ETHNOBOTANY AND ECONOMIC BOTANY: SUBJECTS IN SEARCH OF DEFINITIONS

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Summary

Ethnobotany is the science of people's interaction with plants. This circumscription of the discipline makes no distinction between people in traditional or modern societies. Thus ethnobotany and economic botany can be considered synonymous. Researchers approach the discipline from two perspectives -- the practical and the theoretical. The theoretical viewpoint has been the exclusive domain of anthropologists, while both anthropologists and botanists have examined practical aspects. Ethnobotany's practical focus asks, "What good is this plant?" Today the question often is more limited, "What good is this plant -- for us?" Maintenance of the discipline's ethical and intellectual integrity requires that we reexamine its focus. Ethnobotany's most interesting questions pertain to the various scales of interaction between plants and people. How do humans affect plant genomes in domesticated and managed plants? Are there universal principles of plant-human interactions that apply across cultures? What are the ecosystem effects of plant resources utilization? Only researchers who understand the cultural context of plant use can answer these kinds of questions. Beyond academic interest, there also is an ethical concern. Who should be the primary beneficiary of ethnobotanical research --- the developed world, the people studied, the researcher? While all parties can and should benefit from ethnobotanical research, the people who provide information to researchers often accrue few dividends. The question of what constitutes just compensation has not been resolved and it is likely to be case specific. An important, perhaps the most important, recompense should be the preservation of

local plant knowledge. Because plants are the basis of all material cultures, preservation of ethnobotanical knowledge, like the preservation of language, is a requisite for the safekeeping of cultures. Ethnobotanical researchers have a moral obligation not just to preserve knowledge but also to return information, in a useful format, to the people they study.

1. Introduction

The term ethnobotany recently marked its one hundredth anniversary. The discipline, of course, is much older, arguably dating to the origin of botany as a scientific discipline. The first humans were practicing ethnobotanists. To survive, they had to classify plants (as well as animals) into categories, distinguishing those species that were beneficial from those that caused harm. Theophrastus (ca 370 - 285 BC), the father of botany, described uses of plants and established generic names of economically important species such as *Crataegus*, *Daucus*, and *Asparagus* that still are used. Caius Plinius Secundus (23 - 79 AD), better known as Pliny the Elder, recorded knowledge about cultivated and medical plants in Natural History. He dedicated more than 25% of his encyclopedic work, among the first 15th century books to be printed by moveable type, to the medicinal properties of plants. Dioscorides recorded first hand observations and described the applications of more than 600 medicinal plants in the first century AD (Stace 1989). His Materia Medica remained the standard reference for nearly 1,500 years. In the 16th century, more than 30 editions in four languages were published. Unlike their predecessors who repeated what was known, the 16th century European herbalists recorded new observations on the use of plants. Even Carl von Linné, whose Latinized name is synonymous with modern taxonomy, undertook ethnobotanical research. He published detailed observation on plant use by the Sami people in Lapland. The post-Linnean botanists, likewise, did not limit their research to taxonomy. In 1885, Alphonse de Candolle wrote a classical work on the origin of cultivated plants.

Recording plant uses was not just a European activity. Martín de la Cruz authored the 16th century Aztec herbal that became known as the Badianus Manuscript. His discussion of 251 therapeutic and psychoactive Mexican plants was the first written herbal from the New World. Ten years earlier (1452), Cabeça de Vaca described Native American ritualistic consumption of black drink (*Ilex vomitoria*) in the southeastern U.S. The Spanish Crown commissioned two pharmacists, Hipólito Ruíz López and José Antonio Pavón y Jímenez, to collect botanical specimens in the viceroyalty of Peru. After a decade of field work in present day Peru and Chile, they published Flora Peruviana et Chilensis (1798 - 1802). Although their interests were primarily floristic, Ruíz, in particular, was struck by the utility of the novel flora.

"*For a long time I lived with the conviction that coca was, just as tobacco, an overgrown weed designed for the pleasure of the Indians; but experience has made me change that unfounded opinion, demonstrating with positive facts the admirable effects of those leaves which look so insipid, inert, and odorless.*"

Among Henry David Thoreau's post-Walden writings, are 3,000 pages of unpublished notes on aboriginal life in North America, including observations on indigenous plant use. The great naturalist-explorers of the 19th century also recorded ethnobotanical

observations. Richard Spruce may be faulted for overlooking important plant uses, but he still made significant contributions to Amazonian ethnobotany.

Chinese, Arab, and Indian texts, though generally less-well known in the Western World, are equally rich in plant use lore. Although there is an expansive historical record on human plant use, many of today's ethnobotanists would consider the previous references to deal with historical economic botany and not ethnobotany. Here, I examine definitions of ethnobotany and their relationships to economic botany. I also discuss approaches and objectives of the discipline. Finally, I examine ethical and intellectual questions that relate to these approaches and objectives.

2. Defining the Discipline

In 1874 Stephen Powers coined the term "aboriginal botany" for the study of plant use among traditional societies. His term remained the accepted designation for the next quarter of a century. John W. Harshberger, a botany professor at the University of Pennsylvania, also noted for his work in plant community ecology, first used the term ethnobotany in 1895. He published it the following year. During the past 100 years, researchers have continued to define ethnobotany (or the more inclusive field ethnobiology). Some of the notable definitions are cited below.

1. "... plants used by primitive and aboriginal people." (Harshberger 1896)
2. "... interrelationship of primitive man and plants." (Jones 1941)
3. "... interaction of man and the plant world." (Jones 1957 cited in Griffin 1978)
4. "... direct interrelationships between humans and plants." (Ford 1978)
5. "... the complete registration of the uses of and concepts about plant life in primitive societies." (Schultes 1992)
6. "... complex relationships of plants ... to present and past societies." (Berlin 1992)
7. "... is probably best regarded as a field of biocultural inquiry, independent of any specific paradigm, yet rooted in scientific epistemology." (Balée 1994)
8. "... human evaluation and manipulation of plant materials, substances, and phenomena, including relevant concepts, in primitive or unlettered societies." (Von Reis and Schultes 1995)
9. "... the science of people's interaction with plants." (Turner 1995)
10. "... the study of the interactions of plants and people, including the influence of plants on human culture." (Balick and Cox 1996)
11. "... all studies which concern the mutual relationships between plants and *traditional peoples*." (Cotton 1996)

Ethnobotany: Evolution of a discipline, published in 1995, includes 36 contributions written by 43 authors. Contributors cite at least eight, sometimes divergent definitions of ethnobotany. Much more than a semantic problem, this ambiguity shows ethnobotany's desire and need to establish its identity among better defined disciplines. The adoption of Harshberger's neologism at the beginning of this century was nothing more than a semantic substitution. It did not herald a shift in the academic orientation of the discipline. Nonetheless, the definition has evolved progressively reflecting an evolution in the discipline itself. First, the focus of ethnobotany became more ecological. Terms such as relationships, interrelationships, and interactions emphasize

the ecological aspects of the science. Researchers now consider plants, and sometimes the people who use them, to be integral parts of the ecosystems in which they are found. Second, ethnobotany has become more cultural. Instead of merely listing plant names and their uses, ethnobotanists now attempt to understand culture through the use of plants or plant use from a cultural perspective. Few would disagree with the assessment that plant use makes no sense without understanding the culture in which it is used. Finally, ethnobotanists have redefined the discipline's scope from "man" to "human" to "people" and from "aboriginal" to "primitive" to "traditional."

I do not propose an additional definition. Turner's (the science of people's interactions with plants) or Balick and Cox's (study of the interaction between plants and people) definitions are perfectly acceptable. They are succinct and they include the two fundamental components of ethnobotany --- plants and people. These definitions also differ fundamentally from many of the others. Harshberger and Schultes limited the discipline to "primitive people." A century later, Cotton employed the less pejorative but no less restrictive term "traditional." An important question is whether there is a fundamental difference between the way traditional people use plants and the way modern societies use them. I contend that this distinction is artificial. Etymologically, there is no reason to restrict ethnobotany to traditional societies. The prefix "ethno" refers to any people or cultural group not just traditional societies.

In 1978, Dick Ford thoughtfully discussed this dichotomy in the greatest detail. He modified Jones' 1941 definition by replacing "primitive man" with "humans" and argues that the differences in botanical knowledge between non-literate and literate societies are quantitative not qualitative. For Ford, however, the operative words are direct interaction. Direct means that people gather or cultivate their own food, build shelters from the plants that grow around them, and heal themselves with local herbs. He recognizes the continuum with modern societies, but relates the differences to the duration of contact between plants and people and the relative importance of the plants to the people.

For Ford and many others, ethnobotany is concerned with direct interactions between plants and people; economic botany with indirect interactions. This presumes that one can draw a line somewhere along the continuum. I agree with the late C. Earle Smith, who said, that economic botany is nothing more than ethnobotany with a financial incentive. Unlike many who cite his definition, Ford acknowledges the universality of plant people interactions, when he writes, "... by restricting a definition with this criterion [i.e., relative importance of plants], we may miss an important contribution of ethnobotany toward understanding a particular society, including our own."

All societies have direct relationships with plants. One need only consider the popularity of gardening in nearly all cultures. These relationships go beyond the obvious shelter, food, medicinal, and ornamental uses. When I ask introductory ethnobotany students if they use plants ritualistically, a common response is, "No!" sometimes followed by the rejoinder, "But my friend does." Of course they are thinking about one particular ritualistic use --- the consumption of psychoactive plant substances. It does not take them long think of common ritual uses examples all around them --- Christmas trees (e.g., *Abies fraseri*) , mistletoe (*Phoradendron serotinum*) , Easter lilies

(*Lilium longiflorum*), Valentine Day carnations (*Dianthus caryophyllus*), and Halloween pumpkins (*Cucurbita pepo*). We throw rice (*Oryza sativa*) at weddings, search for four-leaf clovers (*Trifolium repens*), and collect palm fronds (e.g. *Geonoma* spp.) for Good Friday. In 1990, Americans spent more than $20 billion dollars on turf grass, 60% of which was devoted to home lawns. The North American obsession with the lawn is nothing less than a ritual. Could any one fully understand even our own culture without understanding the significance of plants?

In 1994, three of my Chachi colleagues, who live in a small indigenous community in coastal Ecuador, spent several weeks in southern Florida. Life in the U.S. offered many surprises but two in particular. First, the presence of only one or two kinds of bananas and plantains in our supermarkets shocked them. Plantains (*Musa* x *paradisiaca*) are their staple and they expected a wealthy country like the U.S. to have a bounty of bananas. Second, Halloween completely befuddled the Chachi. They watched, with both intrigue and fear, as young and old dressed up like spirits and demons. The ersatz apparitions then systematically visited houses throughout the neighborhood, extracting a sugary tribute from each one. Glowing gourds guided the boisterous spirits through the night. Here is a case where determining the "primitive" polarity between two cultures would be easy. It would not apply to the Chachi. Understanding plant use requires understanding culture.

3. Approaches to Ethnobotany

Ethnobotany is an interdisciplinary field, combining the aspects of botany and ethnology as well as many others. The subject has been approached from two perspectives --- the practical or utilitarian and the philosophical. Janis Alcorn describes the practical approach as asking the basic question, "What good is this plant?" This solitary question defined the approach of Harshberger and early ethnobotanists. Alcorn considers this a basic, but not the ultimate question. I suggest that a second basic question is, "What does this plant signify or what is its cultural meaning?" Brent Berlin frames the queries similarly: "How and in what ways do humans use nature?" and "How and in what ways do human societies view nature?" Even Schultes, who focused mostly on the utilitarian value of plants, described ethnobotany's scope so that it included "concepts about plant life."

Investigation of the meaning of plants within a culture largely has been the domain of anthropologists while both anthropologists and botanists have investigated the utilitarian aspects of plants. The utilitarian approach dominates today's research agenda. Victor Toledo describes ethnobotany as, "... a discipline oriented towards the exploration of new plant resources able to be converted into new raw materials for industry." Michael Balick discusses the role of researchers in germplasm conservation, "Ethnobotanists often have the opportunity to collect valuable genetic material, because many work in remote areas ...." Mark Plotkin cites the discipline's role in conservation and Balick and Cox promote its role in drug discovery. Equally guilty, in 1992 I noted the role of ethnobotany in developing many important Amazonian products. There is nothing wrong with the utilitarian query, except when it is the only one asked by researchers. The current focus lies almost exclusively with the first question, "What good is this plant?" We seldom investigate the cultural meaning of plants.

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Biography Sketch

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