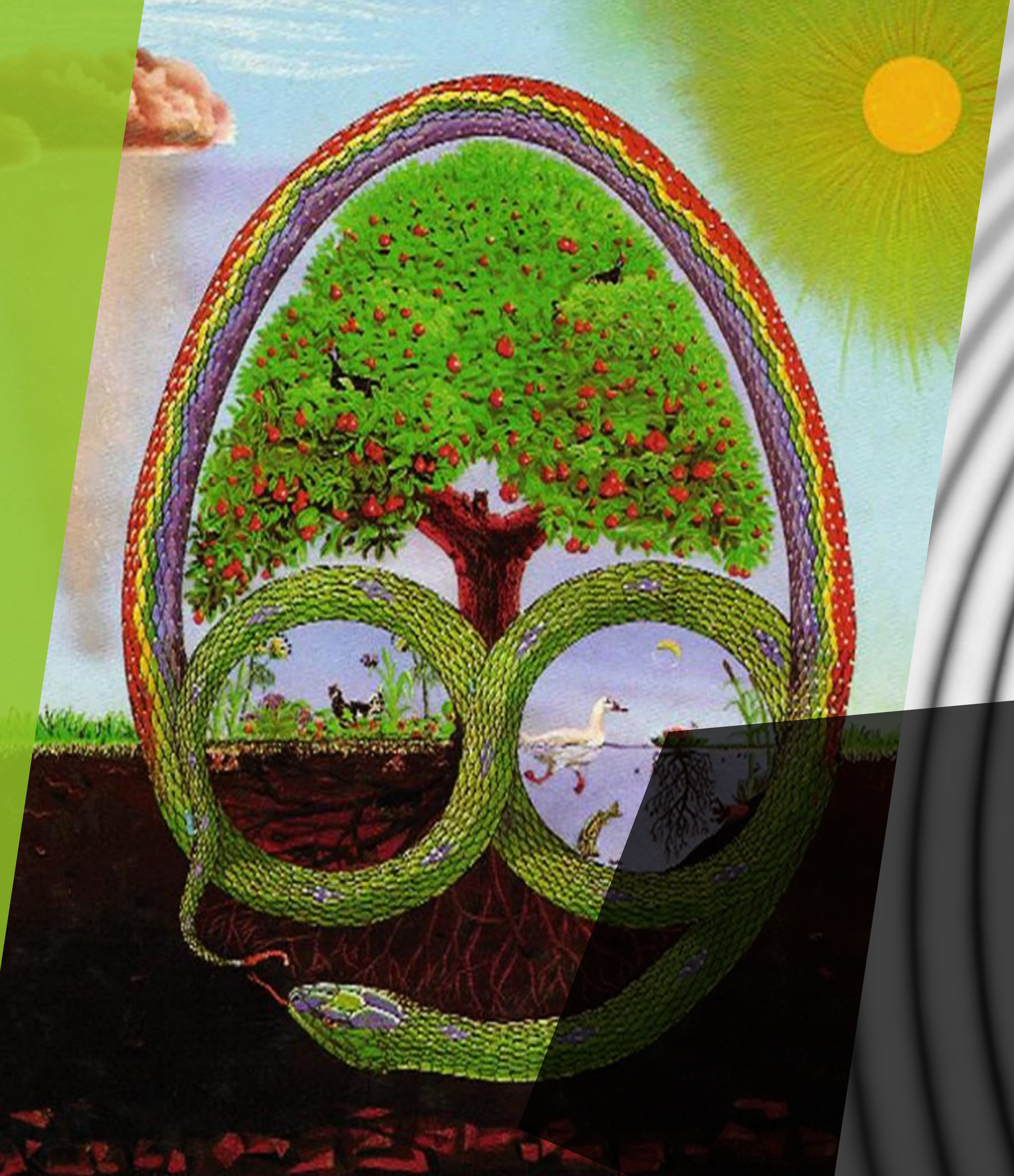


Introduction chapter one

Permaculture design course

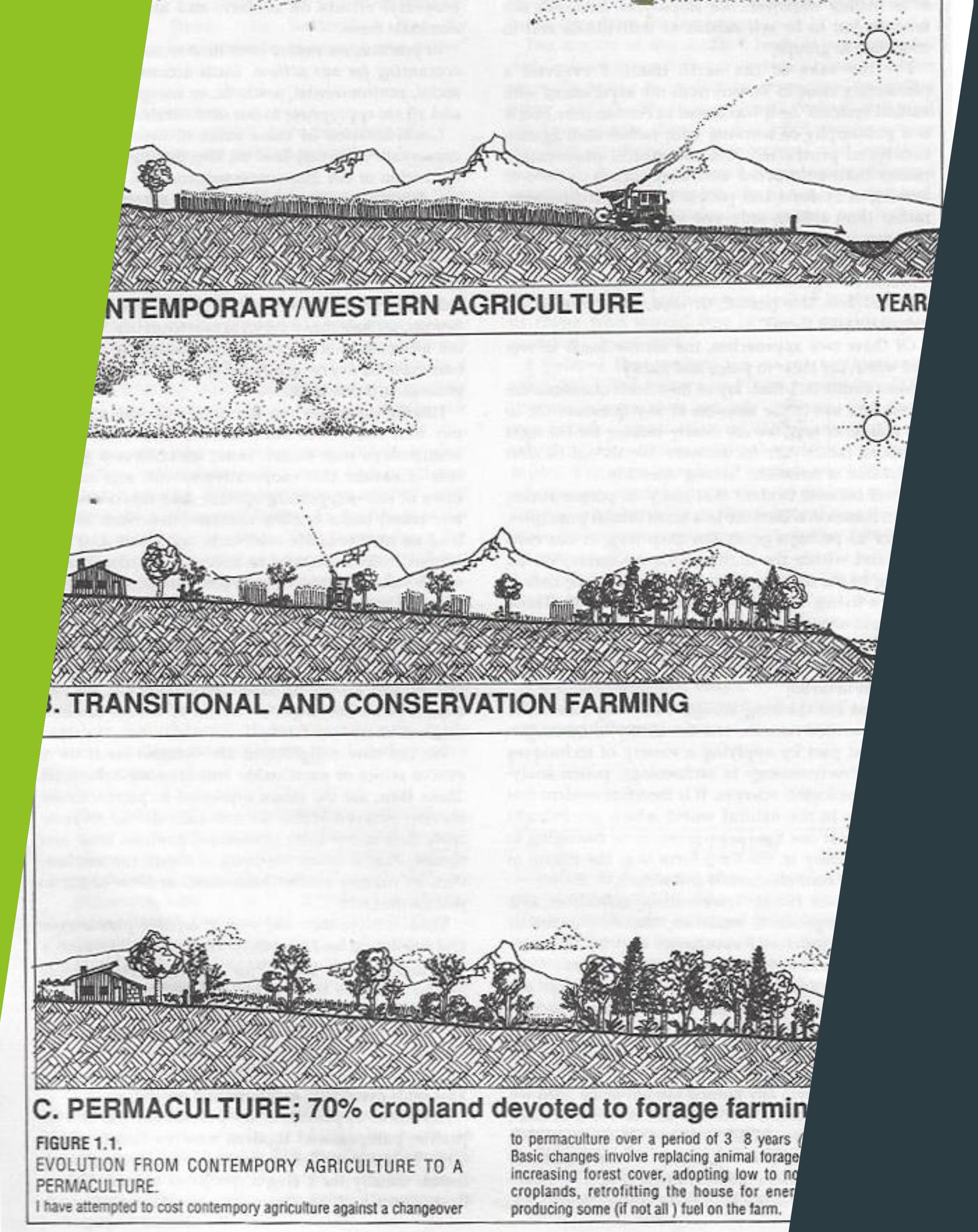
Ethics in permaculture

- To change
- Nature never stands still

- Care of Earth
- Care of People
- Re-invest surplus – Fair share

Mollison’s Principles

- Work with nature, rather than against it, assist rather than impede natural developments
- The problem is the solution, everything works both ways
- Make the least change for the greatest possible effect
- The yield of the system is theoretically unlimited
- Everything gardens



- Western monoculture
- Conservation farming
- Permaculture

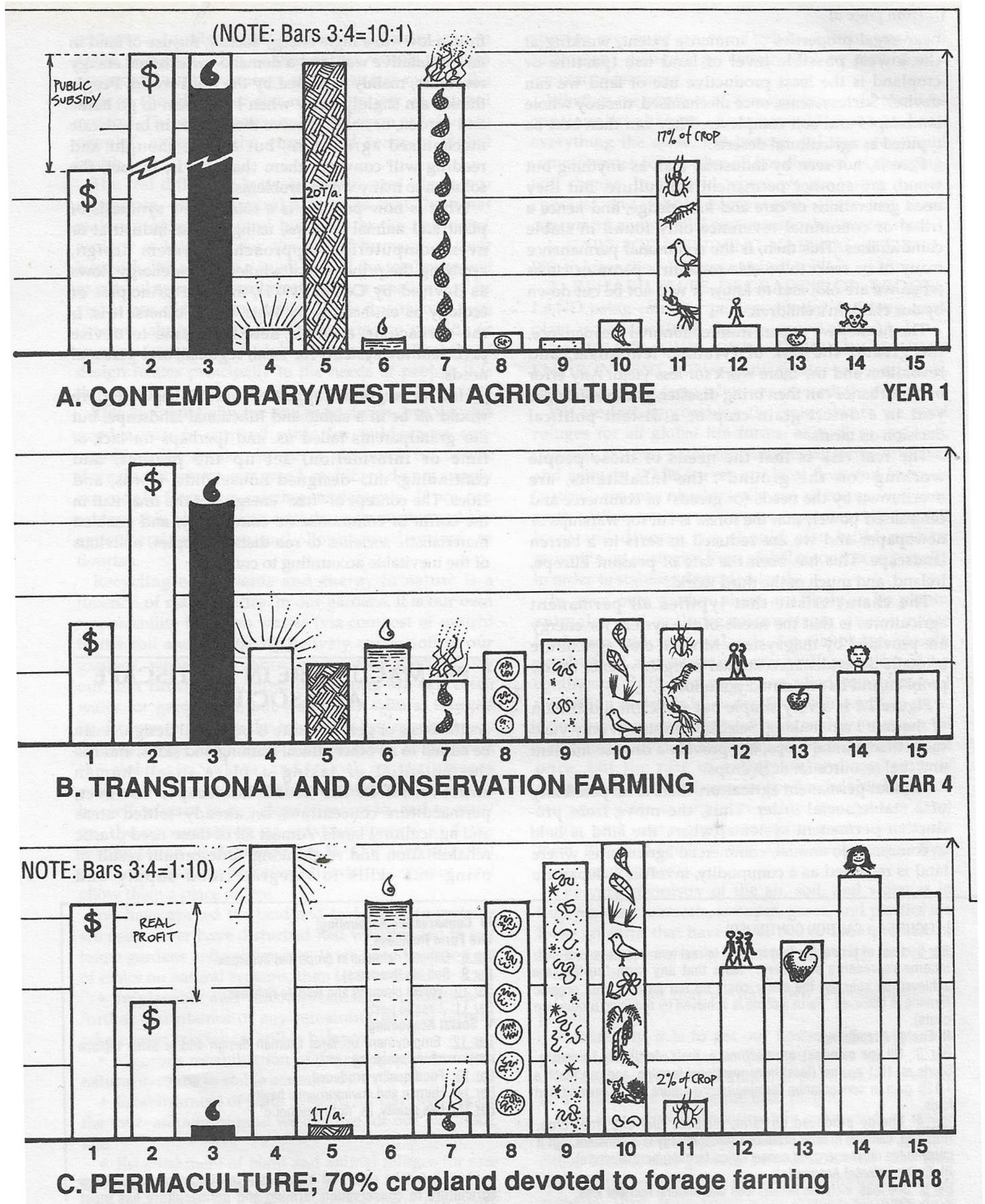
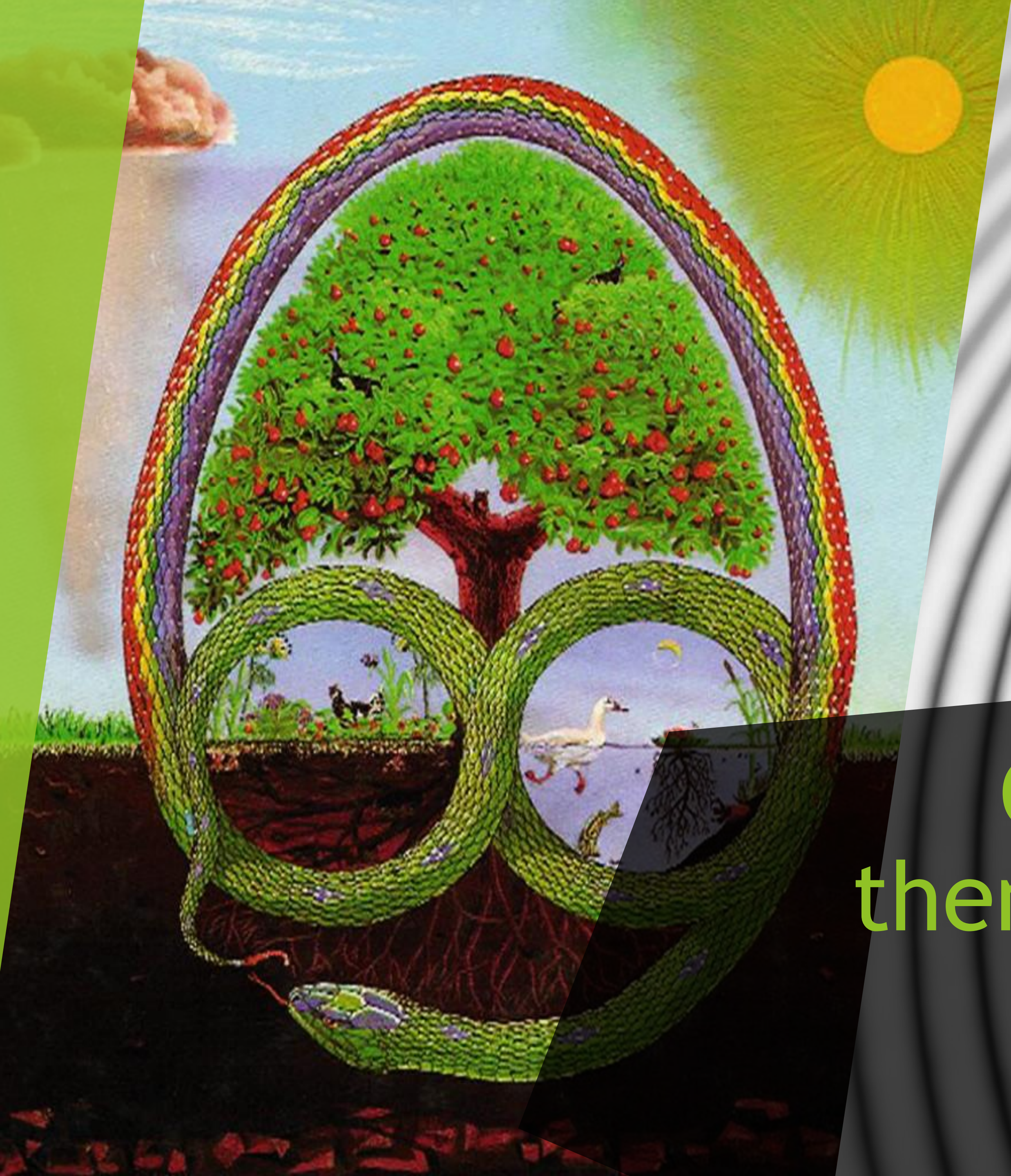


FIGURE 1.1 (Continued)
ANNOTATIONS TO THE BAR DIAGRAM; ACCOUNTING THE COSTS OF FARMING.
The accounting is in sections as follows:

I Cash (Dollar) Accounting.
Bar 1: Income from total product on the farm.

(continued next page....)

1. Income
2. Expenditure
3. Oil use
4. Energy produced
5. Soil loss
6. Water efficiency
7. Pollution produced
8. Genetic richness
9. Soil life
10. Forest biomass and wildlife
11. Loss to pests
12. Employment
13. Food quality
14. Human health
15. Life quality



Concepts and themes in design

Permaculture design course

Buckminster Fuller

The world teeters on the threshold of revolution.
If it is a bloody revolution, it is all over.

The alternative is a design science revolution…

Design science produces so much performance per unit to resource invested to take care of all human needs

Chief Seattle

- Man did not weave the web of life; he is merely a strand in it.
- What ever he does to the web he does to himself… to harm the earth is to heap contempt upon the creator…
- contaminate your own bed and you will one day suffocate in your own waste

Principle summary

- **The prime directive of permaculture**
- "The only ethical decision is to take responsibility for our existence and that of our children"
- **Principle of co-operation**
- Cooperation not competition is the very basis of future survival and of existing natural systems
- **Ethics in permaculture**
- Care of the Earth
- Care of People
- Setting limits to consumption

Birch's 6 principles of natural systems

- Nothing in nature grows forever, there is a constant cycle of growth and decay
- Continuation of life depends on the maintenance of global bio-geochemical systems
- Probability of extinction is greatest when the species density is either very high or very low
- Ability to survive and reproduce is often reliant on one or two key factors in a complex web of relations
- Our ability to change the face of the earth increases at a faster rate than our ability to foresee the consequences of change
- Living organisms are not only means but ends. In addition to their instrumental value to humans and other organisms, they have an intrinsic worth

A policy responsibility to relinquish power

The role of a beneficial authority is to return function and responsibility to life and people; if successful no further authority is needed.

The role of successful design is to create a self-managed system

Resources – different types

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

Methods of producing an egg

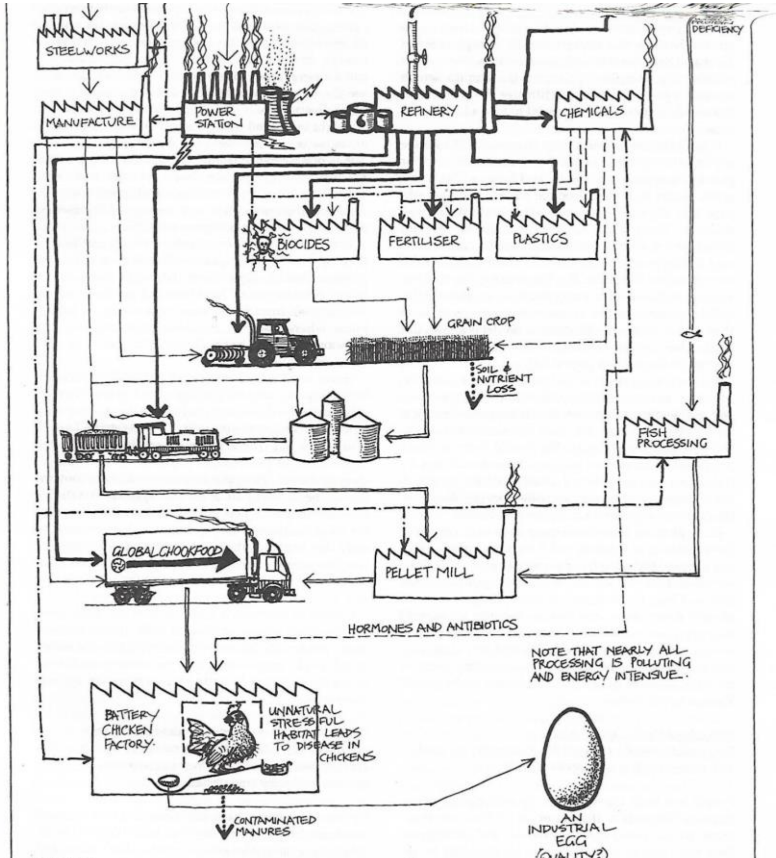
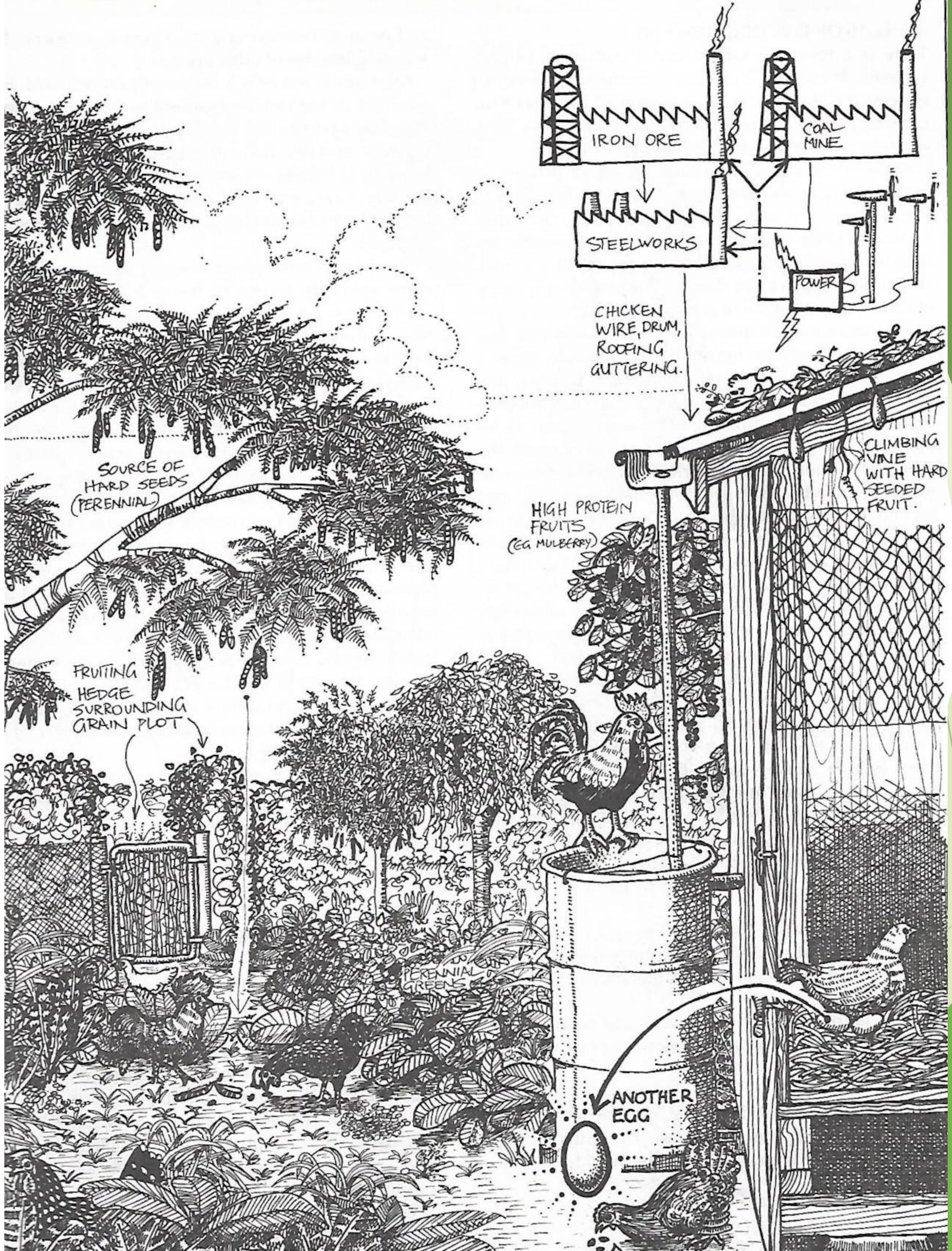


FIGURE 2.3
INDUSTRIAL METHODS OF PRODUCING AN EGG.



IGURE 2.2
VERYTHING GARDENS.
– Pruning, B – Digging, C – Mowing, D – Typical plant assembly
r species. Some species (*Oryctolagus, Cuniculus, Macropus,*
allus, Cairina, and *Homo sapiens*) at work in their fields. Plants

developed by each species are ma
as lawns, pruned trees, flat weed
dwellings.

Everything Gardens

A. Pruning
B. Digging
C. Mowing
D. Plant assembly

- Natural systems are self regulating
- Farming and growing is replicating what occurs in nature

Ecosystems

- Dynamic
- Random assembly
- evolution
- Niche’s
- Trophic levels

niches:

a) In the vertical structure of vegetation (I – IV) including a root zone;

b) Across the aspects, zones, or soil catena variations with slope, and with soil water depth;

c) In the different orders of flow in streams;

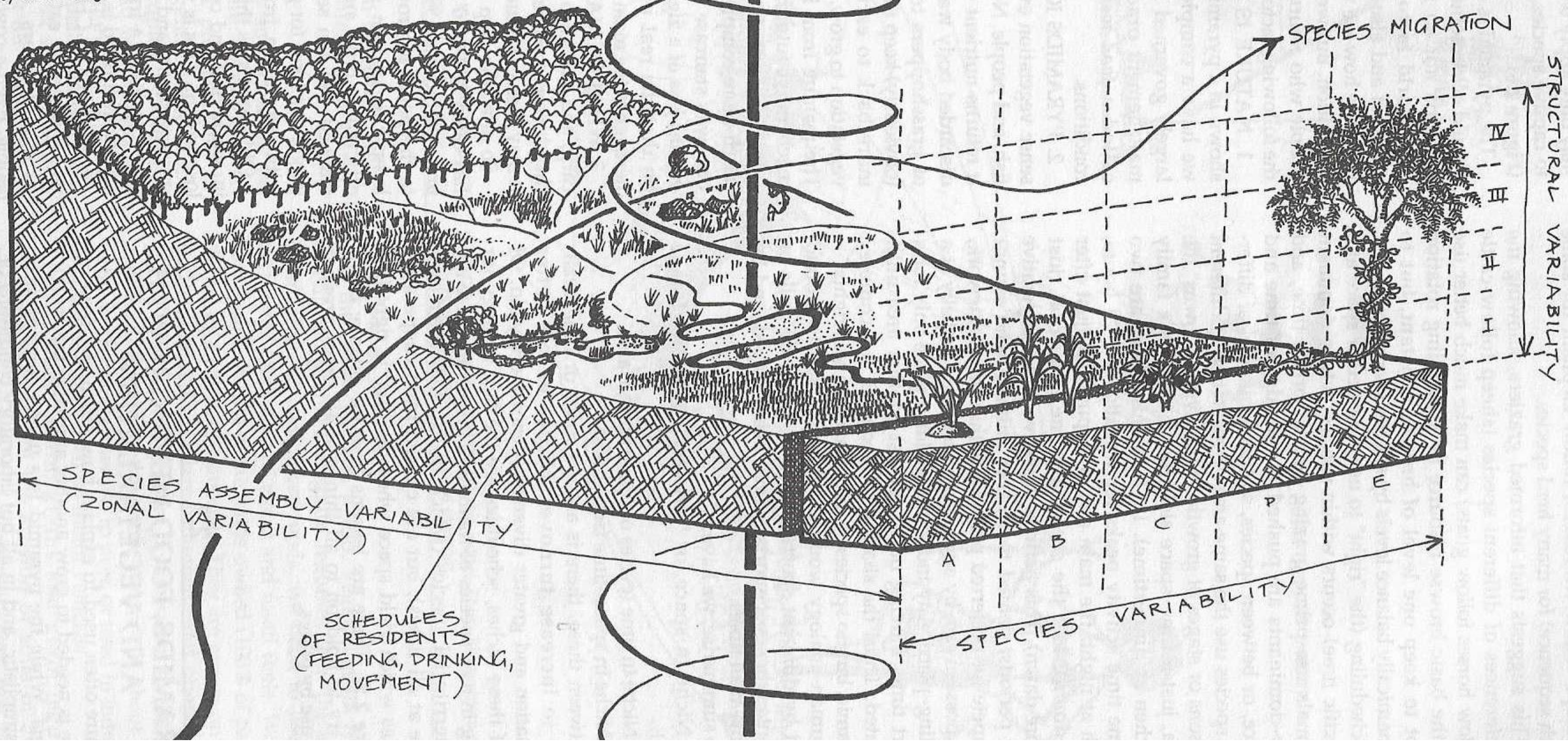
d) Within the different species that occupy specific sites or assemblies;

e) At the edges or boundaries of any system.

and occupying nocturnal and diurnal time slots.

[(f) – (i) refer mainly to animal species, although all plants will have seasonal phases or responses, can invade, or may schedule their flowering times].

As well, the whole system evolves through time, and climate trends or disturbances, such as fire, impose a serial mosaic on the site. Almost every significant time–space complex will have its unique species. There is always a way to enrich species diversity in such a system.



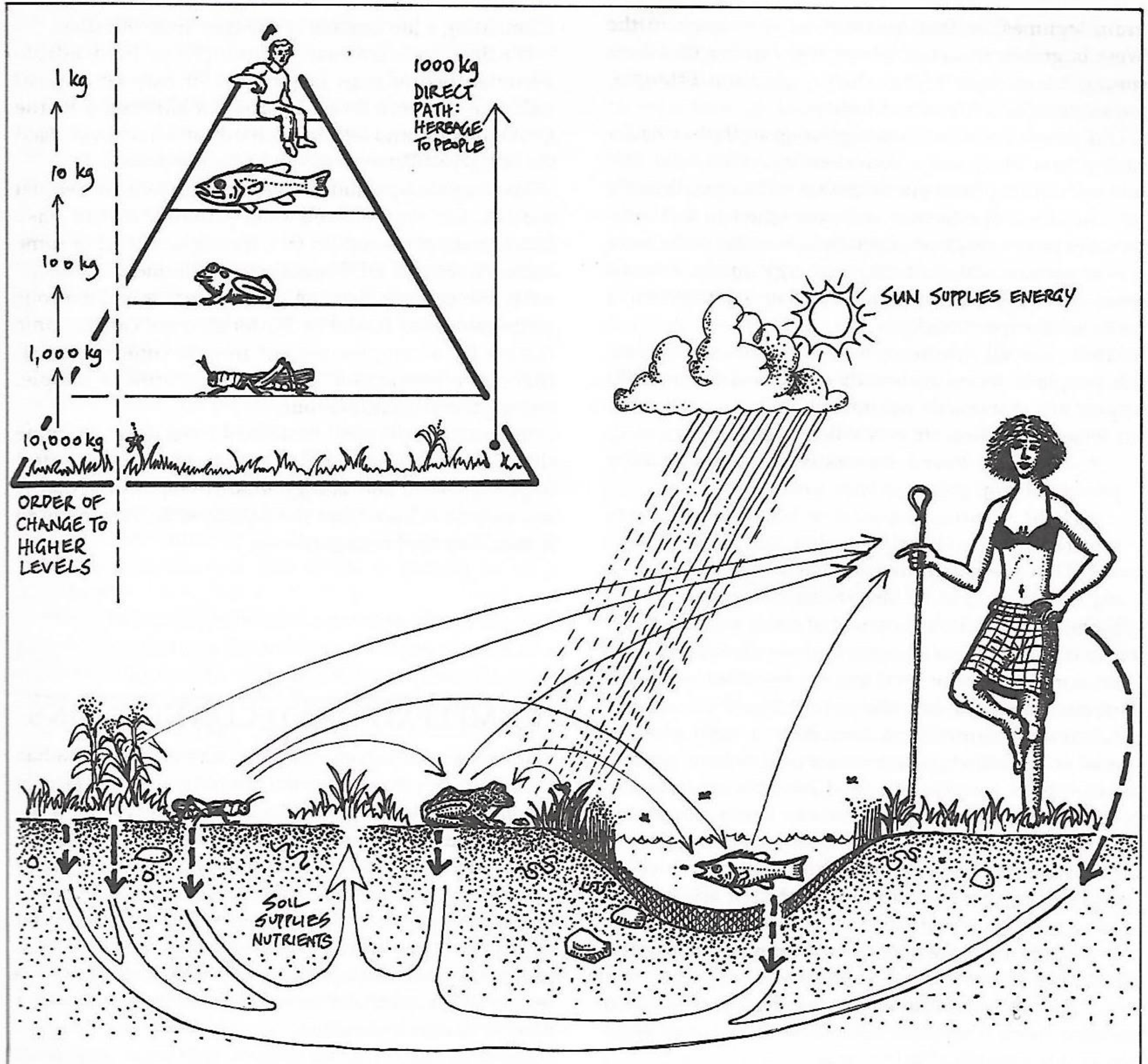
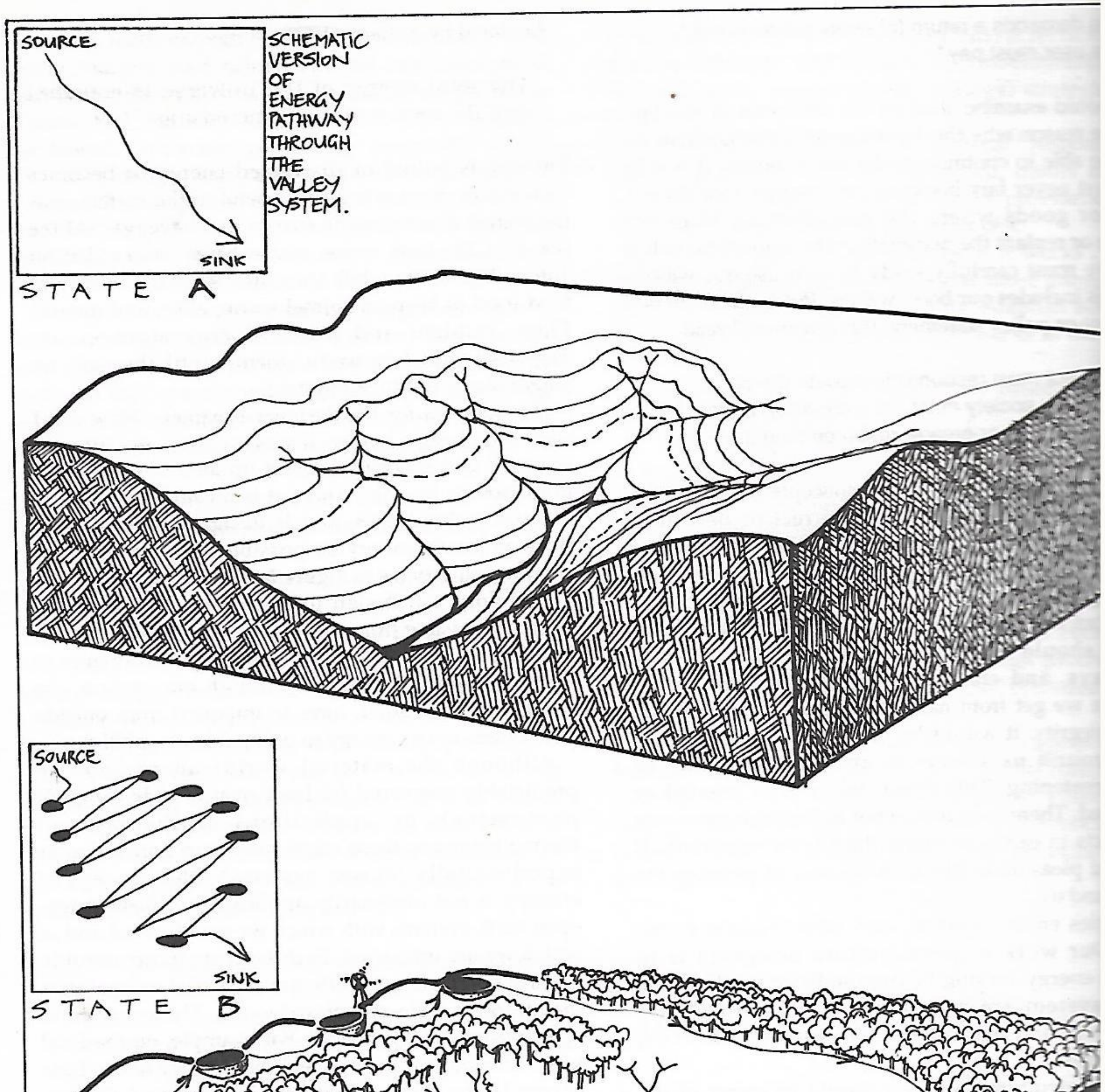


FIGURE 2.6
TROPHIC PYRAMID.
Life systems are rarely strictly hierachical as in the pyramid structure. Most species are omnivorous and *all* species recycle valuable waste products to lower levels of the trophic ladder. Thus, life systems are a web or cyclic systems rather than a pyramid.

Trophic levels

- Nature is much more complex than shown in a pyramid
- Pyramids ignore feedback
- What of maturity?
- Are food chains so simple?


SOURCE
SCHEMATIC VERSION OF ENERGY PATHWAY THROUGH THE VALLEY SYSTEM.
SINK
STATE A
SOURCE
SINK
STATE B

Design to catch and store energy

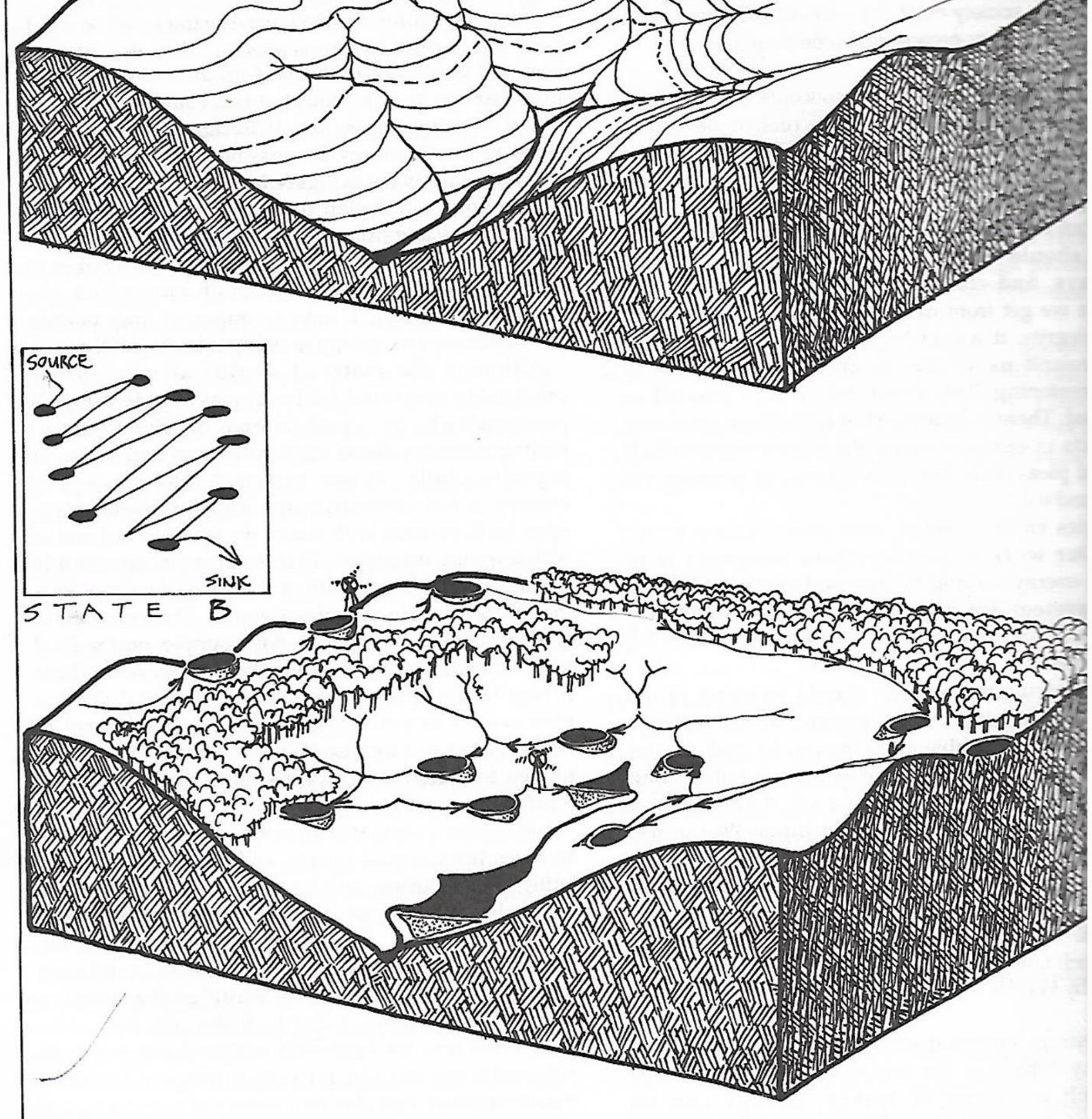


FIGURE 2.1
DESIGNING TO CATCH AND STORE ENERGY

Chapter 3 Methods of design

Permaculture design

Permaculture design is a system of assembling conceptual, material, and strategic components in a pattern which functions to benefit life in all its forms. It seeks to provide a sustainable and secure place for living things on this earth.

Functional design

Functional design sets out to achieve specific ends, and the prime directive for function is:

- Every component of a design should function in many ways.
- Every essential function should be supported by many components
- A flexible and conceptual design can accept progressive contributions from any direction and be modified in the light of experience.
- Design is a continuous process, guided by the feedback of its own evolution

Analysis

- Design by listing the characteristics of components
- Self regulation
- Outputs, yields and benefits area ll Resources to be explored
- Pollutant is an unused output of the system
- Inputs needs and demands create extra work if not designed for

Site components, water earth, Landscape, Climate,Plants

Energy components

Technologies, Structures, Sources, Connections

The design

A beneficial assembly of components in their proper relationships

Abstract components

Timing, Data, Ethics

Social components

Legal aids, People

Culture, Trade and finance

Analysis

- Design by listing the characteristics of components
- Making connections between components

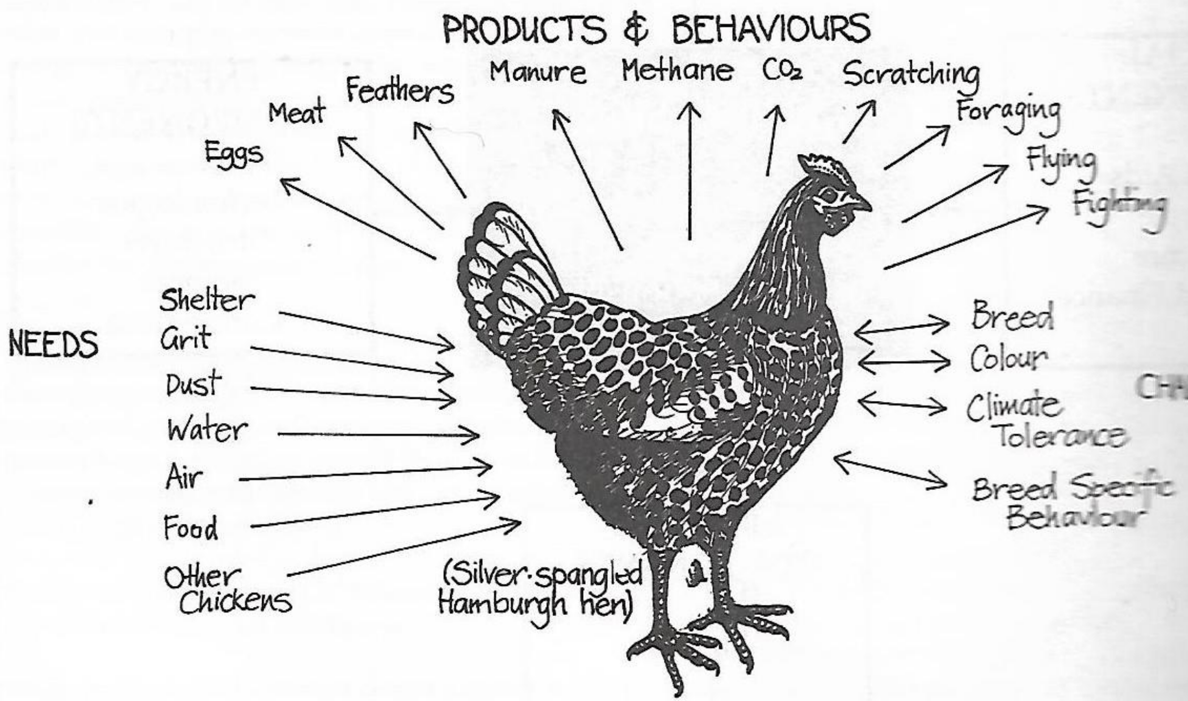


FIGURE 3.1
PRODUCTS AND BEHAVIOURS OF A HEN.
Analysis of these inputs and outputs are critical to self–governing design. A deficit in inputs creates work, whereas a
use creates *pollution*.

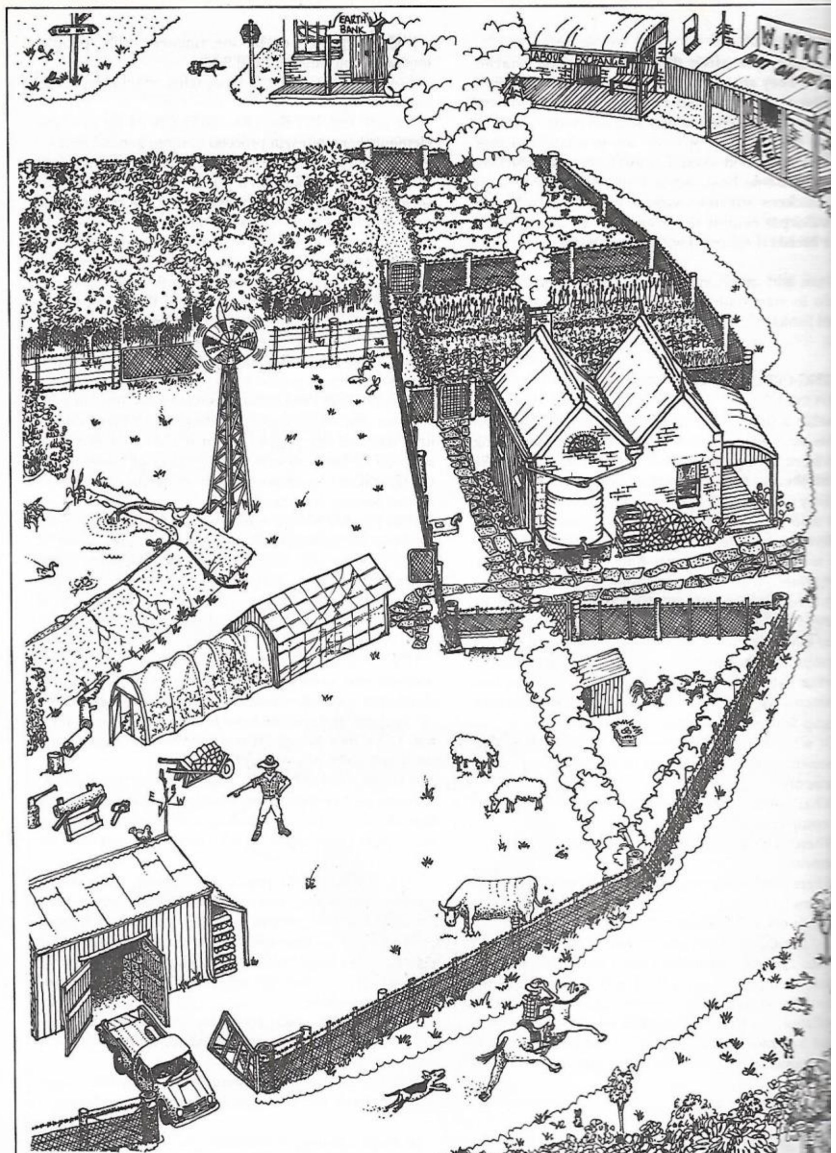
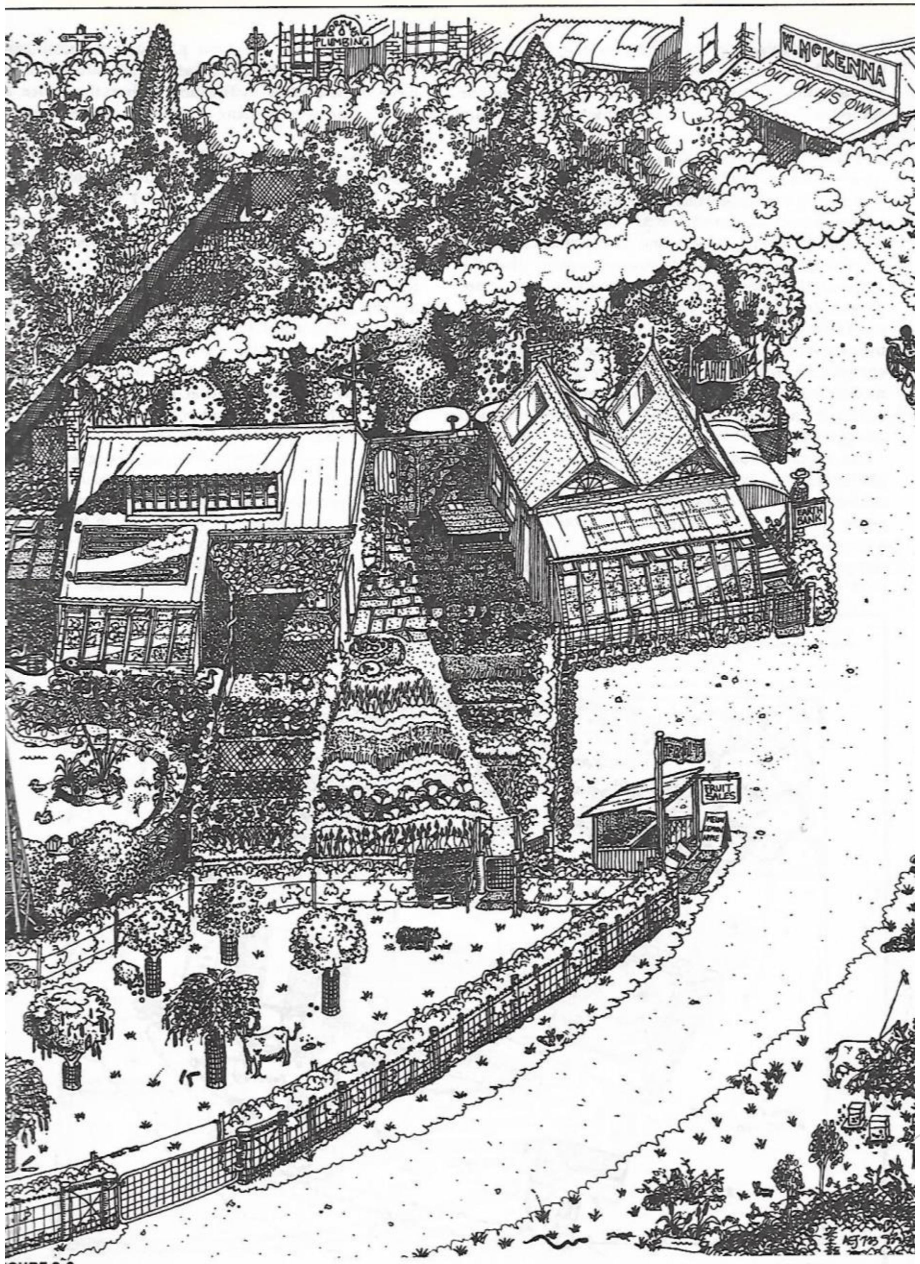


FIGURE 3.2
A TYPICAL SMALL FARM.
Villages and farms may contain all the components for self–governance but unless these components are placed in harmonious relationships to each other time, energy, and are wasted. In this figure unplanned and segregated demand inputs.



IGURE 3.3
RE–DESIGNED SMALL FARM.
this figure many elements supply the energy inputs for others, and the system can be largely self–regulating.

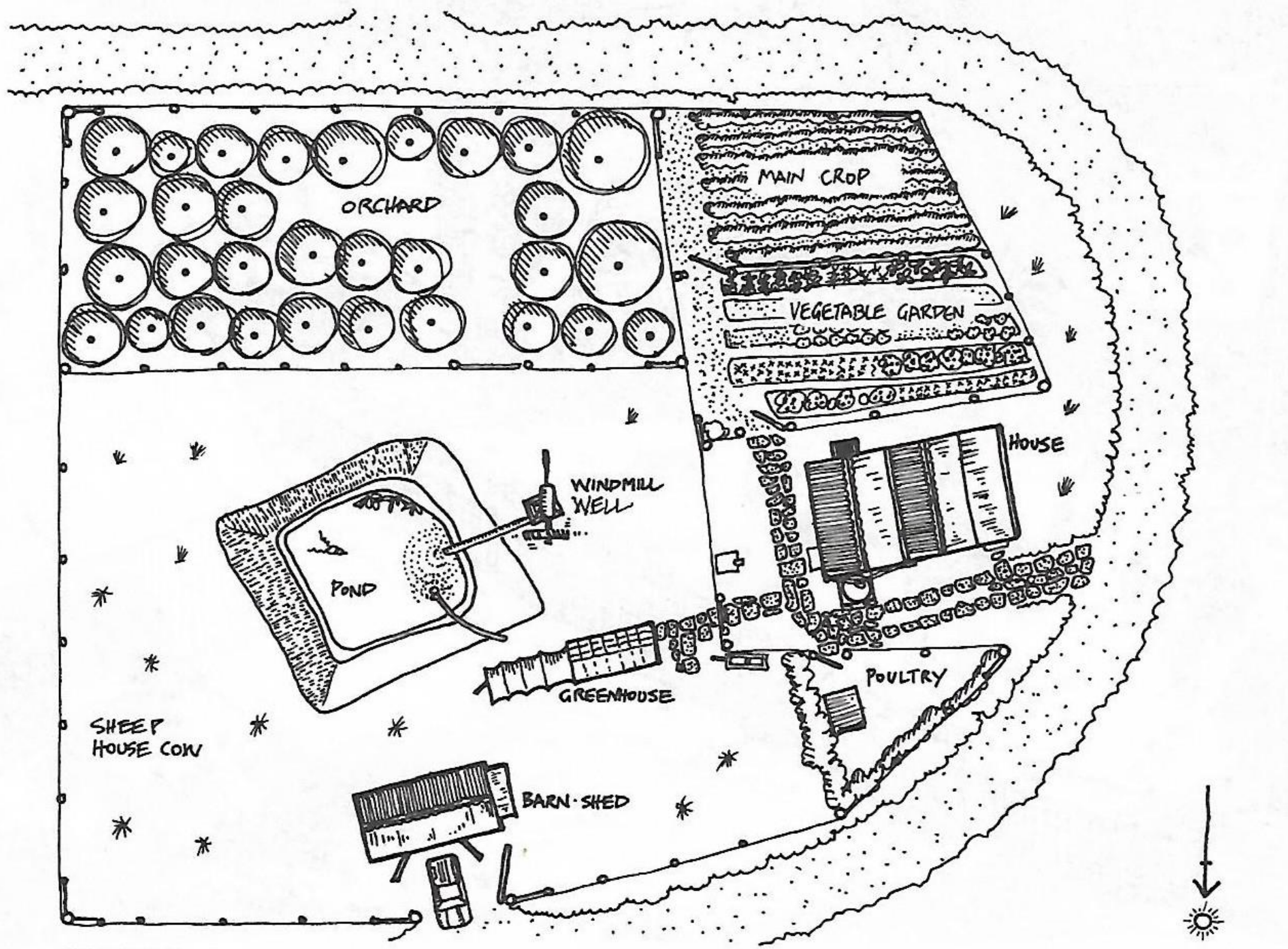


FIGURE 3.4
PLAN OF THE NON–INTEGRATED SYSTEM IN FIGURE 3.2.

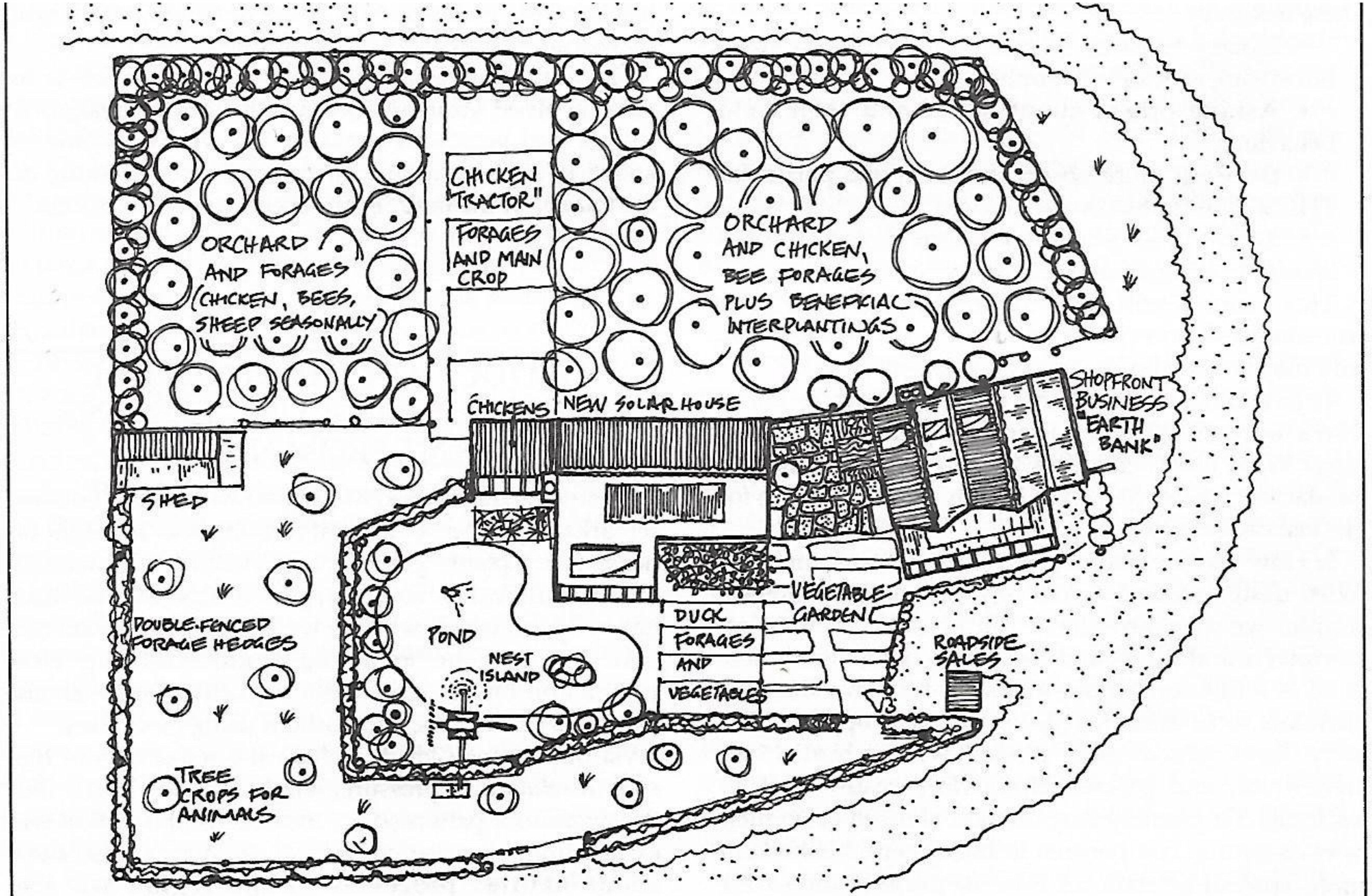


FIGURE 3.5
PLAN OF THE INTEGRATED SYSTEM IN FIGURE 3.3.

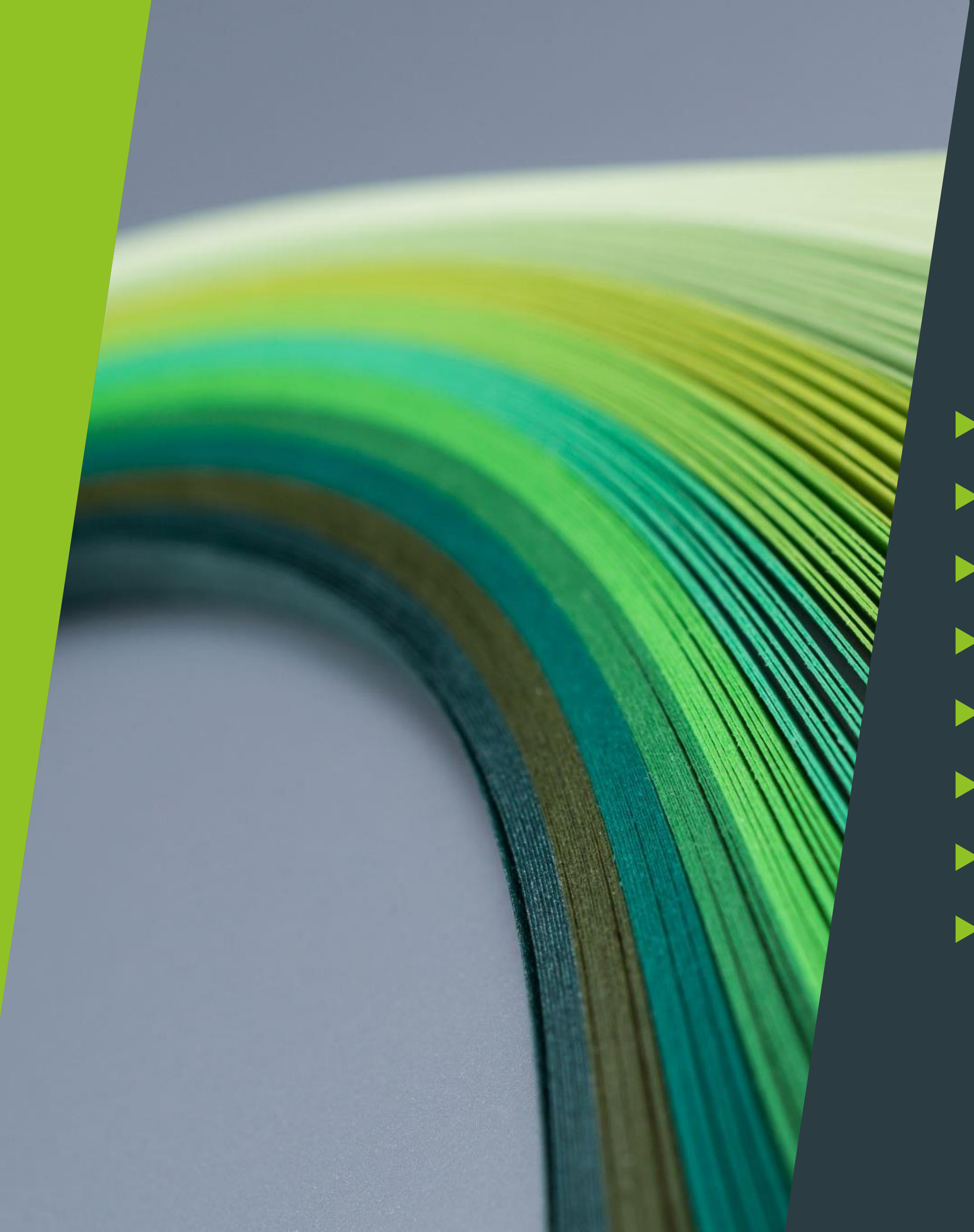
Observation

- Design by expanding direct observation on site
- Child like – non-selective approach, allow the asking of fundamental questions
- Thematic approach, water, energy, food systems
- Instrumental approach, collecting data, gradients, winds etc
- Experiential approach

Observation – site survey

- Make value free noninterpretive notes
- Take as many pictures and videos as you usefully can
- Confirm or deny any speculations through research, local records, local memory, data for longer term trends
- Examination of the evidence
- Build strategies in line with obersvations

Deduction from nature



Principles of natural systems

- Catch and store energy
- Edge effect
- Diversity
- Stacking
- Functions and elements
- Microclimate
- Succession
- Beneficial relationships - symbiosis

Design as a selection of options or pathways based on decisions

- Product or crop options
- Social investment options
- Skills and occupations, education available
- Processing or value adding on or off site
- Market availability
- Management skills

Design by Map overlays

- Googlemaps
- Photoshop
- Drone cameras
- 3D modelling

Design considerations

- Zones
- Sectors
- Gradient
- Guilds
- Succession

Random assembly

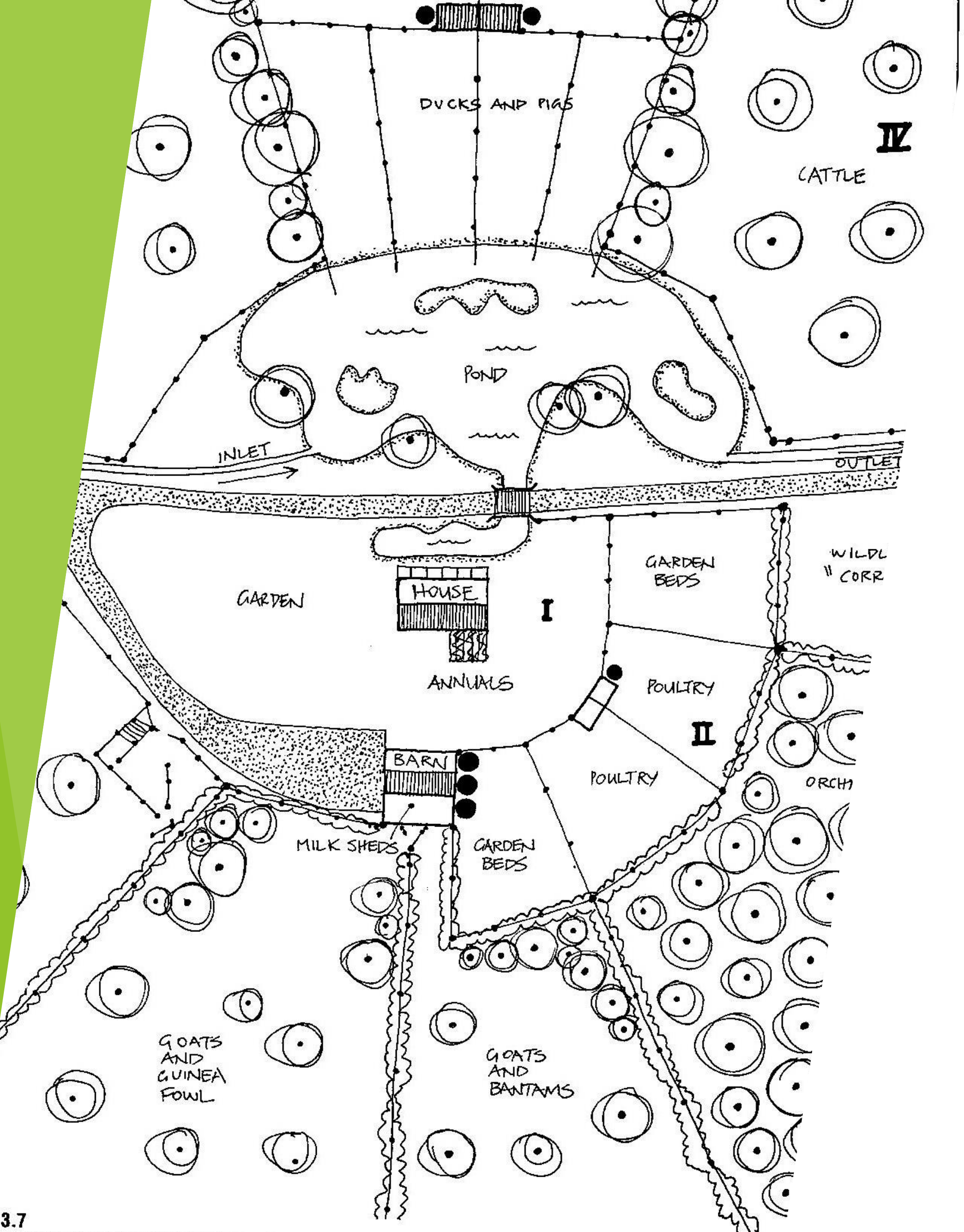
Explore the relationships between functions, elements and systems

Random assembly

Function	Element	System
Food production	Raised bed/ compost/ tool shed/ water butt	Forest garden, IPM
Cash crop	Willow/ Grains/ Cheese	Pasture/ field rotation
Wildlife habitat	Regeneration/ min till	Forest, hedge management
Water catchment	Pond, swale, water butt	Site wide strategy
Space for people	Shed/ tea room/ toilet	Management/ induction

TABLE 3.3:
SOME FACTORS WHICH CHANGE IN ZONE PLANNING AS DISTANCE INCREASES.

Factor or Strategy	ZONE I	ZONE II	ZONE III	ZONE IV
Main design for:	House climate, domestic sufficiency.	Small domestic stock & orchard.	Main crop forage, stored.	Gathering, forage, forestry, pasture.
Establishment of plants	Complete sheet mulch.	Spot mulch and tree guards.	Soil condition-ing and green mulch.	Soil conditioning only.
Pruning and trees	Intensive cup or espallier trellis.	Pyramid and built trellis.	Unpruned and natural trellis.	Seedlings, thinned to selected varieites.
Selection of trees	Selected dwarf or multi-graft.	Grafted varieties and plants managed.	Selected seedlings for later grafts. by browse.	Thinned to selected varieties, or
Water provision	Rainwater tanks, bores wind pumps. reticulation.	Earth tank and wells, bores,	Water storage fire control.	Dams, rivers, in soils, dams.
Structures	House/green-house, storage integration.	Greenhouse and barns, poultry sheds.	Feed store, field shelter.	Field shelter grown as hedgerow and woodlot
Information	Stored or generated by people.	In part affected by other species.	As for II.	Arising from natural processes.


DUCKS AND PIGS
IV
CATTLE
POND
INLET
OUTLET
GARDEN BEDS
WILDL
CORR
GARDEN
HOUSE
I
ANNUALS
POULTRY
II
POULTRY
ORCH
BARN
MILK SHEDS
GARDEN BEDS
GOATS AND GUINEA FOWL
GOATS AND BANTAMS

3.7

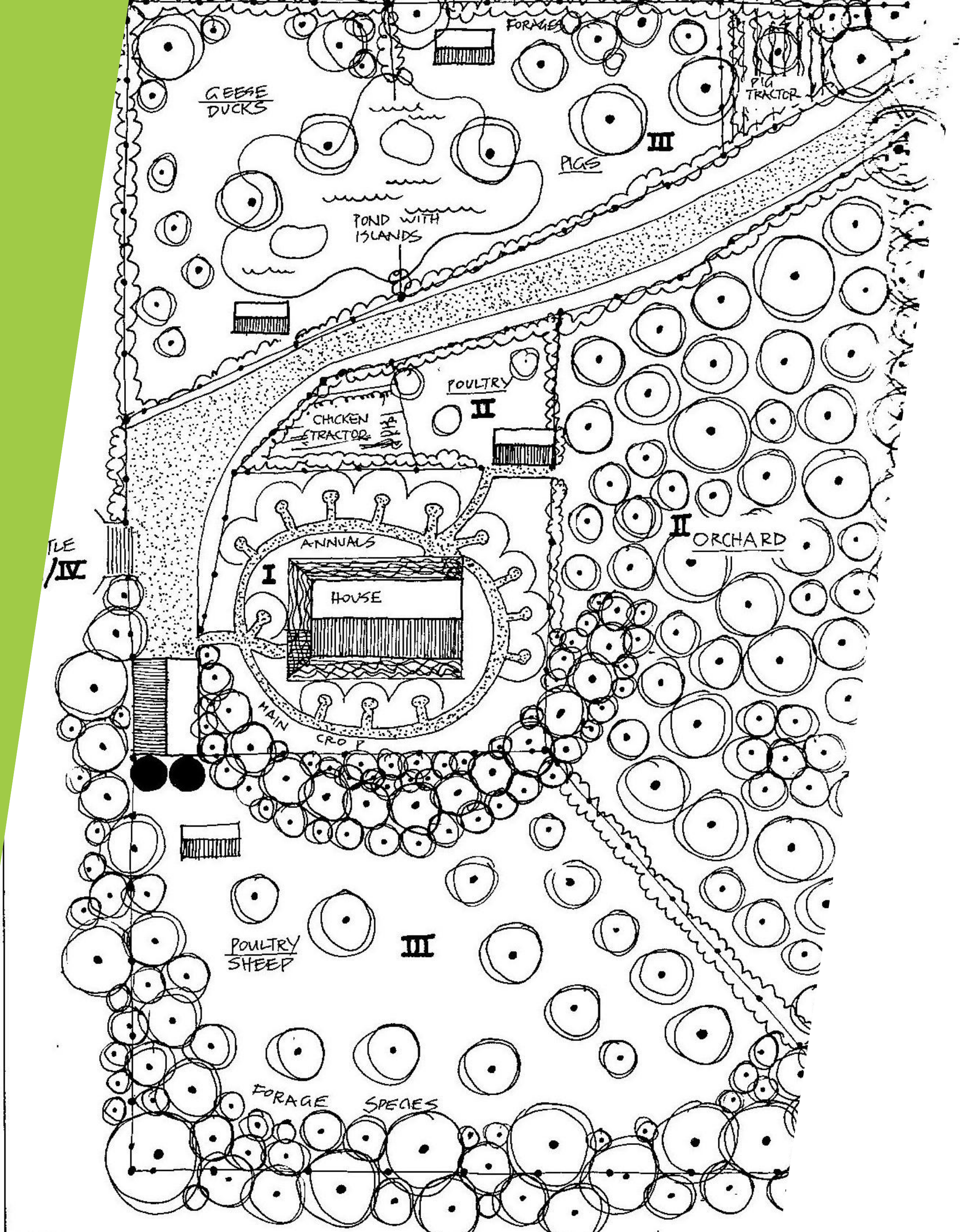
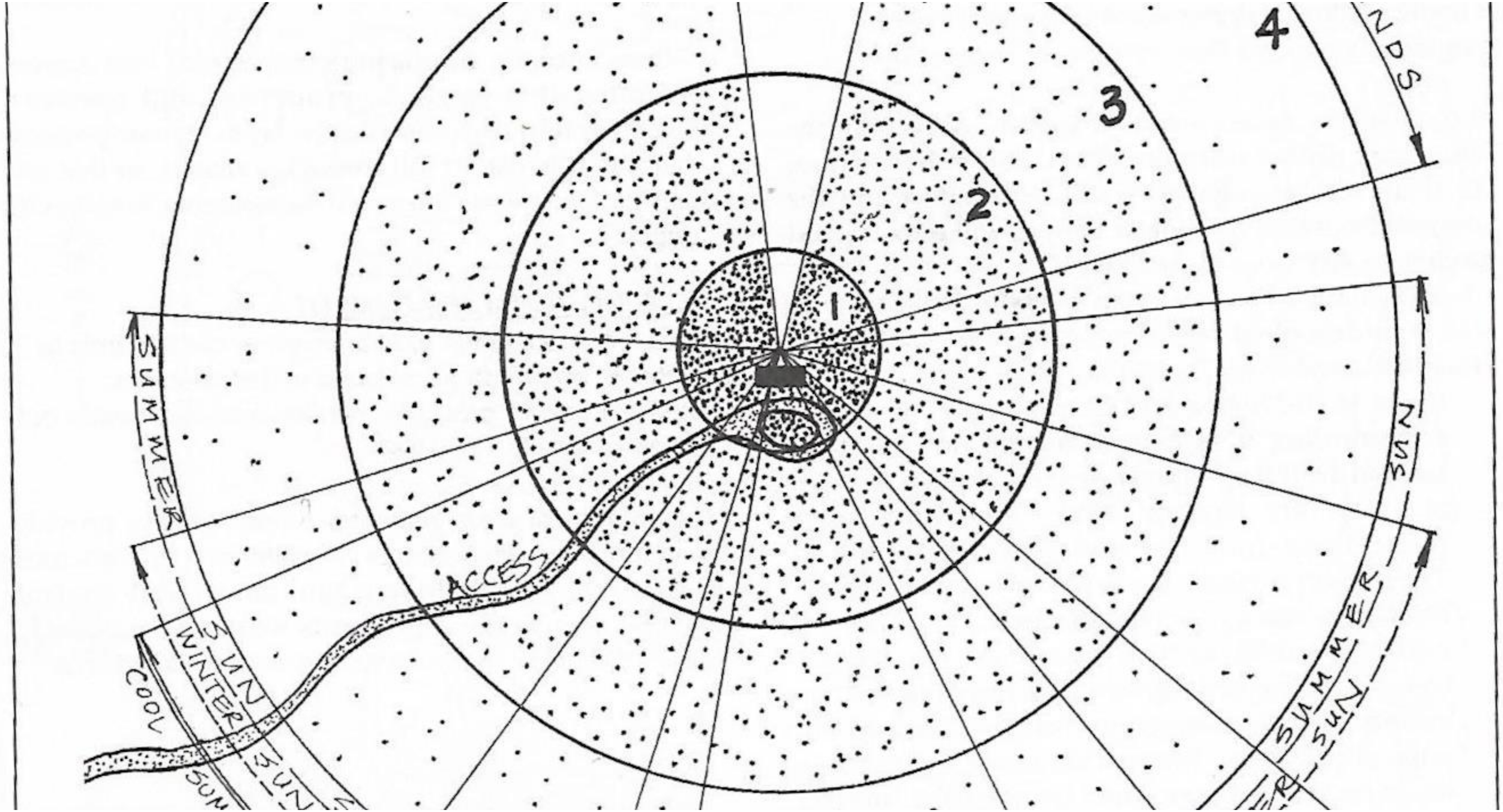

FORAGES
GEESE DUCKS
PIG TRACTOR
III
PIGS
POND WITH ISLANDS
POULTRY
II
CHICKEN TRACTOR
ANNUALS
I
HOUSE
II ORCHARD
MAIN CROP
POULTRY SHEEP
III
FORAGE SPECIES

FIGURE 3.8



1
2
3
4
ACCESS
SUMMER
SUN
WINTER
COOL
SUMMER
SUN
SUMMER
SUN

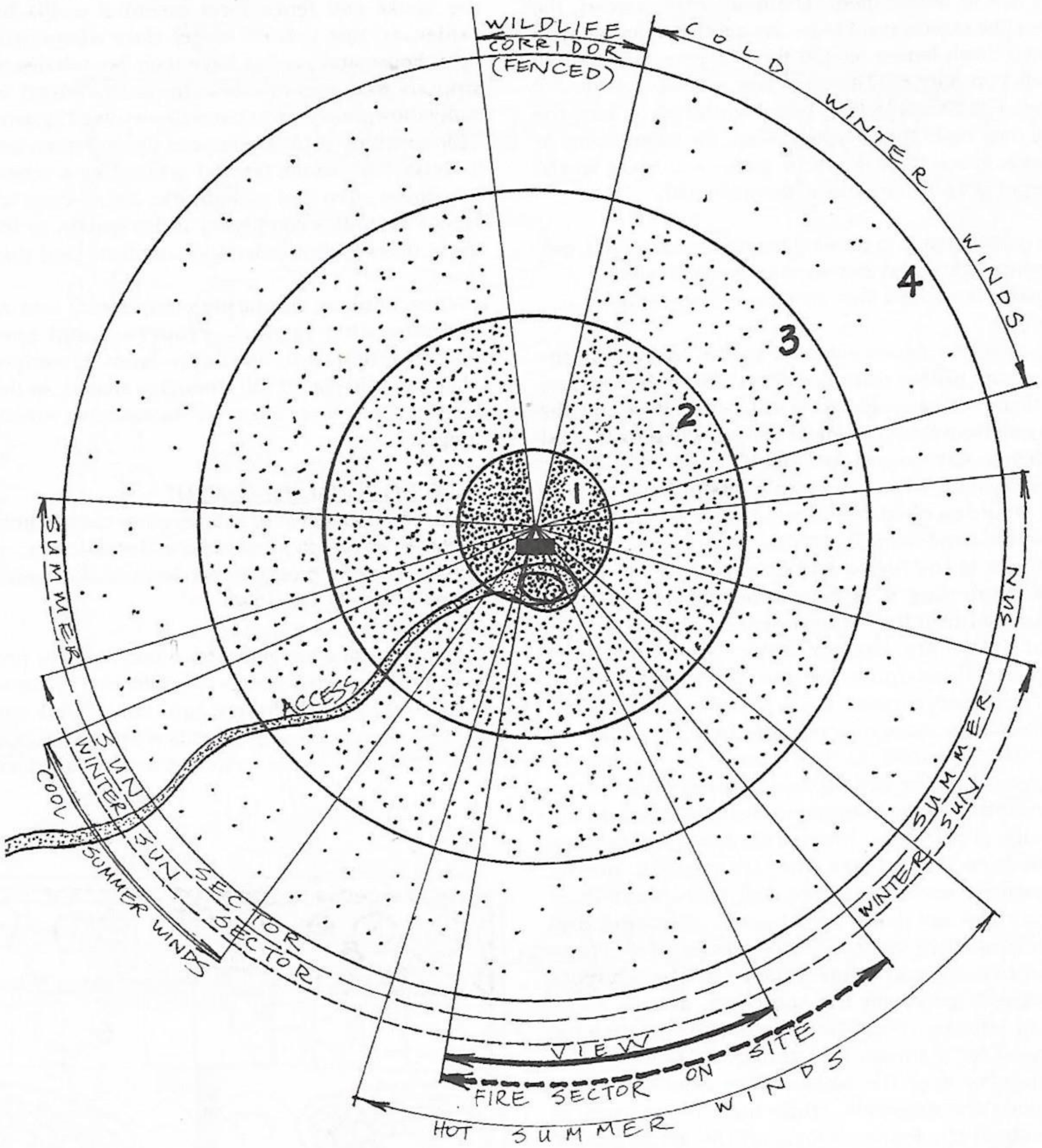


FIGURE 3.10
SECTOR ANALYSIS.

Elevation in design

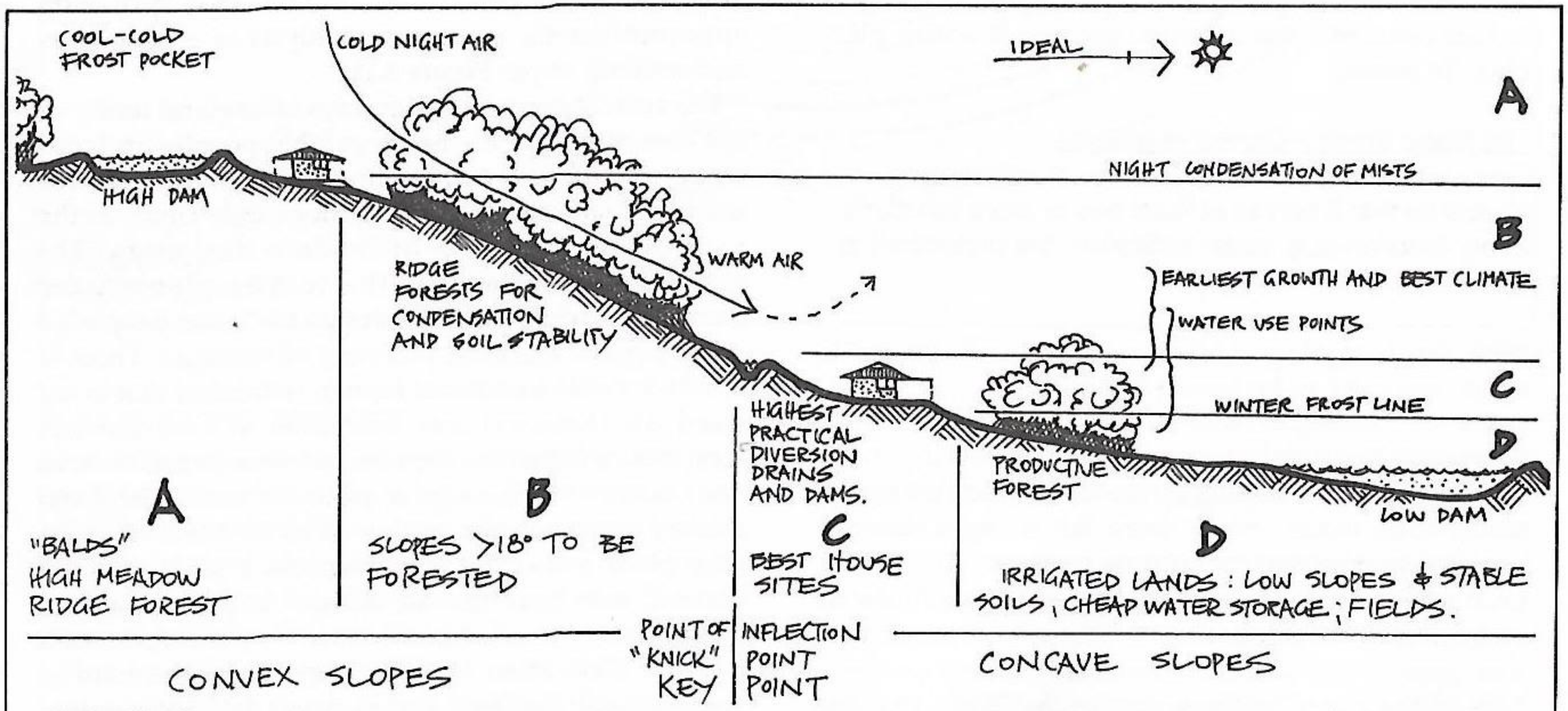
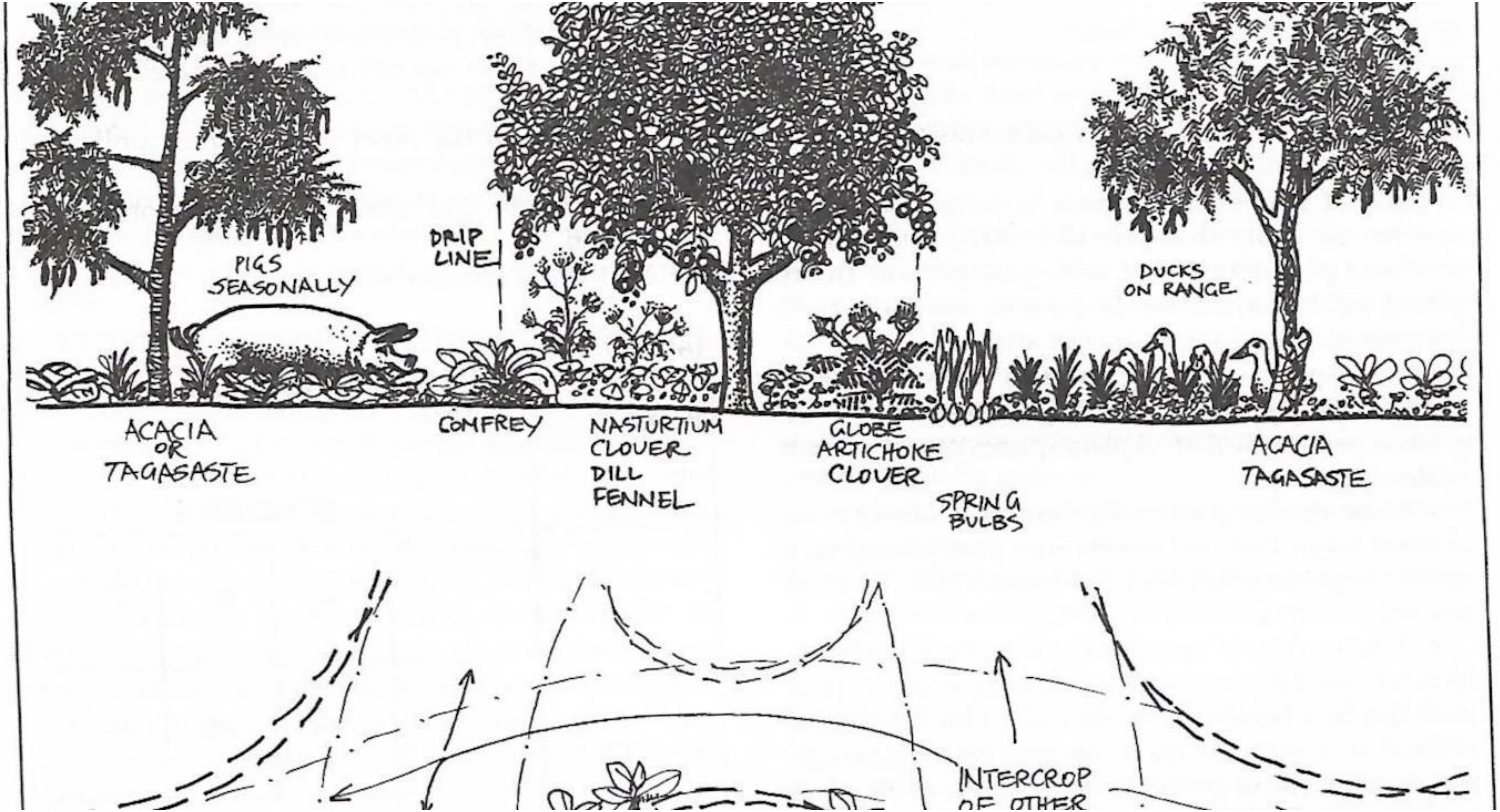
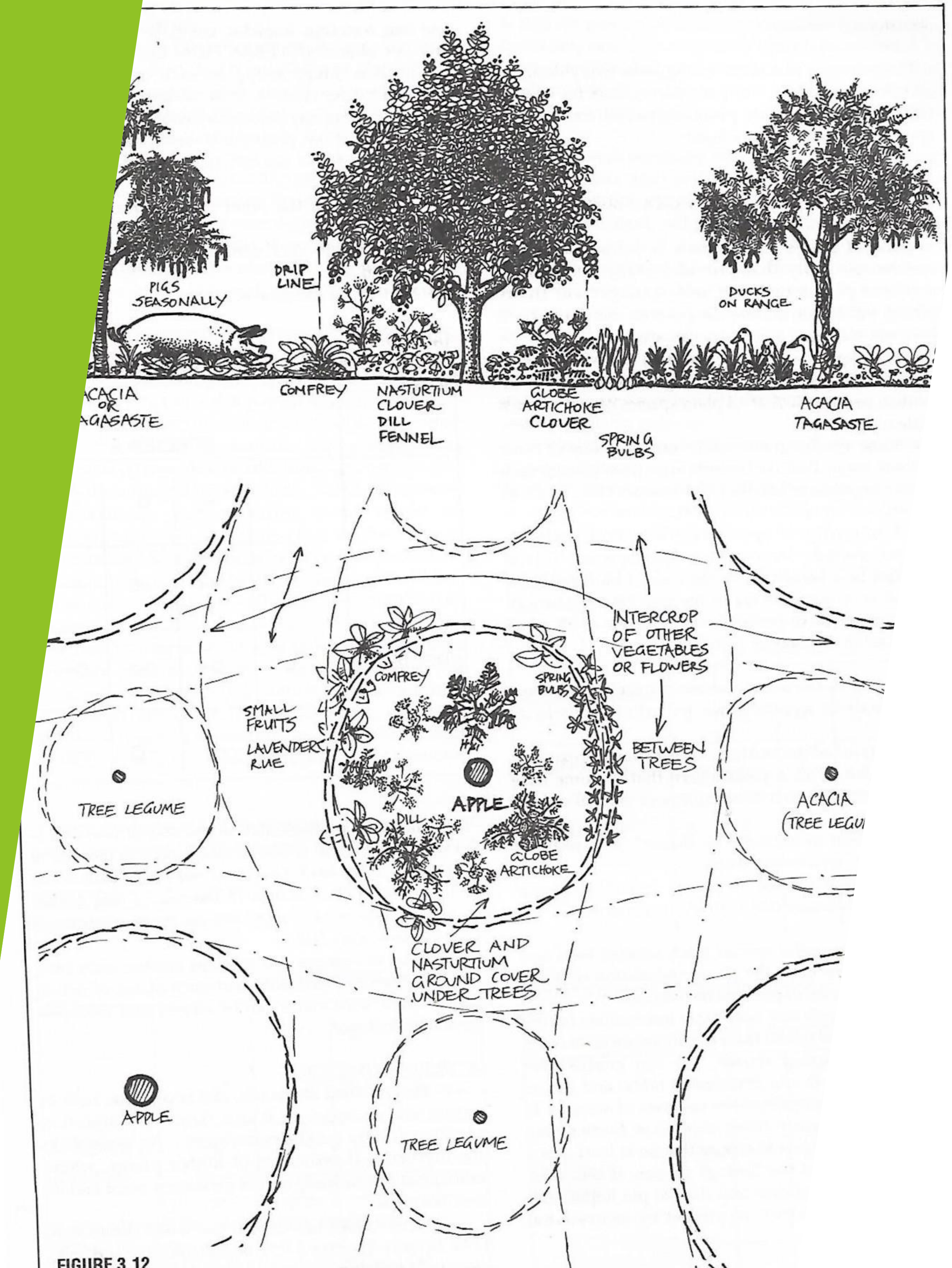


FIGURE 3.11
BROAD HUMID LANDSCAPE PROFILE.
Slope analysis and site planning in relation to aspect largely decide the placement of access, water supply, forests, and cropland. Here we supply such analysis to a cool, humid region .



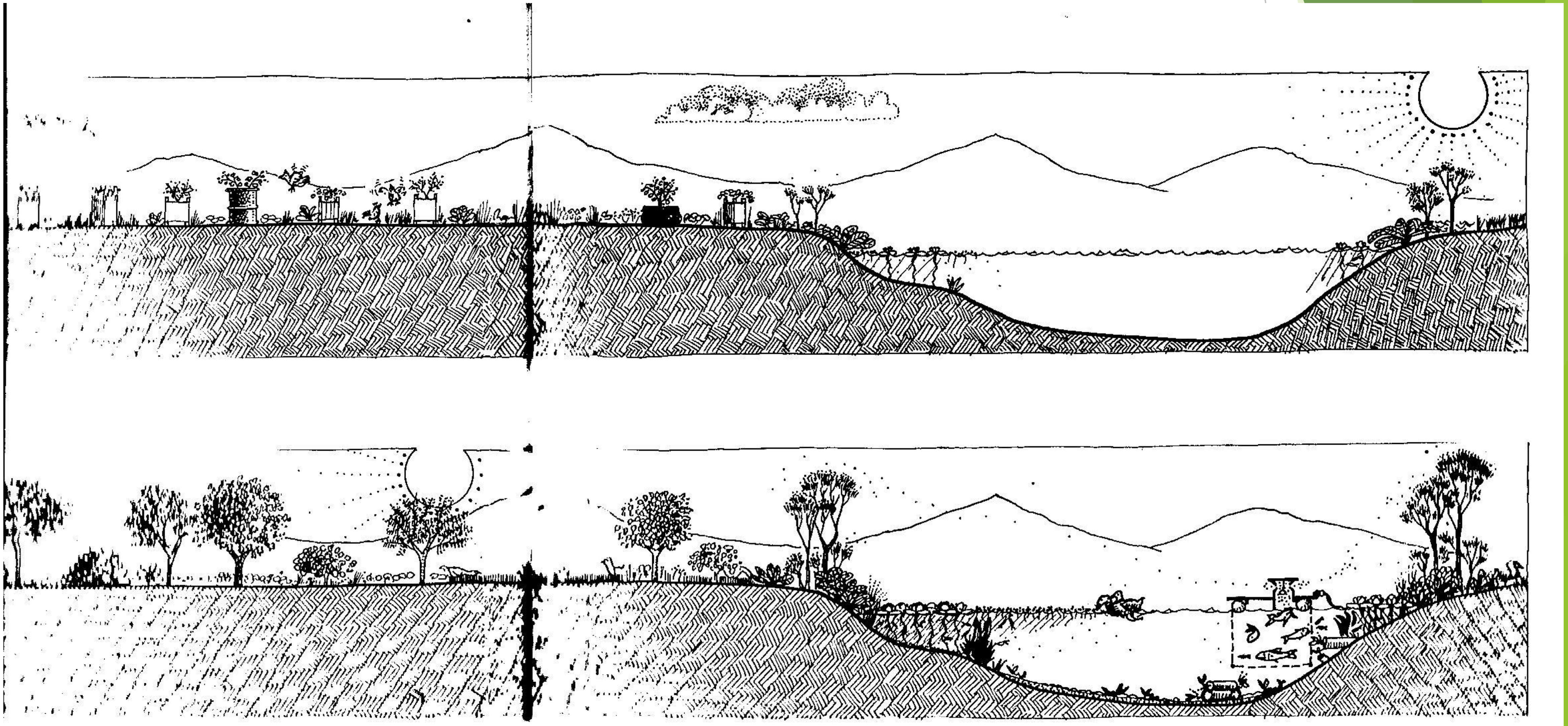
PIGS SEASONALLY
DRIP LINE
DUCKS ON RANGE
ACACIA OR TAGASASTE
COMFREY
NASTURTIUM
CLOVER
DILL
FENNEL
GLOBE ARTICHOKE
CLOVER
SPRING BULBS
ACACIA
TAGASASTE
INTERCROP



Plant guilds create habitat

- Multiple elements combine to create a stronger and more efficient system
- Increase the velocity of nutrient cycling as well efficiency
- Microclimate can be explored to best advantage
- Design to establish mutually beneficial relationships

Succession



…blishment, an area is fenced and a complex of species …ted from grazers by fencing and tree guards. Ponds … Only small livestock (chickens) and some annual …vested

B. The system evolves to a semi–hardy stage. Geese, fish, and shellfish are introduced, and crops include some aquatic plant species.

C. An evolved system provides forage, firewood, aquatic and animal products. Larger foragers (sheep, pigs) can be grown seasonally. The system provides its own mulch and fertilizers. The mature system requires management rather than energy input, and has a variety of marketable yields (including information).