
Alfred F. Whiting : textes choisis / Selected Essays

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Résumé: Deux inédits de A.F. Whiting (1912-1978) sont présentés après une courte note sur la vie de l'auteur. Le premier texte est une communication non publiée que l'auteur fit en 1938 à la réunion annuelle de la Michigan Academy of Science, Arts and Letters. Il s'agit d'une des toutes premières réflexions théoriques sur la définition de l'ethnobotanique à une époque où la discipline sortait à peine de ses langes. Le deuxième texte, écrit vers les années 1940, était très avant-gardiste. Il comprend sous forme embryonnaire l'essence de tous les développements futurs de la discipline : importance de l'aspect linguistique du travail de l'ethnobotaniste, nécessité d'études comparatives, analyse de sens et étymologie, reconstruction historique, phénomènes d'emprunts, correspondance entre les systèmes occidentaux et vernaculaires, etc.

Abstract: After a brief biographical note on A.F. Whiting (1912-78), two unpublished essays by this author are presented. The first is an unpublished paper which he delivered in 1938 at the Annual Meeting of the Michigan Academy of Science, Arts and Letters. This is one of the very first theoretical reflections on the definition of ethnobotany at a time when the discipline was just emerging from its infancy. The second, written in the 1940s, was far ahead of its time. It contains in embryonic form the essence of all future developments of the discipline: the importance of the linguistic aspect of the ethnobotanist's work, necessity of comparative studies, analysis of meaning and etymology, historical reconstruction, borrowing phenomena, correspondence between Western and vernacular systems, etc.

An English version of the Introduction follows the French.

Introduction

Une biographie de A.F. Whiting (1912-1978) ouvre le tout premier numéro du *Journal of Ethnobiology* (Bartlett, 1981) qui rassemblait alors des textes de la seconde conférence américaine annuelle d'ethnobiologie. La conférence avait eu lieu à Flagstaff en Arizona en 1979 et avait été tenue en honneur à deux ethnobiologistes, décédés depuis peu à l'époque, Lyndon L. Hargrave et Alfred F. Whiting. Quoi de plus approprié, près de 20 ans plus tard, de publier dans ce numéro d'*Anthropologica* consacré au même thème, des pages inédites de cet Américain qui marqua indéniablement la discipline et qui fit carrière dans le Sud-Ouest américain, un des foyers les plus importants de l'histoire de l'ethnobiologie.

Whiting est surtout réputé pour son ouvrage sur le savoir botanique des Hopis, *Ethnobotany of the Hopi* (1939) qui a connu plusieurs réimpressions. Mais il a également travaillé sur de nombreux autres peuples du Sud-Ouest notamment les Havasupais, les Navajos, les Apaches, les Seris. Les notes qu'il a rassemblées sur ces divers peuples totalisent plus de 55 000 pages de renseignements originaux dont l'indexation a nécessité quelques 15 années de travail à son ami et collaborateur, P. David Seaman (1993a). Ces notes peuvent maintenant être consultées à la bibliothèque centrale de l'Université de Northern Arizona à Flagstaff. P. David Seaman a également édité deux manuscrits de Whiting (Seaman, 1993b; Weber et Seaman, 1985) dont un comprend plusieurs chapitres sur les savoirs biologiques des Havasupai.

L'époque où Whiting travailla comme conservateur au Museum de Northern Arizona de Flagstaff fut sans doute une des plus fructueuses de sa carrière. C'est durant ces années, de 1935 à 1941 approximativement, mais pas toujours de façon continue, qu'il effectua plu-

sieurs missions chez les Hopis et les Havasupais, entre autres. C'est aussi durant ces années qu'il collabora avec Volney Jones de l'Ethnobotanical Laboratory à Ann Arbor, à un inventaire des plantes cultivées par les Hopis. Il entretint également des liens avec E.F. Castetter, qui fut un des premiers à définir le champ de l'ethnobiologie et qui travaillait sur les usages des plantes par les Amérindiens du Sud-Ouest. L'importance qu'accordait Whiting au Sud-Ouest culmina dans la publication d'un article consacré à l'examen de la documentation ethnobotanique disponible pour cette région (Whiting, 1966).

La publication de textes inédits de Whiting revêt donc un très grand intérêt. Premièrement, Whiting est un des pionniers de la recherche ethnobiologique sur les Amérindiens du Sud-Ouest, une région qui attirera plus d'un ethnobiologiste et qui, pour ainsi dire, est à l'origine même, en tant que lieu privilégié de travaux sur le terrain, de l'ethnobiologie américaine. Deuxièmement, Whiting figure parmi les rares ethnologues à s'être intéressé autant aux savoirs botaniques que zoologiques des ethnies qu'il étudiait. Troisièmement, parmi toutes les notes qu'il a laissées, Whiting a produit des textes théoriques qui sont d'une grande valeur car ils apparaissent durant une période d'effervescence intellectuelle où l'ethnobiologie cherche sa direction (voir introduction à ce numéro). Quatrièmement, enfin, ces textes serviront à alimenter les réflexions courantes en ethnobiologie, notamment en ce qui concerne la définition du champ et l'importance des études comparatives.

Le premier essai que nous publions de Whiting date de 1938. Il s'agit d'une communication que l'auteur présenta à la réunion annuelle de 1938 de la Michigan Academy of Science, Arts and Letters. Whiting voulait au départ l'intituler «L'ethnobotanique est-elle une science?» ou encore «L'ethnobotanique... et puis après?» ou même «L'ethnobotanique, qu'est-ce que c'est?». L'intention de l'auteur était de provoquer son auditoire, du moins l'extrait suivant d'une lettre écrite à Volney Jones à Michigan le laisse-t-il clairement entendre :

Jimmy also talked about the Spring meeting of the Michigan Academy. I am getting set and primed for a bomb throwing, entitled «Is Ethnobotany a Science?», or «Ethnobotany So What?», «Ethnobotany, Whadaya-mean?», Pick any one you like. The main point being that Ethnobotany is a specialized technique, or series of techniques and of itself has no theoretical value. If it has I should like to know it. I can't find any at least. (Ethnobotanical Laboratory, Ann Arbor, Lettre de A.F. Whiting à Volney Jones, 27 janvier 1938.)

Volney Jones ne partagea toutefois pas cet enthousiasme et proposa un autre titre sous lequel la communication fut finalement présentée :

You are on the Mich. Acad. program on Saturday morning, March 19 at about 10 o'clock, following Titiev and preceding me. Your title which is not exactly what you submitted is: "Some Remarks on the Principles and on the Status of Ethnobotany." That will cover most anything which you wish to say. I am afraid that any bombs which you may explode will not particularly excite the audience here as they will be more or less lethargic toward anything concerning ethnobotany. I do not think you will get much of a reaction or much argument, but go ahead and see what happens. (Ethnobotanical Laboratory, Ann Arbor, Lettre de Volney Jones à A.F. Whiting, 7 février 1938.)

La communication de A.F. Whiting n'eut peut-être pas l'effet désiré par l'auteur, mais elle n'en demeure pas moins, encore aujourd'hui, représentative d'une époque où l'ethnobiologie, et plus particulièrement l'ethnobotanique, sortait à peine de ses langes et se cherchait une direction. Le texte est instructif dans la mesure où après avoir fait un bref survol de chercheurs américains à l'oeuvre dans la discipline (Jones, Castetter, Underhill, Opler par exemple) et des principaux champs d'intérêt (aspects archéologiques, linguistiques, culturels; intérêt pour les plantes cultivées, la technologie, l'utilisation médicale des plantes; etc.), l'auteur examine les contributions que la discipline peut apporter en particulier à l'anthropologie. La définition qu'il donne de l'ethnobotanique, une technique plus qu'une science, se rapproche ainsi davantage de celle proposée par E.F. Castetter qui forgea le terme «ethnobiologie» que celle de V. Jones avec qui Whiting collaborait activement. En effet, pour E.F. Castetter, l'ethnobiologie demeura toujours plus une sphère d'investigation qu'une science ou une discipline complètement affirmée (Castetter, 1944 : 163).

En revanche, nous n'avons pas autant d'informations contextuelles pour le deuxième texte de A.F. Whiting que nous publions. Le manuscrit porte le titre de «Language, Culture and Ethnobotany» et il n'est pas daté. Il a sans doute été écrit après les années de cueillette de données sur les Hopis puisque ces données forment la majeure partie des exemples que l'auteur utilise pour illustrer ses thèses sur la formation des noms de plantes. Nous le situons donc vers les années 1940, sans savoir exactement dans quelle intention il a été rédigé. D'autre part, le texte est très important puisqu'il met en valeur la nature linguistique du travail de l'ethnobotaniste, premièrement dans la correspondance que celui-ci doit

effectuer entre les termes vernaculaires et latins et deuxièmement, dans l'analyse des termes vernaculaires eux-mêmes pour en dégager la spécificité culturelle. Tous les ethnobiologistes ont d'ailleurs insisté sur ce dernier aspect langagier qui différencie nettement l'ethnobotanique de la botanique économique. De plus, le texte de A.F. Whiting est très avant-gardiste. L'auteur y utilise des concepts comme le «folk species» qui ne sera pleinement développé – en tant que concept central des taxinomies des sociétés non occidentales – que dans les années 1970 avec l'ethnobiologiste Ralph N.H. Bulmer. Il révèle la richesse et la complexité de la formation des noms vernaculaires des plantes et, surtout, insiste sur les possibilités qu'offre la méthode comparative dans ce domaine. Avec ses références et ses analyses de termes *gosiute* et *tewa* qu'il puise dans la documentation (Chamberlin, 1911; Robbins, Harrington et Freire-Marreco, 1916) et qu'il compare avec ses propres données, il fait véritablement oeuvre de pionnier en la matière.

Les deux textes de A.F. Whiting sont reproduits ici tels qu'ils apparaissent dans les archives de Flagstaff (A.F. Whiting Collection, Cline Library, MS #25) et les corrections à la main – sans doute de l'auteur – superposées au manuscrit dactylographié sont intégrées directement dans cette édition (la version corrigée de la communication présentée en mars 1938, qu'on trouve à Ann Arbor, à l'Ethnobotanical Laboratory, est légèrement différente de la version de Flagstaff). Les quelques coquilles (fautes de frappe, orthographe) ont également été corrigées. Toutefois, il subsiste encore quelques écarts d'orthographe entre les termes hopis du deuxième texte et ceux consignés dans l'ouvrage ethnobotanique de Whiting (1939) auquel, en cas de doute, les spécialistes pourront se référer. Nous tenons à remercier le personnel de la section «Special Collections» de la Bibliothèque Cline de la Northern Arizona University pour leur aide et la permission qu'ils nous ont accordée de publier ces inédits. Notre reconnaissance va également au Docteur Seaman qui a bien voulu nous conseiller dans le choix des textes à présenter.

Introduction

The very first issue of the *Journal of Ethnobiology*, featuring papers from the Second Annual Ethnobiology Conference, opened with a biography of A.F. Whiting (1912-78) (Bartlett, 1981). The conference was held in Flagstaff, Arizona in 1979 in honour of two recently deceased ethnobiologists, Lyndon L. Hargrave and Alfred F. Whiting. What could be more appropriate, nearly 20 years later, than to release in this issue of *Anthropologica*, devoted to the same theme, some previously unpublished work by this American who made his career in the U.S. Southwest, one of the most important centres in the history of ethnobiology and who left an indelible mark on the discipline.

Whiting is known mainly for his frequently reprinted work on the botanical knowledge of the Hopi, *Ethnobotany of the Hopi* (1939), but he also worked on many other peoples of the Southwest, notably the Havasupai, Navajo, Apache and Seri. The data he collected on these peoples totalled over 55 000 pages of original information, the indexing of which required some 15 years of work by his friend and collaborator P. David Seaman (1993a). These notes may now be consulted at the main library of Northern Arizona University in Flagstaff. P. David Seaman has also edited two manuscripts by Whiting (Seaman 1993b; Weber and Seaman, 1985), one of which has several chapters on the biological knowledge of the Havasupai.

Whiting's time as curator at the Museum of Northern Arizona in Flagstaff was certainly one of the most productive periods of his career. It was during these years, from about 1935 to 1941 (though not always continuously), that he did extensive research on the Hopi and the Havasupai, among others. This was also the period of his collaboration with Volney Jones of the Ethnobotanical Laboratory in Ann Arbor on a survey of Hopi crop plants. In addition, he was in contact with E.F. Castetter, one of the first to define the domain of ethnobiology, who was working on the uses of plants by the Indians of the Southwest. The importance Whiting ascribed to the Southwest culminated in the publication of an article reviewing the ethnobotanical documentation available for this region (Whiting, 1966).

The release of hitherto unpublished work by Whiting is thus of tremendous interest. First of all, he is one of the pioneers in ethnobiological research on the Indians of the Southwest, a region which attracted more than one ethnobiologist and which, as a preferred location for field work, can be said to stand at the very origins of American ethnobiology. Second, Whiting is among those rare

ethnologists who took an interest in the botanical as well as the zoological knowledge of the Native groups he studied. Third, the many notes he left behind include theoretical texts of great value, because they appeared in a period of intellectual excitement when ethnobiology was seeking its direction (see the introduction to this issue). Fourth and finally, these essays will serve to fuel the ongoing reflections in ethnobiology, notably as regards definition of the domain and the importance of comparative studies.

The first essay we are publishing by Whiting dates from 1938. This is a paper presented by the author at the 1938 annual meeting of the Michigan Academy of Science, Arts and Letters. The following excerpt from a letter to Volney Jones in Michigan ponders some tentative titles, and clearly indicates Whiting's intention to be provocative:

Jimmy also talked about the Spring meeting of the Michigan Academy. I am getting set and primed for a bomb throwing, entitled "Is Ethnobotany a Science?", or "Ethnobotany So What?" "Ethnobotany, Whadaya-mean?" Pick any one you like. The main point being that Ethnobotany is a specialized technique, or series of techniques and of itself has no theoretical value. If it has I should like to know it. I can't find any at least. (Ethnobotanical Laboratory, Ann Arbor, Letter from A.F. Whiting to Volney Jones, January 27, 1938.)

However, Volney Jones was not so enthusiastic, and proposed another title under which the paper was finally presented:

You are on the Mich. Acad. program on Saturday morning, March 19 at about 10 o'clock, following Titiev and preceding me. Your title which is not exactly what you submitted is: "Some Remarks on the Principles and on the Status of Ethnobotany." That will cover most anything which you wish to say. I am afraid that any bombs which you may explode will not particularly excite the audience here as they will be more or less lethargic toward anything concerning ethnobotany. I do not think you will get much of a reaction or much argument, but go ahead and see what happens. (Ethnobotanical Laboratory, Ann Arbor, Letter from Volney Jones to A.F. Whiting, February 7, 1938.)

Perhaps A.F. Whiting's paper did not have the desired effect, but today it still stands as representative of a period when ethnobiology, and specifically ethnobotany, was just emerging from its infancy and searching for a direction. The essay is instructive in that, after providing a brief review of U.S. researchers in the discipline

(such as Jones, Castetter, Underhill, Opler) and the main fields of interest (archaeological, linguistic, cultural aspects; cultivated plants, technology, medical use of plants, etc.), the author examines the particular contributions that ethnobotany can make to anthropology. The definition he gives of ethnobotany, as being a technique more than a science, is closer to that proposed by E.F. Castetter, who coined the term "ethnobiology," than to that used by V. Jones with whom Whiting was actively collaborating. For E.F. Castetter, ethnobiology always remained more a sphere of investigation than a science or fully confirmed discipline (Castetter, 1944: 163).

On the other hand, we do not have as much contextual information for the second essay by A.F. Whiting that we are publishing. The manuscript is entitled "Language, Culture & Ethnobotany" and is not dated. It was doubtless written after the years spent collecting data on the Hopi, since these data comprise most of the examples used by the author to illustrate his arguments on the formation of plant names. We accordingly place it in the 1940s, although it is not known for what exact purpose it was written. The text is very important for its emphasis on the linguistic nature of the ethnobotanist's work: first of all, the correspondence that must be made between the vernacular and Latin names, and second, analysis of the vernacular names themselves so as to reveal their cultural specificity. All ethnobiologists have stressed this latter linguistic aspect, which clearly differentiates ethnobotany from economic botany. Furthermore, this essay by A.F. Whiting is far ahead of its time. The author uses concepts such as "folk species", which was not to be fully developed as a central concept of the taxonomies of non-Western societies until the 1970s, with the ethnobiologist Ralph N.H. Bulmer. He reveals the richness and complexity of the formation of vernacular plant names, and above all, insists upon the possibilities of the comparative method in this field. With his references and analyses of Gosiute and Tewa terms which he draws from the literature (Chamberlin, 1911; Robbins, Harrington and Freire-Marreco, 1916) and compares with his own data, he offers work which is truly of a pioneering nature.

The two essays by A.F. Whiting are reproduced here as they appear in the Flagstaff archives (A.F. Whiting Collection, Cline Library, MS #25), and the handwritten corrections—no doubt the author's—to the typescript are incorporated directly in this edition (the corrected version of the paper presented in March 1938, located at the Ethnobotanical Laboratory in Ann Arbor, is slightly different from the Flagstaff version). A few misprints (typos, spelling mistakes) have also been corrected.

However, there remain certain differences in spelling between the Hopi plant names in the second essay and those appearing in Whiting's ethnobotanical work (1939); specialists may refer to the latter in cases of doubt. We wish to thank the Special Collections staff at the Cline Library of Northern Arizona University for their assistance and for their permission to publish this previously unpublished material. We also acknowledge the kind advice of Dr. Seaman on selecting the essays to be presented.

Some Remarks on the Principles and the Status of Ethnobotany

By Alfred F. Whiting

Ethnobotany is and must be a hybrid science, bringing to one field the techniques, outlooks and biases of another. Like most hybrids, the offspring are often varied and not infrequently show characteristics not found in either parent.

We will not attempt a definition of ethnobotany here, for that would mean stating what ethnobotany should be; and that is not our purpose. Rather, we are interested in what has been called ethnobotany, and the kind of work that has been done by people who call themselves ethnobotanists.

Here at the University of Michigan we find an entire laboratory given over to "ethnobotany." Specimens come to this laboratory from archaeological sites, from museum collections, and from ethnologists in the field. There is one question they all ask, "What is this stuff, and what does it mean?" This laboratory is interested in the technical identification of plant materials associated with man, and works primarily with such of those materials as the ordinary botanist does not care to handle. Before leaving this laboratory we note one other miscellaneous item, the ethnobotanist who inhabits it. Observing him over a period of time we note that in addition to identifying other peoples' materials he collects some of his own. We find him rambling about the Southwest collecting the minutest of variations of Indian corn. Later we find him climbing over the adobe walls of a long-abandoned mission, like a hopeful chickadee looking for seeds. At a later time he interests himself, like Nebuchadnezzar, in sweet-smelling hay, in the manufacture of wooden brooms, and more recently in a review of the literature on aboriginal cotton and the very significant discovery of a pre-corn agriculture in the Mississippi valley.

Wandering farther afield we come to Albuquerque, New Mexico. Here we find Dr. Castetter publishing a series of papers including a summary of wild plants used

for food, detailed studies of the utilization of particular plants, and two tribal ethnobiological studies which attempt to evaluate data in terms of cultural complex.

Rambling a little farther west we find some vague mutterings issuing from the Flagstaff region which seem to be concerned with crop plants and the social organization.

Reviewing this very hurried and by no means complete survey of the field, we note that ethnobotany apparently is a miscellaneous collection of oddities covering nearly the entire range of anthropological interest. If ethnobotany simply covers the entire field of anthropology why consider it as a separate discipline? (It is obviously not to be related to botany, since, as we have seen, it goes far beyond the legitimate interest of botanists in primitive economic botany.)

Is there any reason for considering ethnobotany a separate field? Is it a science in itself? If, by science, we mean a field of investigation which yields valid generalizations, I think we can almost at once say that ethnobotany is not a science. One has only to examine the data that an ethnobotanist collects: a part of the *materia medica* (author's emphasis), some data on agriculture, a portion of the technology, some slight insight into religion and ceremonials, and possibly some information which is explainable only in connections with the social system. Obviously, whatever unity this field has is due to the common factor of botanical materials, not to its aims or results.

We have spoken of the diversity of this field. Let us now examine its common characteristics.

We often hear the term hybrid vigour. This appears in the field of ethnobotany in the form of a more vigorous use of the imagination. This factor, it is true, is present in both of the parents, but in neither of them is it allowed free reign. There, it is always checked by some other factor, usually termed caution. It is an observed fact that the most cautious and precise specialist never makes a statement without embedding it in a soft protective layer of "ifs," "ands," "buts" and "maybes." However, when he leaves the familiar ground of his own field he frequently throws all caution to the winds and proceeds to develop the wildest and most impossible theories imaginable, all in the name of science. Since most ethnobotanists have abandoned either permanently or temporarily their own field in favor of the greener pastures across the way, they are as a class particularly susceptible to this form of hybrid vigour.

Specifically, however, what can be said about current ethnobotanical reports? Happily, the omission of native names has ceased to be a common fault and if the anthropologists will forgive the botanists their rendition of

native (author's emphasis) names the botanists in turn must forgive the misspellings and other upsetting deformities which so often attract the botanical eye in anthropological papers.

A difficult hurdle, which certainly no anthropologist should be expected to surmount, is the presence of synonyms in botanical terminology. This is a particularly difficult matter in areas where the botanical synonymy is intensely variable, but the use of synonyms in the same paper is unpardonable.

Turning to more basic things we note the appearance of a number of ethno-biological studies which mitigate the barrenness of their data by attempting to fit it into the cultural context. One notes here particularly the work of Ruth Underhill and Opler. Only as data of this kind is presented in this form does it take on its true anthropological significance. However, it would be inadvisable to entrust the cultural interpretation of such materials to the average "botanist gone anthropological." It is on this point that I wish to lay particular stress. It seems to me that the function of ethnobotany is primarily a technical one. Many ethnobotanists do not realize that their material has little or no significance of itself but must be set into a larger context—a context which as a rule he is not capable of handling, and all too often is not even aware of. The ethnobotanist, then, should pay more attention to how the anthropologist wishes to use this material and he should prepare his reports with this end in view. This would involve not only the equating of a native name with a scientific name, but should include some indication of the range, availability, and properties of the plants discussed, as well as a definitive statement of the native usage. And would it be asking too much if we required some kind of a pronounceable name and some idea of what the plant looks like? Reports should, above all be useable, no matter how unreadable. No one expects to sit down and read through a dictionary either as a form of entertainment or as a means of discovering the nature of the language. Similarly he should not expect to read through an ethnobotanical report. The data should be listed in some definite sequence, it matters not what, so long as there are abundant indices.

All the data about any one plant should be gathered together in one place. There is a theory that the ceremonial usage of plants reflects their economic significance. Should we not at least present the functionalists with the pertinent data which may prove or disprove their theory? We can not do this by separating it into different sections, or worse still into separate publications.

I do not mean that we should not discuss our data under the various topics of food, technology, or ritual sig-

nificance. We should. But such a discussion is more valuable when separated from the main mass of data, which often includes a number of technical and insignificant items which do not belong in a discussion.

If ethnobotanical data is going to be useful in tracing cultural traits, our data should include a list of the plants which are present but not used, or are of only slight significance.

This brings up another problem which is very pressing. We need a general survey of the ethnobotany of at least certain areas. Aside from Gilmore's thesis and a paper by Zingg I know of no publication which even attempts the *comparison* (author's emphasis) of ethnobotanical data from different sources, though there are many which *amass* (author's emphasis) it. We should begin to put this picture together, in order that we may see the gaps in it. It is time we stopped adding to our bibliography long enough to see what it is that we are doing, and what, if anything, it is good for.

I have spoken rather disparagingly of the appearance of a certain trait in this hybrid which was not found in either of its parents.

I should like to mention another one of these traits, one which is I think highly significant, and so far as I am aware, totally unexploited. That is the ability of the investigator who is acquainted with these two fields to see the similarity of their materials and to suggest the possible solution of the problems of one field in the light of the experience and findings of the other. Laugh if you will, but I still insist that human society and plant society are only two aspects of the same type of phenomena and that when our generalizations are sufficiently broad and sufficiently basic they will apply to both.

On the technical side, the problem of classification which the archaeologists in the Mississippi valley are facing today is essentially the same problem which Linnaeus faced some years ago, and I venture to predict that it has essentially the same solution. The archaeologist would do well to leave his potsherds for an afternoon and read a little of the history of biology.

Language, Culture and Ethnobotany

By Alfred F. Whiting

Before entering into a discussion of the importance of language in ethnobotanical investigation we should first determine what constitutes ethnobotany.

For purposes of our discussion we will eliminate the individual who examines fragments of plants sent to him by archaeologists. Such an individual is, strictly speaking, not an *Ethno*-botanist (author's emphasis), but an

Archaeo-botanist (author's emphasis). His task is essentially that of a botanically trained Sherlock Holmes. Only rarely does his task involve culture, as the anthropologist defines it, and even less frequently does he indulge in anything which might be remotely defined as linguistic analysis. Thus we may disregard the *Archaeo*-botanist as being merely a transplanted botanist, whose sole, and perhaps not unworthy purpose, is to identify plant materials that no self-respecting botanist would look at.

This does not mean, however, that people who are at certain times "*Archaeo*-botanists" are not also at other times "*Ethno*-botanists." Out of perhaps four such individuals in the United States, at least three answer this description.

Much has been said about how the ethnobotanist is interested in studying the interrelationships between man and his environment. Actually such a study is never done under the name of ethnobotany. Strictly speaking it is not ethnobotany at all, but Human Ecology, which is a related but distinct field. Actually the ethnobotanist is interested in studying such ethnological data as require botanical definition.

A detailed analysis of the full significance of all the plants involved in any culture would be practically indistinguishable from a monograph on the tribe in question. That is not the job of the ethnobotanist. His task is rather to define the botanical elements of the culture in such terms as can be understood by the ethnologist and which can be compared from one tribal group to the next. Thus he is concerned primarily in defining in the scientific nomenclature of his own culture the groups of plants which in another culture are called by a single name and are used essentially for the same purpose.

The first and perhaps most difficult part of the ethnobotanist's job is to define these classes of plants. The names commonly used in the English language are so variable that they are practically useless for purposes of definition. The investigator is forced, therefore, to use the nomenclature of botanical science. One should not make the mistake of assuming that botanical terminology does not vary. However, it is possible to define these variations, so that while these names are far from constant, the equivalents are known.

When we attempt to equate the units of scientific nomenclature to the local native concept of a plant we often run into difficulty. The native, as a rule, considers it worthwhile to have names only for such plants as are "worth talking about." Oftentimes these names are applied to a group of plants which are roughly similar, but not all of which would be used in the same way: "Yes. That plant is a

willow. We make baskets of willow. That plant is too small. We do not make baskets of that willow."

In practice, however, the definition of a Folk species in terms of scientific nomenclature is often a fairly simple task:

<i>putci'vi</i>	Mountain mahogany	<i>Cercocarpus eximius</i>
<i>te'skona</i>	Wild rose	<i>Rosa arizonica</i>
<i>he'si</i>	Mariposa lily	<i>Calochortus aureus</i> .

Even where the botanist makes distinctions that the native does not, the task is not overly complicated:

<i>pi:'va</i>	Tobacco	<i>Nicotiana attenuata</i> and <i>trigonophylla</i> .
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Similarly:

<i>3nga'toki</i>	"Saltbush" includes	<i>Atriplex confertifolia</i> <i>Atriplex obovata</i> <i>Atriplex powellii</i> <i>Atriplex saccaria</i> <i>Atriplex argentea</i> and <i>Chenopodium incanum</i> .
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In some of these cases the botanical nomenclature can be shortened to the genus, particularly where the distinctions between species are rather fine and have no distributional significance.

<i>qaha'vi</i>	Willow	<i>Salix</i> spp.
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At times it is feasible to separate out one species of a genus and to lump the rest:

<i>t3vo'vi</i>	Aspen	<i>Populus aurea</i>
<i>s3h3'vi</i>	Cottonwood	<i>Populus</i> spp.

The Native names may cross-cut a genus however:

<i>siva'pi</i>	Rabbit brush	<i>Chrysothamnus graveolens</i> <i>Chrysothamnus howardi</i> <i>Chrysothamnus pinifolius</i> <i>Chrysothamnus speciosus</i> var.
<i>ma:',3vi</i>	Snakeweed	<i>Chrysothamnus depressus</i> <i>Chrysothamnus greenei</i> <i>Chrysothamnus stenophyllus</i> <i>Gutierrezia lucida</i> <i>Gutierrezia sarothrae</i> <i>Solidago petradoria</i> .

The specific distinction within the same group are not always equivalent. Thus both the Hopi and the botanists recognize the generic group Mormon Tea, but differ in their definition of the two groups which compose it.

<i>,3'svi</i>	Mormon Tea	<i>Ephedra viridis</i> (Green specimens)
<i>masi',3svi</i>	Mormon Tea	<i>Ephedra viridis</i> (Gray specimens) <i>Ephedra torreyana</i> .

These are some of the difficulties with which the ethnobotanical investigator must deal if his data is to be detailed and accurate. It would seem that these difficulties are chiefly those of defining the terms of one language in terms of another. As such it constitutes a linguistic procedure and much time and effort can be eliminated if the investigator will only realize this fact.

The names of plant often reveal something of the cultural significance of the plants themselves.

<i>kawai'ngahu</i>	"Watermelon medicine"	<i>Solanum triflorum</i> (A plant whose rapid growth can be magically transferred to watermelons by planting them in the same hill).
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More especially is this true where the only name for a plant is a general term referring to its specific use. (The following example from Gosiute).

<i>pūñ'-go-na-tsu</i>	"Horse-medicine"	A name applied to several plants all of which are used as medicine for horses.
	Battle pod	<i>Astragalus junceus</i>
	Bed Straw	<i>Galium aparine</i>
		<i>Lygodesmia grandiflora</i>
	Catchfly	<i>Silene multicaulis</i>

A study of the elements which enter into plant names are often a clue to the general interests of the group, particularly where the plants in question are of no particular importance. Thus:

<i>,isa'lhavu</i>	"Coyote testicles"	<i>Asclepias involucrata</i>
<i>paka'pmos'nga</i>	"Uterus"	<i>Tribulus terrestris</i>
<i>lsha'vu</i>	"Testicles"	<i>Sporobolus flexuosus</i>

reflect an ever-current theme which is often uppermost in the Hopi mind. On a somewhat higher and more publishable level:

<i>kwai'p3'h3</i>	"Eagle down grass"	<i>Munroa squarrosa</i>
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reflects the symbolism of "Feather down-clouds-rain" which dominates Hopi ritual and ceremonial thought.

Plant names are often important in historical reconstruction. Especially is this true of the names of the cultivated plants. One of the most revealing and probably most transitory types is the specification of particular varieties of cultivated plants by compounding with the name of the variety, the name of the person who introduced the particular strain, or the direction from which the plant was obtained:

Hubbell- <i>mori</i>	Mr. Hubbell (the local trader)—bean
Hubbell- <i>meloni</i>	Mr. Hubbell melon
<i>hopa'kqa',3</i>	Eastern (Rio Grande) corn
<i>koni'nqa',3</i>	Havasupi corn.

It is significant that the older compounds of this type which involve borrowed words tend to modify the phonetic structure, whereas more recent borrowings preserve the English phonemes. This may be due in part to an increasing familiarity with English:

Kansas- <i>kawaiwatnga</i>	Kansas watermelon (recent)
<i>momon-watnga</i>	Mormon pumpkin (not so recent).

The same situation is found in compounds involving personal names, where the older names are no longer recognized or remembered.

<i>Kuwanyesva-kawai'vatnga</i>	<i>Kuwanyesva</i> (well-remembered gentleman of Oraibi)—watermelon
<i>honya'-tawa'ktci</i>	<i>honya'</i> —Meaning unknown. Name? Sweetcorn.

What is perhaps equally significant, the most recent introductions have no names at all. Nor is this always due to the use of another language in which the plants in question are named. One remembers particularly the old man in lower Oraibi who managed to get hold of some cauliflower seeds. He described the resulting crop as "being all white on the inside, and sort of like a cabbage. But we don't know how to eat it."

What is apparently the next stage after the general mystification and experimentation which follows the introduction of a new plant is a situation illustrated by two different names applied to the same bean.

<i>povo'khoyamori</i>	"Puppy dog bean"
<i>wokasmori</i>	"Cow bean" (Spanish <i>vaca</i> , cow)

Insofar as a special variety of cultivated plant retains a specific name the sequence appears to be as follows:

- Introduction.
- No name; general discussion.
- Diversity of names.
- Specification which is readily understood.
- Specification which is understood but phonetically modified.
- Specification which is phonetically modified and whose meaning is not readily understood.
- General absence of specification, as the plant either disappears, becomes genetically undifferentiated as the result of cross breeding, or is universally diffused possible at the expense of some earlier variety.

Turning now to the names which apply to groups of plants in general, as contrasted with specialized varieties, the most obvious method of recognizing relative age is in borrowed names. The following borrowings are obvious in Hopi:

<i>o:va</i>	Spanish	<i>uva</i>	grape
<i>tci'li</i>	Spanish	<i>Chili</i>	peppers

<i>mansa'na</i>	Spanish	<i>manzana</i>	apple
<i>toma'ti</i>	English	tomatoes	
<i>kora'nro</i>	English	Coriander.	

Borrowing in compounds often appears to be older than pure borrowed forms.

kawai-vatnga *kawaio* (Spanish *caballo*, horse)-*vatnga* (from *patanga*, pumpkin) "Horse-pumpkin" the name for watermelon.

molas,u:'yi *molas* (English molasses), *u:'yi*, plant. The name for Sorghum.

The meaning or pattern of a compound may be borrowed. This is probably a relatively late type of borrowing involving speakers who are essentially bilingual (from Tewa).

'wa-ʔe *'wa*, egg *ʔe*, fruit Egg plant

Borrowings may be quite complex.

woka'smori "Cow bean" a parallel from English where the bean is called "Jacobs cattle bean." At the same time, the Spanish word for cow, *vaca*, appears as *woka's-*

An even more complex situation is illustrated in the Hopi name for the Russian thistle or Tumble weed. This plant first appeared in the vicinity of a trading establishment run by a German trader. His pronunciation of the English word "Good", amused his Navajo clientele, who forthwith nicknamed him "Goody". The Hopi soon followed the Navajo example. Since this trader was responsible for the weed, it too became known as "Goody's weed" or as it eventually came to be expressed by the Hopi "koti." Thus the Hopi name for tumble weed represents the Hopi version of the Navajo rendition of a German's pronunciation of the English "Good."

Within the boundaries of the native language itself, the structure of the name of a plant is often a key to its history. New plants sometimes take on names that had wider meanings:

siva'pi once meant any fruit; now means peach.

Cultivated plants frequently take over the name applied to a similar wild species:

tu'mna once meant wild potato; now includes Irish potato
si:'wi once meant wild onion; now includes cultivated form.

Even among wild plants, old names are extended to include introduced forms:

pa:'kavi *Phragmites communis* Native reed
pa:'kavi *Arundo donax* Introduced reed.

New forms are frequently named by modifying an older name with a descriptive element.

<i>pi:'va</i>	Native tobacco	<i>Nicotiana</i> spp.
<i>wupa'viva</i>	"Tall tobacco"	Mullein (<i>Verbascum</i>). Introduced
<i>kwangwa-viva</i>	"Sweet tobacco"	Fennel (cultivated). Introduced.

The elements which enter into a compound supposedly represent forms which are older than the plant which the compound name designates:

<i>tu'mna</i>	Wild potatoes	<i>Solanum jamesii</i>
<i>a:'qaw,u</i>	Wild sunflower	<i>Helianthus annuus</i>
<i>a:'qaw,tumna</i>	Jerusalem artichoke "Sunflower-potatoes"	<i>Helianthus tuberosus</i> a recent introduction.

The danger of this method can be best illustrated by the following series:

<i>sipa'la</i>	Peach (originally, fruit)
<i>sipa'ltuva</i>	Almond ("Peach-nuts" <i>tuve'e</i> Pinyon nuts)
<i>sh3'fsipa'la</i>	Apricot (peach with cottonwood leaves)
<i>homi',sipa'la</i>	Pear (peach with a handle).

The implication here is that the plants whose names are compounds involving *-sipa'la* are of more recent origin than the plant which is named *sipa'la*.

This may be so, but as we have already indicated the term *sipa'la* originally, and in certain contexts, still means fruit. There is some reason to believe that the peach and the apricot may have reached the Hopi at about the same time. The peach has been by far the most popular and the frequency of the utterance of its name, even at an early date must have been much higher than that of the apricot. It would be quite logical to assume that originally the name for peach, like that of the other fruits of this nature, was a compound involving the term *sipala*, and that as time went on, the modifier disappeared. Thus we have two possibilities,

<i>sipala</i> : "fruit"	<i>sipala</i> : "fruit"
<i>sipala</i> : "fruit, especially peaches"	<i>#-sipala</i> : "#-fruit," i.e., peach
<i>sipala</i> : "peach" (rarely "fruit")	<i>-sipala</i> : "peach" (archaic, "fruit").

At what time, and in which sequence the term *sh3'fsipa'la* appeared we can not say. It may have meant originally, "Cottonwood fruit," or "Cottonwood-peach." The relative antiquity of the two forms is not indicated by the linguistic data at hand.

Our previous examples have been taken from a single language in every case (Hopi, unless otherwise indicated). We should not, however, overlook the possibilities of the comparative method. Let us glance briefly at Gosiute and Hopi.

Gosiute	Hopi	
<i>si'-bu-bi</i>	<i>si-va'pi</i>	<i>Chrysothamnus</i> , etc.
<i>ba'-u</i>	<i>pi:'va</i>	Tobacco
<i>tsiñ-ga</i>	<i>tci-ninga</i>	Thistle

<i>ti-ba</i>	<i>tu-ve,e</i>	Pinyon
<i>hi-na-bi</i>	<i>hu:n'-vi</i>	Cliff rose
<i>tu'-na</i>	<i>toto-na</i>	<i>Cymopterus</i>
<i>kwi-ni-ûp</i>	<i>kwi:'ngvi</i>	Oak
<i>so-ho-bi</i>	<i>s3-h3'-vi</i>	Cottonwood
<i>dzi'na</i>		<i>Claytonia</i> (Small bulb)
	<i>tum'na</i>	Wild potato (Small tuber)

Out of a total of about 15 similarities of name which were easily located, the plants were essentially the same in 13 cases and the use was the same in eight. Of these most of them were for food.

It would be dangerous to generalize too far on the basis of such casual analysis. Nevertheless it is quite evident that the comparative method applied to this material would be highly significant. For example, we can say that in so far as our data goes it would appear that the Hopi and the Gosiute have had a common origin, both in language and in environmental adjustment; that that common origin was either confined to the Upper Sonoran Zone or that it contained such a district.

Summary of Arguments

1. Insofar as the ethnobotanist is concerned with attempting to define the meaning of native names in terms of scientific names, he is dealing with a linguistic problem.
2. There are fundamental differences in the nature of "native" or "common names" and scientific names, which unfortunately cannot be easily expressed. The native name is variable and through variability changes in meaning take place. Ethnobotanical studies do not illustrate this interesting phenomenon.
3. Names of plants often reveal something of their own cultural significance or of the interests which are dominant in the culture.
4. Varieties of cultivated plants often receive special designations. A typological sequence has been indicated which possibly illustrates their history.
5. Borrowing of names for plants is illustrated and some especially complex instances explained.

6. The extension of meaning of old names to include new though allied forms is illustrated.
7. The elements of a compound are supposedly older than the compound. The historical inferences from this are discussed and the possibilities of misinterpretation indicated.
8. The possibilities of the comparative method are indicated.

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