Ethnobotany

(Plants & People)

Ethnobotany (Biol. 616)

Credit Value : 5 ECTS (~ 2 credit hrs)

Endale A. (MSc., PhD Candidate)

Ethnobotany

This course is about plants and people

Introducing the Module

Course syllabus

- Contents, learning outcomes, all other aspects
- Texts, References, Reading materials

See syllabus

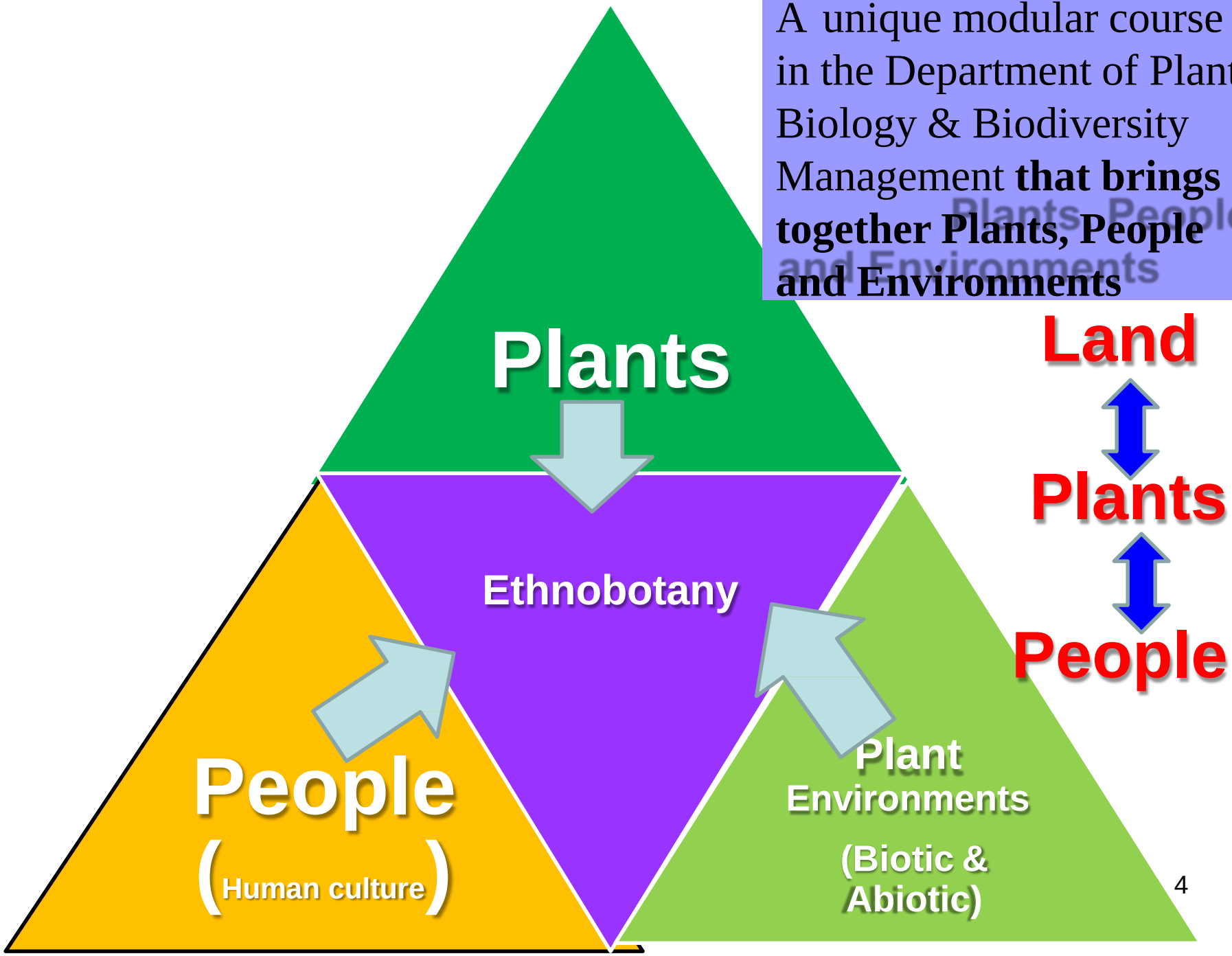
Key Books for the module (▲= Soft copy PDF Available)

1. Martin, G. (1995/2004). ***Ethnobotany: Methods Manual***, Chapman and Hall.▲
2. Cotton, C. M. (1996). **Ethnobotany. Principles & Applications.** John Wiley & Sons ▲
3. Balick & Cox (1996): **Plants, People & Culture: The Science of Ethnobotany** ▲
4. Alexiades, M.N. (1996) (ed.). ***Selected Guidelines for Ethnobotanical Research: A Field Manual.*** ▲
5. Albuquerque, U.P.; Cruz da Cunha, L.V.F; de Lucena, R.F. P. and Alves, R.R.N. (eds.) (2014). ***Methods and Techniques in Ethnobiology and Ethnoecology*** ▲

Key Journals for the module:

1. *Journal of Ethnobotany Research and Applications (open Access)*
2. *Journal of Ethnobiology and Ethnomedicine (open Access)*
3. *People and Plants Working Papers (Open Access)*
4. *Journal of Ethnopharmacology*
5. *Economic Botany*
6. *Journal of Ethnobiology, etc.*

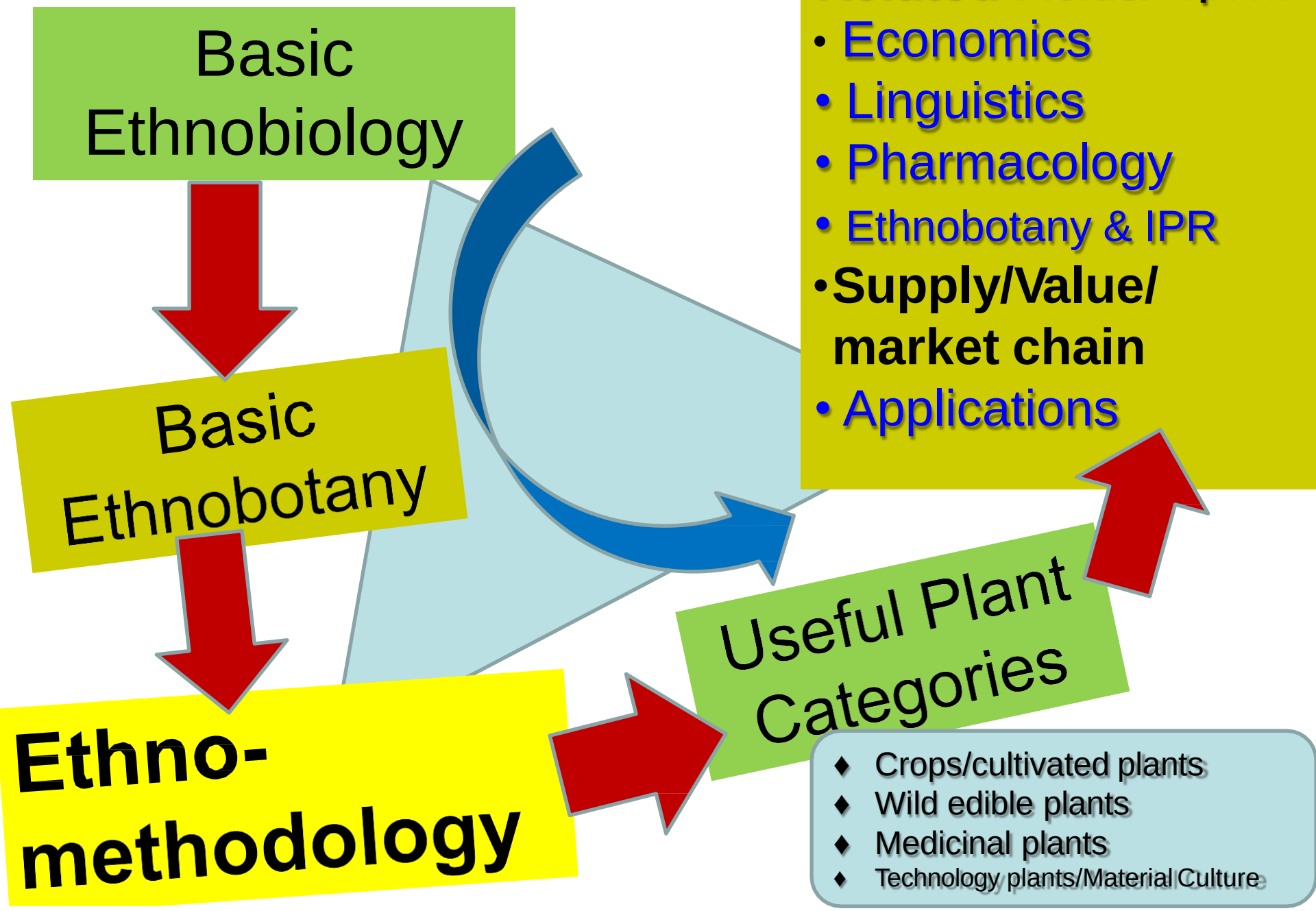
A unique modular course in the Department of Plant Biology & Biodiversity Management **that brings together Plants, People and Environments**



Main Aspects to be Covered in this course

- Introductory **Ethnobiology** **- To be covered by students**
  - Scope, concepts, history, foundations, branches, relations
- Basic Aspects of **Ethnobotany**
- The Expanding **Methodological Scope** of Ethnobotany
  - Sources of ethnobotanical methodology (methods, tools, techniques)
  - Ethnobotanical surveys (Rapid and In-depth surveys)
  - Qualitative, quantitative
  - Methods of data collection, data analysis
- Quantitative Ethnobotany
- Survey of major categories of Useful Plants
  - **Ethiopian Plants to be Emphasized**
  - **Major categories of useful plants**
- Ethnobotany & linguistics
- Ethnobotany & economics
- Ethnobotany & pharmacology
- Ethnobotany & intellectual property rights
- Applications of Ethnobotany

Ethnobotany in Four Packages



Ethnobotany

- **Ethnobiology:** Studies people-biota interactions
- **Ethnobotany:** Studies people-plant interactions
  - Ethnobotany examines human relations/interaction with plants
  - Studies about categories of useful plants
    - –Diversity of use categories, ways of categorization
      - – Emic (insider view) –Etic (outsider view) categorizations
    - –Main categories of useful plants
      - – Foods and Drinks (Cereals, vegetables, fruits, oils, legumes/pulses)
      - – Health & Beauty (Medicinals, cosmetics, perfumes, fragrance, etc.)
      - – Skills & Crafts (Technological, material culture)
    - –Individual useful plants (Some examples)
      - – *Ensete ventricosum*, *Taverniera abyssinica*, *Aloe* spp., *Hagenia abyssinica*, *Carissa spinarum*, *Embelia schimperi*, *Glinus lotoides*

Ethnobotany

- *From "ethnology" - study of culture and "botany" - study of plants*

- Is the scientific study of the relationships that exist between people and plants.

- Ethnobotany is derived from Greek *ethnos* (people) + *botanikos* (of plants)
- Can be defined as

➢ **The study of the diversity of human views and relationships with plants in different cultures, both past and present.**

Plants or People?

Plants & People (Ethnobotany)

I The Basics

1. **Introductory Ethnobiology**
2. Basic Aspects of Ethnobotany
3. **Methodological Scope of Ethnobotany**
   - General aspects
   - **Quantitative Ethnobotany**
4. **General Aspects of Applied Ethnobotany**

II Survey of Useful Plants

5. **Categories of plants used by people**
   - **Domestication & Domesticated plants, spices**
   - **Wild Edibles, Medicinals, Technological plants,**
6. **Ethnobotany & pharmacology**
7. **Ethnobotany & linguistics**
8. **Ethnobotany & economics, supply/value/market chain**
9. **Ethnobotany & Intellectual Property Rights (IPR)**

INTRODUCTORY ETHNOBIOLOGY

Start looking at **Human-Biota-Environment** Interactions/Interdependence

Ethnobiology: What? Where from?

Etymology (origin and history of word):

- Derived from two important terms:
- **Ethno** - Popular prefix to say that is the way a group of people (others) look at things/world

  From **Ethnology:** the Study of cultures

  - **Biology** - Study of living things
- Ethnobiology is mainly concerned with…**perception of indigenous people.**
  - Indigenous people: People who follow traditional, non-industrial lifestyle in areas that they have occupied for generation. Indigenous people have generated & maintained indigenous knowledge (IK)

Formal Definitions of Ethnobiology

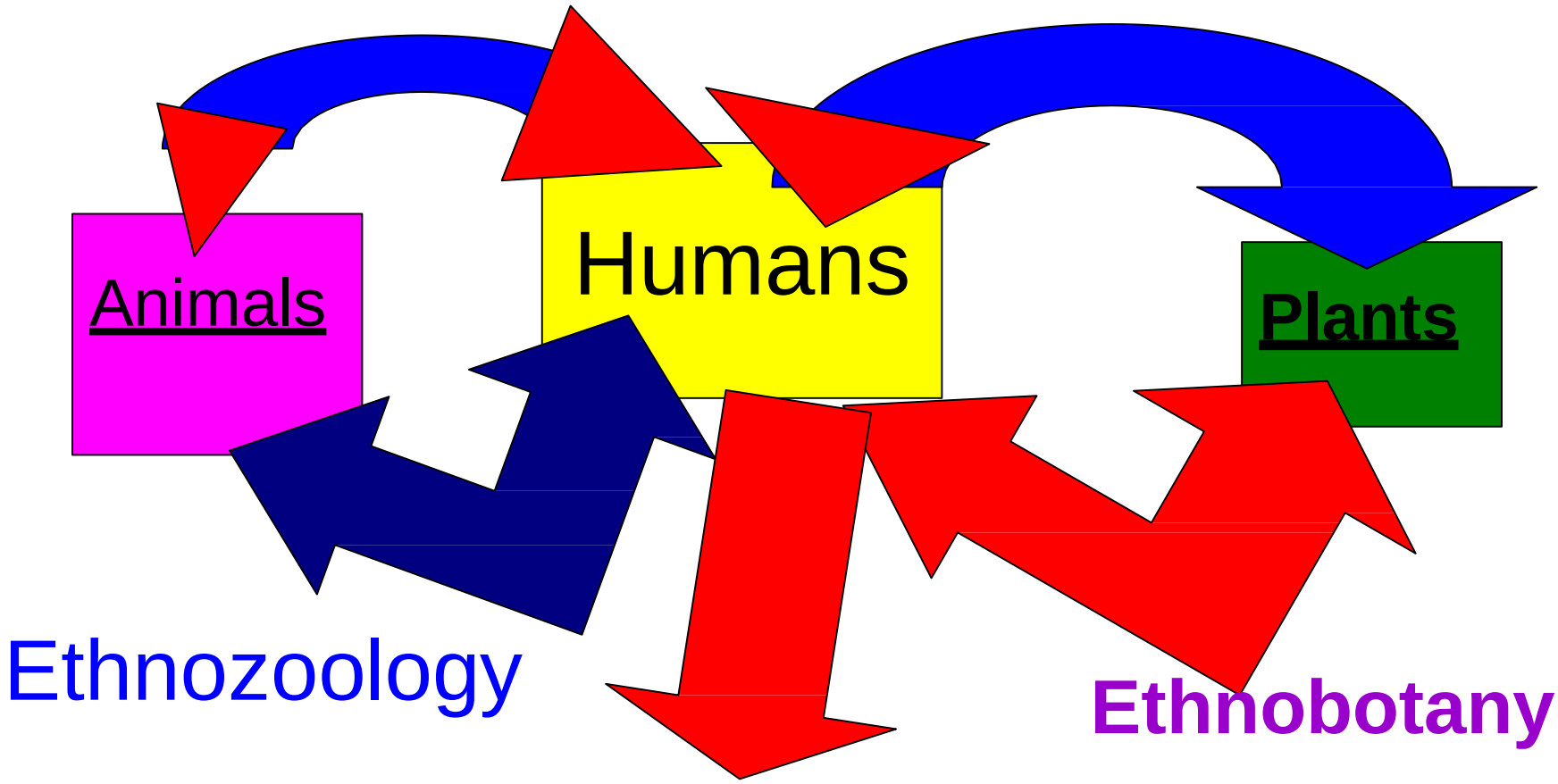
- An interdisciplinary and multidisciplinary science for documentation, analysis and use of indigenous knowledge on plants and animals

- The study of how people interact with all aspects of the natural environment including plants, animals, life forms, forests, ecosystems, etc.
- The study of the interaction between people and plants and between people and animals including the influence of human culture is the focus of the interdisciplinary field of ethnobiology
- Study of local peoples' perception of cultural & scientific knowledge on plants & animals

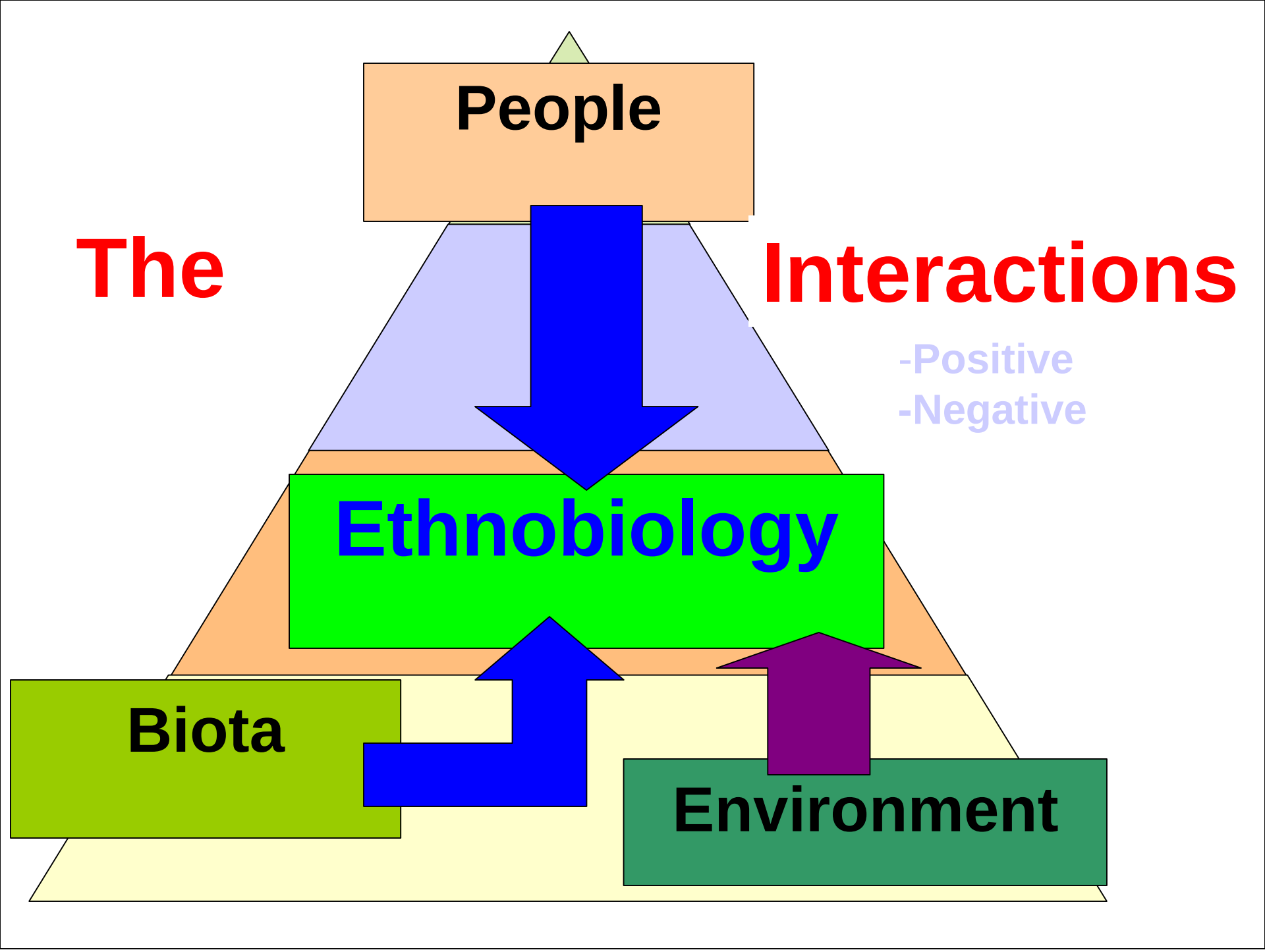
- A field of study for the collection, analysis, interpretation & use of knowledge accumulated by people during the prolonged interaction with plants & animals/biotic components of the environment.

Ethnobiology

People-Biota Interactions



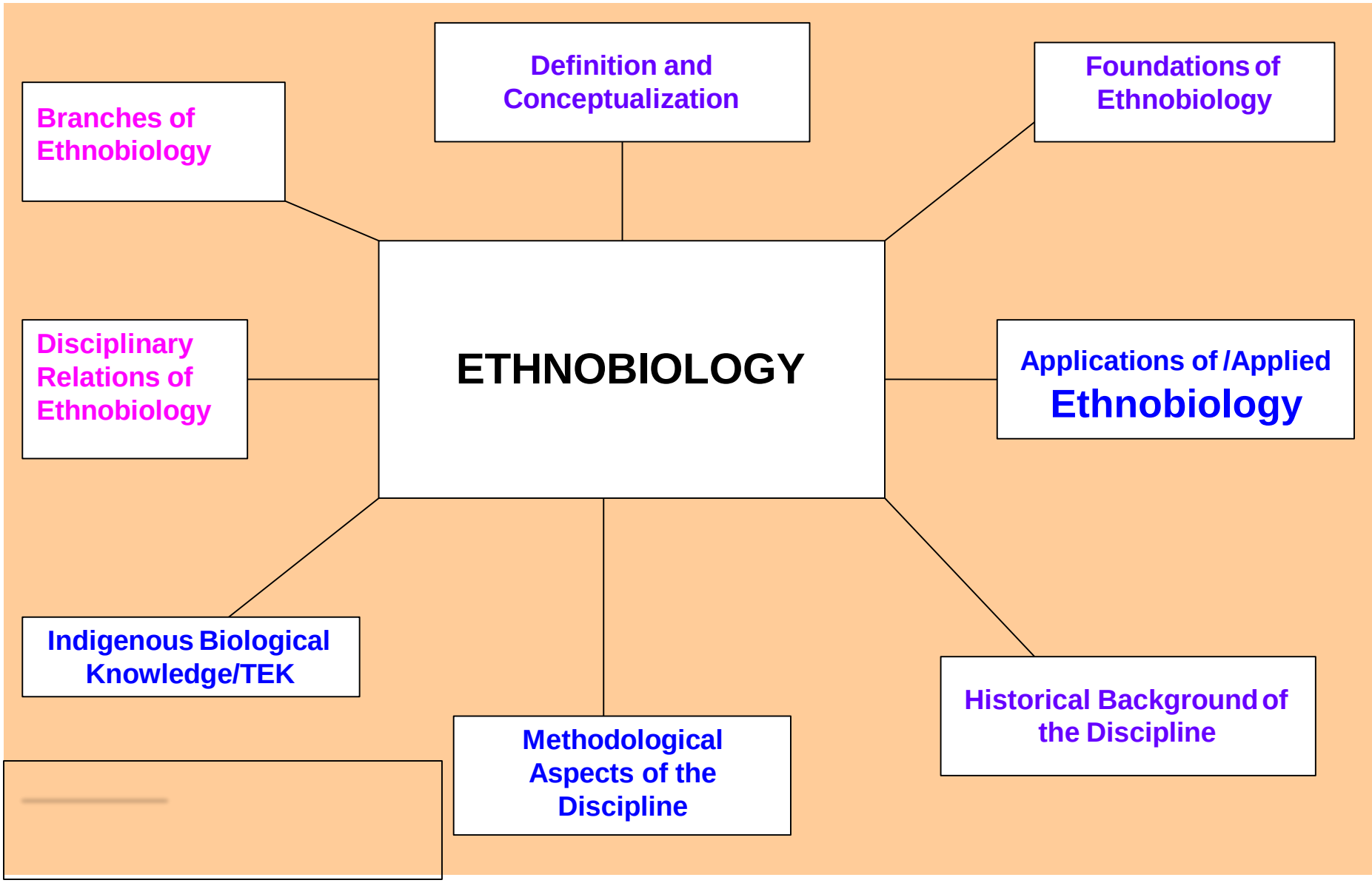
Ethonobiology is a modern science that helps to study indigenous biological/ecological knowledge


People
The
Interactions
-Positive
-Negative
Ethnobiology
Biota
Environment

Ethnobiology

- **A term coined in 1935**
- **Defined as the study of the reciprocal interactions between people and the biological organisms in their local environment**
- **The study of biological sciences as practiced in the present and the past by local people throughout the world. (1895----1935=40 years)**
  - **Ethnobotany 1895, Ethnozoology 1889, Ethnobiology 1935, Ethnoecology 1954**

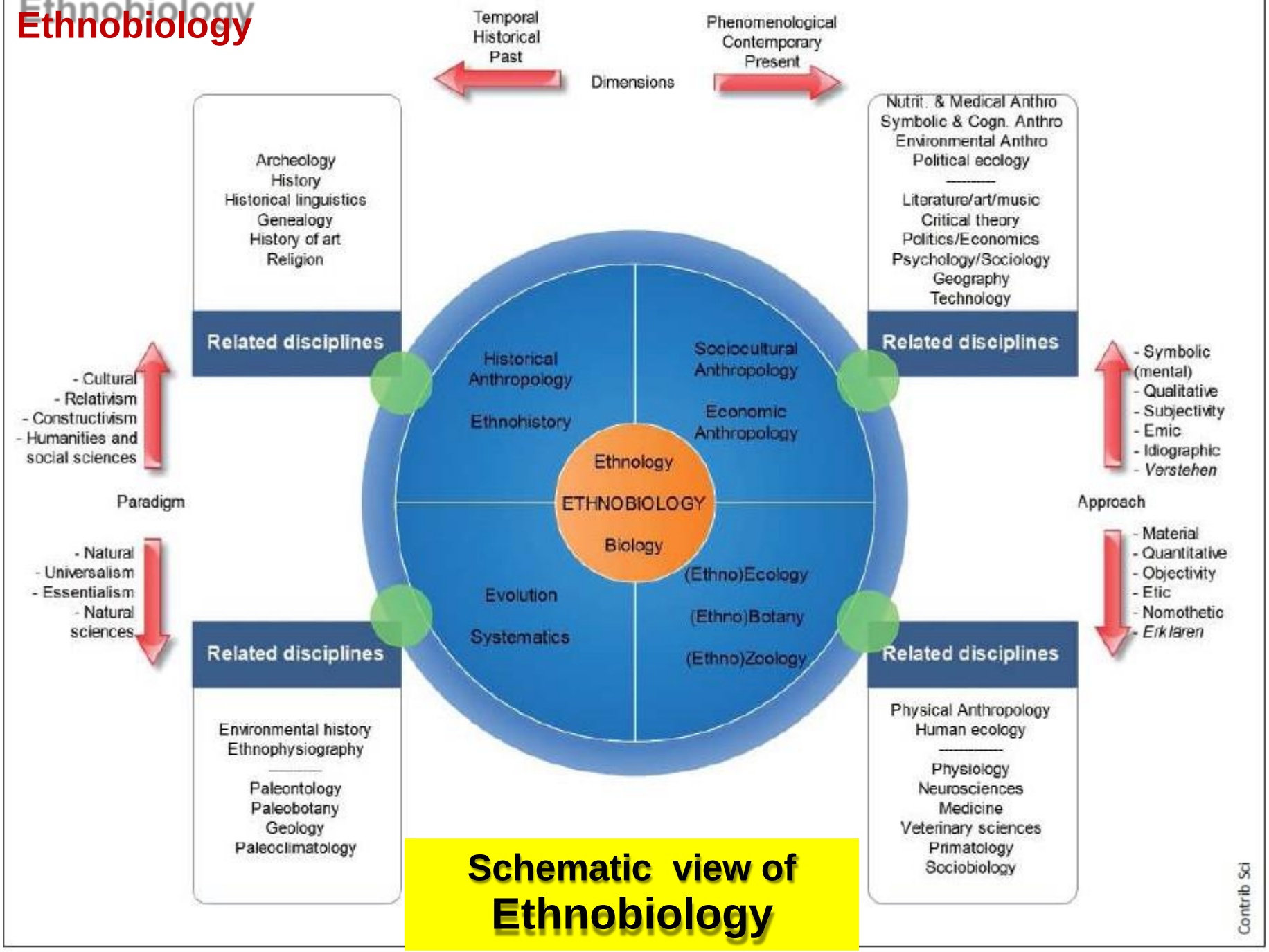
CONCEPT MAP OF ETHNOBIOLOGY



Ethnobiology

- Multidisciplinary foundations
- Theoretical & conceptual diversification
  - The investigation of the material and symbolic interrelationships between human beings and the rest of existing organisms

Study the schematic view of contemporary ethnobiology on the next slide and attempt a similar schematic view for ethnobotany – what are the key points represented?



Schematic view of Ethnobiology

Fig. 1. Schematic view of contemporary ethnobiology (central orange and blue circles) in relation to other disciplines and areas of knowledge

Ethnobiology deals with:

- **H**ow the local people:
  - Relate to their environments
  - Manipulate environmental components
  - Make use of the biological materials in their surroundings
  - Understand the biotic components & the processes of the environment
  - Classify vegetation, flora, fauna & individual plants & animals

Ethnobiology has:

❑ **Cognitive aspect**	understanding, classification, categorization
❑ **Utilitarian aspect**	Uses of vegetation/flora, fauna, individual plants & animals
❑ **Management aspect**	Environment, biodiversity (species, ecosystems, genes)

Ethnobiology tries to see human **societies in relation to:**

- Experiences resulting from interactions with the environmental components
  - It does this in order to know **human**:
    - Perception on biota
    - Understanding of biota
    - Use of biota
    - Management of environments & biota
    - Classification of vegetation, organisms
    - Symbolization of plants & animals

Note these Carefully!

Interactions between Humans & the biotic components of the environment

It does all these and not only uses

Historical Sketch of Ethnobotany/Ethnobiology

- **Earliest form**:
  - Listing the names & uses of plants & animals in native non-Western or 'traditional' populations
  - Descriptive biological knowledge of peoples
  - Essentially utilitarian focus
  - Focuses on 'native' plants, animals & technologies of potential use/value
  - Etic perspective, qualitative approach

Later form:

- Emic perspective
- Quantitative approach
  - –More cognitively framed studies replaced utilitarian-focused studies
  - –Studies centered on elucidating classificatory schemes
  - –Applied in ecology, conservation biology, agriculture, medicine, developmental studies

Perspectives in Ethnobiology

Etic View	Emic View
• An alien view • Outsider's view point • Researcher's view • Cross-cultural • Derived by comparing many systems • Derived by abstracting and synthesizing • Universal knowledge	• Domestic view, • Insider's view • Monocultural view • Functional relation of one cultural group

Ethnobiology/Ethnobotany

Started with a traditional style:

- Etic approach
- Qualitative methods
- Basic ethnobiology
- Lists plant names
- Inventories/surveys

Became more formal with the addition of:

- Emic approach
- Quantitative methods
- Application/applied
- Experimental
- Technological

ETHNOBIOLOGY IN FOUR PHASES

EUGENE HUNN: Journal of Ethnobiology
27(1):1-10. 2007

I	**Ethnobiology I** begins well before the formal naming of ethnobiology as a scholarly endeavor at the end of the 19th century. Initial phase widely characterized, with some over simplification, as essentially utilitarian
II	**Ethnobiology II** was elaborated in the cognitive/linguistic anthropology of the 1960s
III	**Ethnobiology III** integrates knowledge with practice, stressing the ecological consequences of knowledge applied to make a living
IV	**Ethnobiology IV** emphasizes the rights of indigenous peoples to control their traditional knowledge

ETHNOBIOLOGY IN THREE PHASES

Society of Ethnobiology

- **Phase I (1900s-1940s)**
- **Phase II (1950s-1970s)**
- **Present (1980s-2000s)**

- Ethnobiology itself, as a distinctive practice, only emerged during the 20th century as part of the records then being made about other peoples, and other cultures.
- As a practice, it was nearly always ancillary to other pursuits when documenting others' languages, folklore, and natural resource use.

Phase I (1900s-1940s)

- At its earliest and most rudimentary stage
  - Involved listing the names & uses of plants & animals in native non-Western or 'traditional' populations
- *Ethno*biology is taken as the descriptive biological knowledge of 'primitive' peoples
  - This 'first phase' essentially has a utilitarian purpose
  - Focuses on identifying those 'native' plants, animals & technologies of potential use/value
  - Operated within increasingly dominant western economic systems

Phase II (1950s-1970s)

- Arising out of the practices in Phase I
  - Researchers started striving to better document and better understand how other peoples' themselves "conceptualize and categories" the natural world around them
    - By the mid-twentieth century
      - Utilitarian-focused studies started to give way to more cognitively framed ones
      - Notably studies that centered on elucidating classificatory schemes

Phase III (1980s-2000s) [Present!]

- By the turn of the 20th century ethnobiological practices, research, and findings have had a significant impact and influence across a number of fields of biological inquiry including
  - Ecology, conservation biology, developmental studies

- Ethnobiology is a rapidly growing field of research
  - Gaining professional, student and public interest
  - Internationally Ethnobiology has come out from its place as an ancillary practice in the shadows of other core pursuits
  - Arose as a whole field of inquiry and research in its own right
  - Taught within many tertiary institutions and educational programmes around the world
  - With its own methods manuals, its own readers, and its own textbooks

Ethnobiology has many branches

Ethnobotany is the most popular and the most developed branch

to help

Branches and Relations of Ethnobiology

Ethnobiology Today

- Ethnobiology is the study of dynamic relationships among peoples, biota & environments.
- A field that is:
  - growing rapidly in research, student and public interests, popular & strongly thriving field
  - multi-disciplinary
  - becoming more quantitative & experimental
  - more practical, applied and relevant
  - becoming the real spice of biology
  - being adopted by most fields of the subject
  - Adding value to traditional disciplines of biology by focusing on interactions among people, biota & their environments

- The greatest strength of Ethnobiology lies in its:
  - –Diversity of scope
  - –Focus on complex interactions and dynamic integrations among human and natural systems
  - – Enhancing theoretical understanding on cognitive and utilitarian scopes.

Many fields contribute to Ethnobiology

- Systematics (botany, zoology)
- Population biology
- Ecology
- Mathematical biology
- Cultural anthropology
- Ethnography
- Archaeology
- Palaeobotany
- Geography
- Economics
- Linguistics
- Chemistry
- Pharmacology
- Nutrition
- Conservation
- Sustainable development

Applications

- Currently, interest in ethnobiology and its branches is rising as a result of its important applications:
  - In **rural development** – by identifying and promoting **useful plant resource** for local use.
  - In natural **resource management** and **conservation** identifying and promoting **good conservation practices**.
  - In **biodiversity prospecting** – e.g. selecting plants for drug development.
  - In bioprospecting for medicinals, edibles, other useful plants including climate genes

Ethnobiology, Conservation and Development

Reading Material: G. Martin, 1995:Pp 224-251, M.J. Balick & P.A.Cox, 1996, Pp 179-206

1. Applying traditional ecological knowledge
2. Ethnobiological research and community development
   - Community projects
3. Forests
   - Agroforestry and agroecosystems
   - Social forestry/community forestry
   - Ethnobiological forest reserves
   - Marketing of non-timber forest products
4. Conservation of wild crop relatives and endangered useful plants
   - Botanic gardens
   - Community herbaria
5. Conservation of traditional crops and landraces (farmers' varieties)
   - Traditional farming systems (traditional field cropping and homegardening

6. Conservation of useful plants in places of worship (churchyards, mosque yards, cemeteries, sacred groves), field margins, riverbanks, roadsides, etc.
7. Education
    - Education programmes for the young
    - Newsletters
    - Popular publications, exhibits and workshops
8. Use of protected areas
    - Resource use in protected areas
    - Conservation areas and indigenous people
    - Searching for new products
    - Arts and crafts promotion
    - Ecotourism
    - Healthcare
9. The local perspective on ethnobiological research
    - Local people’s guidelines for collaboration
    - Local peoples wisdoms
10. The future of ethnobiological conservation
    - Quantitative ethnobiology
    - Comparative ethnobiology

The intellectual scope of ethnobiology

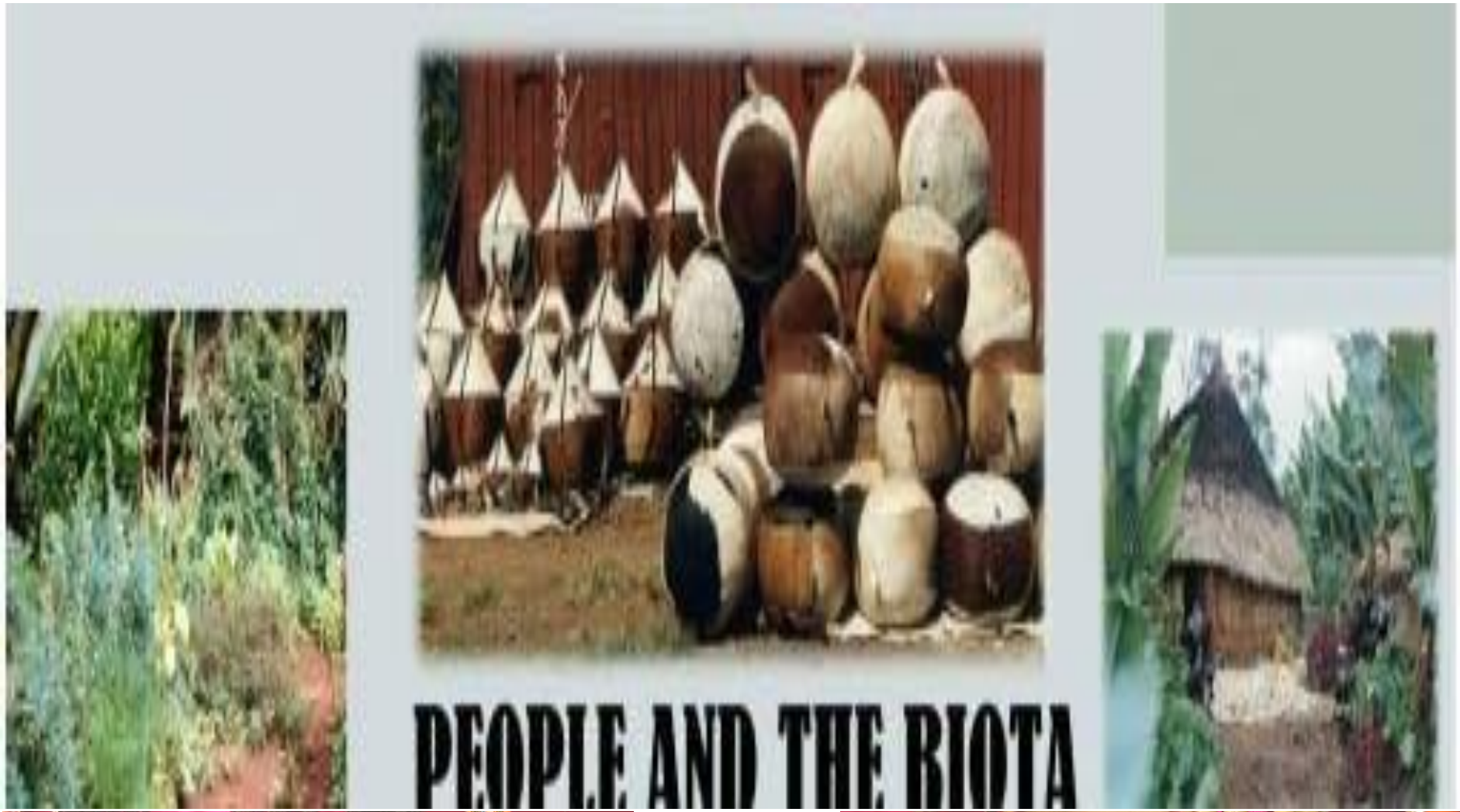
It explores:

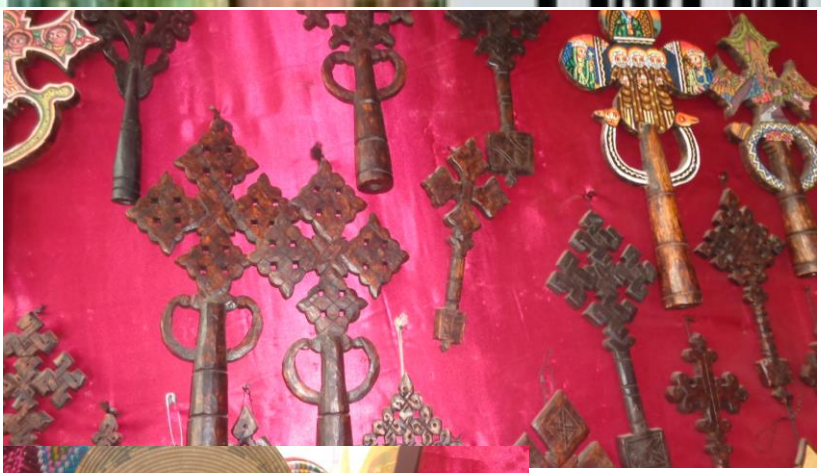
- How knowledge is created, acquired, transformed & transmitted
- How knowledge is codified & what it tells
- What are knowledge variables (age, gender, culture)?
- What creative interactions there are between science & traditional knowledge

Landscape transformations are dependent on culture, biota & environments resulting in distinct patterns in the ways

- Biodiversity is correlated with human cultural diversity (Why?)
- Links between human cultures & biodiversity are of great concern to ethnobiology
- Ethnobiology/ethnobiologists show high regards for biodiversity conservation and cultural survival

Material Culture





Knowledge Systems

Knowledge concerns:

- The way people understand the world
- The way in which they interpret & apply meaning to their experiences
- The method of selection, rejection, creation, development & transformation (adaptation) of information
- The way the intricate linkages of the social, environmental & institutional contexts can be decoded

➢ Formal Science & Indigenous Knowledge System

Indigenous Knowledge Systems

- The understanding & knowing systems of indigenous & local communities or non-industrialized societies
- Related to the cosmovision/worldview
- Full understanding requires understanding of worldviews

Reading:

1. *Working with Indigenous Knowledge: A Guide for Researchers*, Louise Grenier (1998)

Knowledge Systems

ETHNOBIOLOGICAL KNOWLEDGE ---

- IK is a subset of knowledge
- Ethnobiological knowledge is a subset of IK
- Ethnobotanical knowledge is a subset of ethnobiological knowledge

➢ IK :Refers to the unique, traditional, local knowledge existing within & developed around the specific conditions of women & men indigenous to a particular geographical area

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Indigenous ways of knowing

Knowledge that is:

- Experiential, actionable
- Context-specific
- Dynamic, innovative
- Pro-nature
- Relational, ethical

Indigenous Knowledge Systems

- The knowledge systems that deal with the ways in which different societies & cultures know things in their surroundings:
  - The ways in which different societies & cultures have come to:
    - Perceive, Know, Use, Classify &
    - Symbolically represent plants & animals
- Knowledge of societies that concern cosmological, moral & spiritual aspects

Origin of Indigenous Knowledge

- Sum total of knowledge & skills which people in a particular geographic area possess
- This knowledge enables them to get the most out of their environments
  - Most of the knowledge & skills have been passed from earlier generations
  - Men & women of each new generation adapt & add to this body of knowledge to adjust to changing circumstances & environmental conditions
  - They in turn pass on the knowledge to the next generation to provide them with survival strategies.

The Basis for IK

- Indigenous peoples have long had a significant interdependence with the lands & environments in which they live
  - These lands & environments:
    - Are vital for their survival
    - Provide a wide array of substances for food, shelter & implements
    - Provide a source for a variety of objects for rituals & everyday use
    - Are significant in the peoples' cultural, religious & social systems

The Basis for IK ---

- Indigenous & local communities
  - Custodians & stewards of their lands & environments
  - Entrusted by ancestral charters to care for these through successive generations
- The land, its features, environments & products form cultural landscapes
  - Cultural landscapes are given significance by belief systems
  - The cultural landscapes are the result of ancestral events
- Social, political & religious systems, lands & environments are interwoven into a tightly integrated cultural system
  - Such integrated cultural system forms the basis for IK

Types of Indigenous Knowledge

Common knowledge	Held by most people in the community
Shared knowledge	Held by many, but not all, community members
Specialist knowledge	Held by a few people who might have had special training

- ***Common knowledge*** – held by, almost, all people in a community

  e.g. everyone living in a local setting knows how to cook bean or maize; what tools are used for planting & harvesting

- ***Shared knowledge*** – held by, relatively, many members of a certain community

  e.g. technology for making Ethiopian local beer (Tella), Ethiopian brandy (Areqe)

- ***Specialized knowledge*** – kept by a few people having special skills

  e.g. information on some medicinal plant properties

ETHNOBIOLOGICAL KNOWLEDGE

- Is a subset of indigenous knowledge
- Concerned with the biotic components
- Can be grouped into different branches dealing with the different categories of indigenous biological knowledge:
  - Ethnobotany – deals with the IK on Plants
  - Ethnozoology – deals with IK on animals
  - Ethnoecology- deals with IK on ecological relations

Note

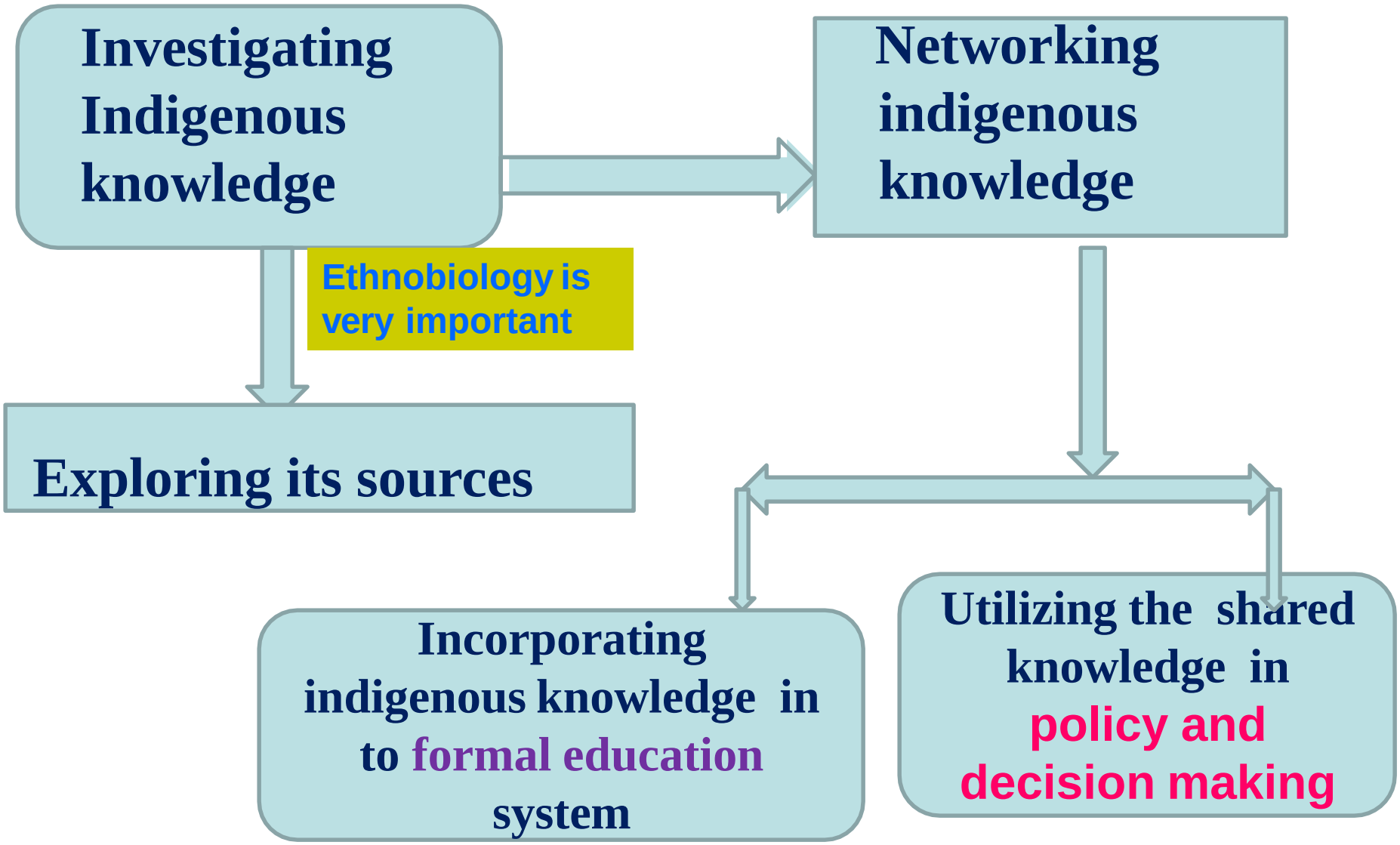
- **Ethnobotany is the science**

- **Ethnobotanical knowledge** refers to that part of IK, which deals with plants

NB. **ETHNOBOTANY collects indigenous knowledge using modern scientific approach/methodology to understand human-plant relations in a scientific way**

Recent Reading

- A researcher asking other researchers said: when people have lived for about 100 years, they are considered indigenous, **but when does an introduced, naturalized plant species be called indigenous plant species?**



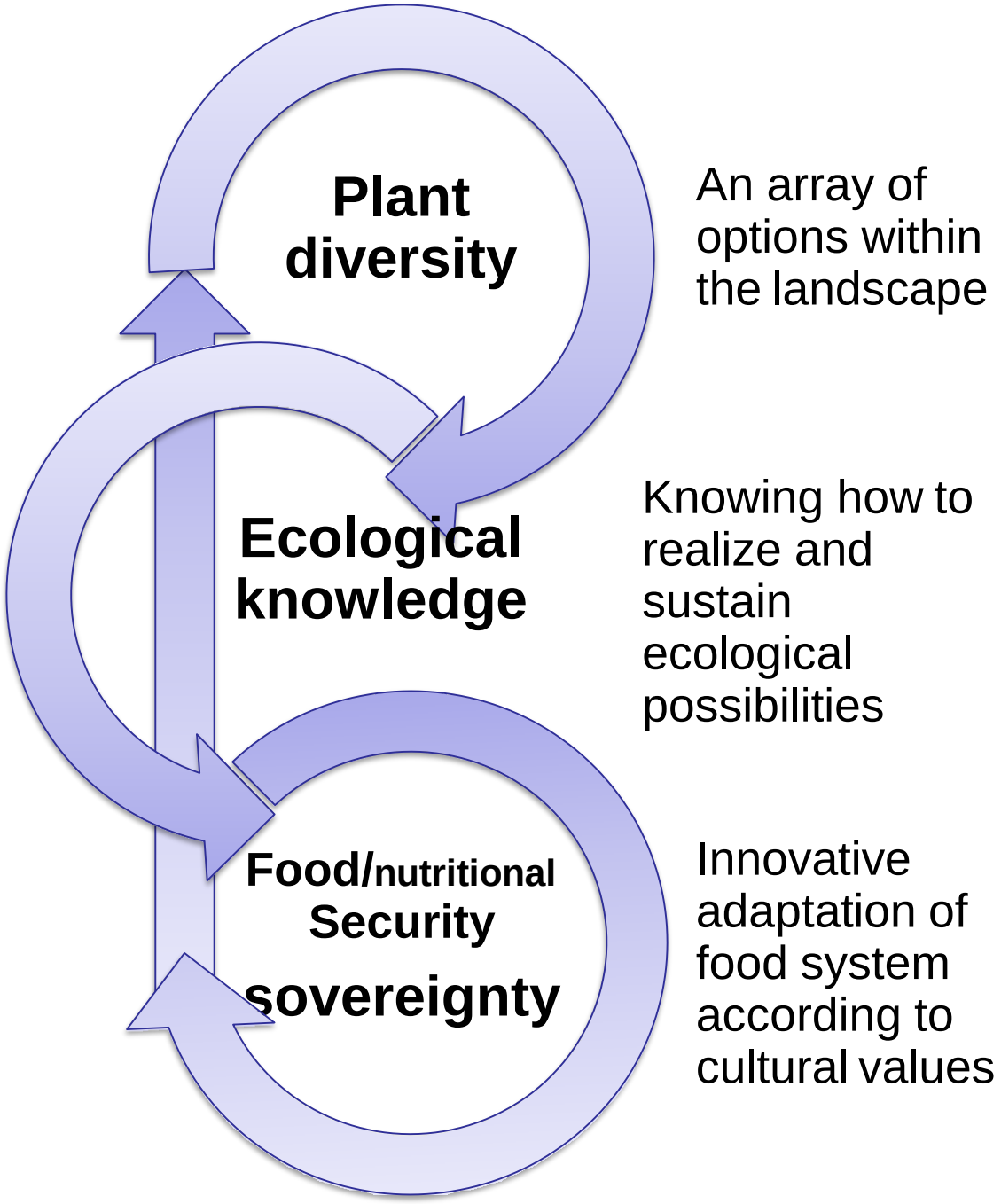
Utilizing IK in Development, Management, Policy evolution

- Note the relevance of ethnobiology in contemporary issues

Plants in Human Life beyond

nature & with the spiritual world

- **Plants come in many ways in human life (Think of some)**

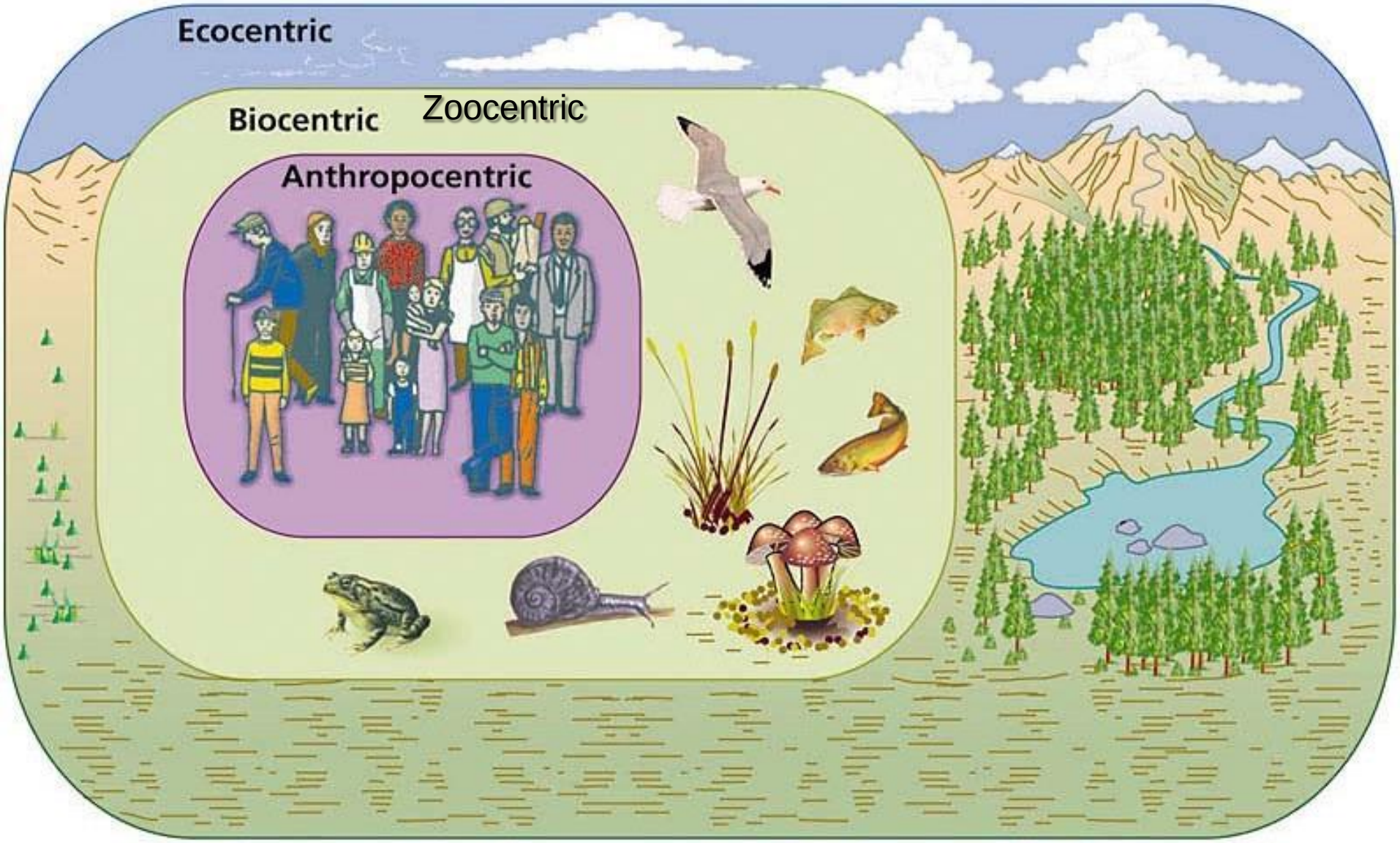


An array of options within the landscape

Knowing how to realize and sustain ecological possibilities

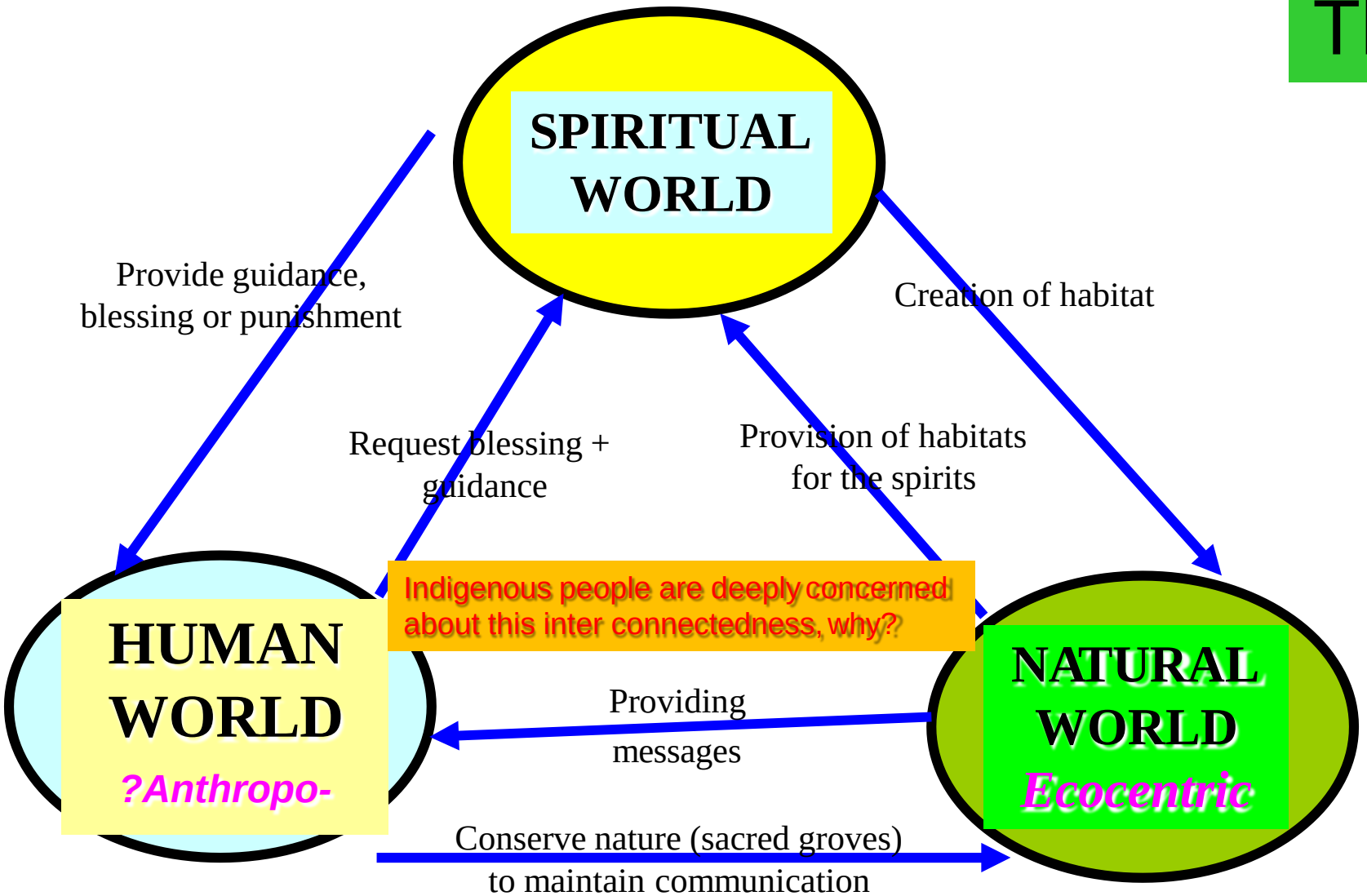
Innovative adaptation of food system according to cultural values

Three (Four) ethical worldviews exist



Cosmovision: Worldviews

The Cosmovision



See PhD Dissertation of Feleke Weldeyes

In the traditional worldviews:

- Land
- Water
- Animals
- Plants

- These are not only production factors with economic significance

BUT

- They have their rightful places within the sacred nature

- Certain trees have some kind of a sacred nature
  - Fig trees (*Ficus vasta, F. sycomorus*), baobab tree (*Adansonia digitata)*
- Certain animal species have spiritual significance
  - Cattle, sheep, goats & chicken for sacrificial purpose
  - Snakes, lizards, chameleons, some birds considered messengers of the spiritual world
- Special spiritual significance of some locations spiritual & sacrificial purposes:
  - Sacred groves, shrines, mountains & rivers
  - Chinese traditional medicine is linked with these

HISTORY OF ETHNOBIOLOGY:

HOW OLD IS ETHNOBIOLOGY?

- Goes back to the time when humans started making conscious interactions with plants & animals
  - Ethonobiological work seems to have started with Christopher Columbus (1492) who brought to Europe Tobacco, maize, cotton, spices and other useful plants
  - Immigrants in the New World - documented food, medicine, useful plants of Aztec, Maya, Inca peoples

Landmarks in Ethnobiology/Ethnobotany

Date	Events
1492	New World Discovery & economic value of plants based on observations of native people
1597	Herbals published in UK
1651	The 'English Physician' published in UK
1663	Native herbal medicine, New England
1770	Captain Cook's voyage facilitated observations of Australian aborigines & their plant use
1785	An account of the foxglove and some of its medical uses in UK
1803	Morphine crystals isolated from crude opium in Germany, Fossil pollen from rocks
1841	Active principles isolated from *Digitalis purpurea*
1871	25 years of domination by economic botanists noted
1893	Anthropological interests in aboriginal botany leading to emphasis on cultural significance of plants
1895	Directions given for collection of information on aboriginal botany, term ethnobotany introduced
1896	Ethnobotany introduced to the anthropological literature
1898	Department of Ethnology in US National Museum document plant used by North American Indians
1900	First Doctoral Dissertation on Ethnobotany, Universities interest in the subject increases
1919	Traditional resource management wins much attention and interest
1928	Structure of digitoxin and digitalin, sporopollenin identified in Switzerland
1930	Masters program in Ethnobotany, Univ. of New Mexico; Digoxin isolated from Digitalis alata
1941	Application of pollen analysis techniques concerning prehistoric subsistence (Denmark)
1950	Folk classification system, interest in ethnopalaeobotany
1963	New technique for quantification of pollen samples in UK
1969	First major international seminar on plant and animal domestication held in UK
1980	Journal of Ethnobiology by Society of Ethnobiology in America
1983	Symposium on recent advances in the understanding of plant domestication and early agriculture
1990	Postgraduate and undergraduate programmes in ethnobotany become increasingly available, research project focus on the practical application of traditional knowledge
1995	Ford noted that ethnobotany was first applied 100 years a go
2000	Millennium marked by emphasis on quantitative ethnobiology and comparative ethnohiology

History of Ethnobiology

Period	Stage	Dates	Features
I **The Preclassical Period** **(1860-1953)**	Use-oriented studies	**1860-1899**	Studies on utility carried out by researchers affiliated with major museums and universities, *general lack of appreciation of the sophistication of local knowledge and subsistence systems from an **emic** perspective*.
	Information gathering from an **etic** perspective (**Etic world view=the cognitive world of the observer – researchers describe based on own views)**	**1900-1931**	Greater empirical depth in research, but continued emphasis on economic uses of plants and animals; better appreciation of complexity of local knowledge and use of plants and animals, especially as reflected in systematic attempts to record local terminology, myths and beliefs, and knowledge of anatomy and behavior; emergency of comparative studies & standard methods.
	The first syntheses	**1932-1953**	Emergence of ethnobiology as a distinct field of enquiry, and appearance of the first syntheses that delimit its scope; growing distinction between economic botany and ethnobotany, with the latter emphasizing the systematic documentation of local knowledge and management of plants; continued lack of recognition of scientific aspects of traditional biological knowledge.

I I **The Classical Period** **(1954-1980)**	Emic knowledge **(Emic world view=**the congnitive world of the observed-describing in terms of local categories and semantics)	**1954-1968**	Emergence of ethnoscience, leading to a focus on the organization of knowledge systems from the local perspective, with insights from linguistics and empirical anthropological methods; relegation of the study plant and animals resources themselves of secondary importance; beginning of interest in ethnobiological classification and appreciation of the scientific basis of traditional knowledge
	Classification	**1969-1980**	Focus on ethnobiological classification, including principles of categorization and nomenclature, and the analysis of correspondence between scientific and local classification; accumulation of evidence for the scientific basis of local biological knowledge; growing interest in ethnobiology beyond the United States and Europe, especially in Latin America and the Pacific.

I I I **Post-classical Period** **(1981 ➔Present**	Associations	**1981-1992**	Production of major empirical works based on close collaboration between academic and local researchers; development of theoretical approaches beyond classification, including gender relation in resource use, cultural significance of plants and historical reconstruction of ethnobiological knowledge systems; emergence of academic societies and specialized journals of ethnobiology, especially in developing countries.
	Resource management	**1993➔**	Publication of standard methods manuals, quantitative techniques and innovative empirical studies; emergence of concern about applying ethnobiology to conservation and development; renewed interest in economic botany, including nutritional and medicinal benefits of plants, but incorporating novel theoretical and methodological approaches