# 7. Discussion and Conclusion

## 7.1. Factors that influence ethnobotanical knowledge and its patterning

### 7.1.1. Age

With respect to the initial research hypothesis stated in this dissertation (page 8), it can be concluded that age correlates positively with ethnobotanical knowledge. Older men mentioned 63.9% of the total variety of plants as opposed to 36.6% mentioned by the younger men, while older women named 49% of the total plants mentioned as opposed to 42.6% named by younger women. With growing age and experience, specialisation in certain areas and methods of healing expands, and older men and women shared a higher lexical as well as substantive knowledge of medicinal and ritualistic uses of plants. The younger generation relies on these specialists, and acknowledges, in general, that " the old ones know more ". It is also commonly believed that women under the age of 30 should not engage into healing with plants, as “their blood is still too hot”, meaning that they are in the height of their reproductive age. Domain specific interest, however, can motivate individuals to apprentice with their elders or specialists in specific areas of expertise, which will enhance their knowledge of domain- specific plants. A 47- year old man, son of a renowned elder and specialist healer for back, chest and lower back pains, has worked with Dr. Zeitlyn on an ongoing reforestation project and also has a tree nursery next to his house. His specialist knowledge in cultivated and introduced tree species was also reflected in his younger wife’s free list.

### 7.1.2. Gender roles

Scholars have emphasized gender as a particularly critical variable in ethno-biological knowledge, as it is highly correlated with other socio-cultural factors, including birthplace, residence, occupation, educational background, social status and networks, resource access, and income class (di Leonardo 1991; Sarin 1998, in Pfeiffer and Butz, 2005).

The role of gender as a factor influencing variation of ethnobotanical knowledge was not found to be very pronounced, and presents the Mambila as a considerably 'egalitarian' society. Fieldwork activity calendars for women and men show very similar roles and distribution of labour. Women, and men farm, fish, trade plant products on the market (men

mainly coffee and, seasonally *Voacanga* seeds), and they make largely independent decisions about the use of their surplus crops.

Nevertheless, some distinct gender roles contribute to differences that were reflected by a certain extent of domain specific plant focus. As main carers for the household and children, young women mentioned mainly plants that are used as food and firewood, and older women added their knowledge of basic household pharmacopoeias. Young women's' focus on work in the fields was reflected by their high knowledge of weeds that "spoil the field". Men, on the other hand are responsible for house construction and maintenance, as well as certain crafts (such as basketry), which explains their more apparent knowledge of plants used in construction and crafts.

However, plant knowledge is influenced in domains such as medicine by different types of specialisation and participation in the **sua** masquerades. As the chief pointed out in an interview, women share practical knowledge about specific 'ceremonial ' or medicinal plants, which don't concern men, while men share use contexts of particular plants, especially in connection with 'ritual' medicine. One example I found for this was women's' equally shared knowledge of the plant **libi** *(Sida rhombifolia)* which is an important ingredient in the ceremonial ointment '**beér'** that is rubbed into women's skin during the **sua** dances. Mambila women also anoint their skin with '**beér**' when they get married. I was told that for one month, the new wife is supposed to stay home, eat a lot and abstain from work. Rubbing her body with the red oil is said to help her put on weight and prepare for the bearing of children. Although men are perfectly aware of the ointment and its ritual and cultural significance, young men's knowledge of the plant libi itself, showed disparities, both in its identification and the knowledge of its uses.

Gender based specialisation was furthermore observed to pattern ethnobotanical knowledge sharing. Older men's higher knowledge of 'ritual' applications of medicinal plants stems from their medical specialisations and modes of treatment. On the trail walk, the older female specialist listed more medicinal uses in a strictly physiological use context, while her younger male counterpart knew different applications for the same plant, which referred to ritualistic contexts.

### 7.1.3. Ethnic mixing and the effects of "Fulbeisation"

An interesting question arose about the considerably large variation in knowledge sharing between men, both within the groups and across the generations. Looking at individual cases suggests birthplace and residence as a cause. Variations in the plant knowledge of a 16- year old boy might stem from the fact that he had moved to the village only four years previously as an orphan from a nearby small town, where he possibly knew plants by different names, hence he confused Fufulde and Mambila names in his free list. A 52- year old man who had emigrated from Nigeria 10 years previously might have drawn upon his plant knowledge from Nigeria. He was the only informant to mention the most salient weed kabe *(Echinochloa colona*) in the context of ritual, and he also knew more Fulfulde and English names for plants.

In the past, social prestige has been coupled in a " package of being ethnic Fulbe, being Muslim and speaking Fulbe " (D. Zeitlyn, pers. comm.), and this has had some influence on the younger generations of Mambila who incorporate more Fulbe words into their language and exchange knowledge of foods and other plant uses. As gradually more Fulbe trade their nomadic lifestyle with a more sedentary life as cattle breeding village members, their knowledge of certain plants becomes commonly shared, as was observed with **lalo** and **gubudo (***Allectra* spp.**),** two plant species that were lumped under the Mambila name **mgbéra**[44] by many older Mambila women, while several younger women reminded me that it is necessary use the Fulbe term "so everyone knows what you are talking about".

### 7.1.4. The role of formal education

Quantitative analysis of formal education as an independent variable suggested a positive correlation with individual ethnobotanical knowledge. Closer investigation raised methodological questions about the accuracy of the analysis and called for a more qualitative approach. The relationship between formal education and plant knowledge was analyzed using knowledge scores from trail walks, where older men scored highest. However, taking trail walks alone as a measure for plant knowledge proved to be flawed.

Although most families try to send their children to school, the traditional pattern of prioritizing boys' education over that of girls' still prevails, and consequently, men, in general, spend more time in school than women. High levels of education measured in years

[44] To be identified at Kew as the herbarium at Yaounde was uncertain of the species' scientific identification.

spent at school might have biased the analysis, as most of the older men on the trail walk spent more years in education than the older women. From informal discussions, I perceived many of the younger female participants to be more interested in getting married and maintaining the traditional village life than continuing in education. Success in formal education often leads to parents' expectation of financial support, which might entail a move from the village. Whereas for young men, travelling and searching for work and, sometimes, adventure, is more common and accepted, young women seemed reluctant to engage in such a lifestyle, as one 17 year old woman told me who left her husband to return to the village because she felt out of place and lonely in the city. However, I have also encountered young girls who showed ambition to excel in school and were encouraged by their parents, teachers, as well as the church community, to pursue the path of education, and most young mothers I spoke to, told me that they want their daughters to go to school.

It is difficult to judge how formal education will affect plant knowledge in the future. Villagers lament that the decline of **yulu (***Sorghum* spp.) as a staple crop is linked to children having to spend time at school, and, therefore, not being able to chase away the birds when the crop ripens.

### 7.1.5. Patterns and fluctuations in the transmission of knowledge

Considering that the Mambila are farmers who base their life, their social structure and many of their rituals on subsistence agriculture, it is not surprising that the knowledge of food plants is highly developed and shared to a high degree by all members of the community. Already in early years, children, irrespective of gender, observe their mothers and female family members preparing food and learn to participate in food-related chores. As soon as they are considered strong enough, they accompany their parents into the fields to help with weeding and food gathering, and learn names and management practices of the most conspicuous food plants through a seamless transmission of knowledge and experience. As they grow up, young girls are the principal labour force that women can access and are generally expected to prepare the midday meal in times of heavy workload in the fields, while boys often stay with their fathers or male family members to help in their fields and cash crop related plantations. While knowledge of food is mainly transmitted through mothers or other female family members, transmission of medicinal plant knowledge is gender- influenced and is passed down from mothers to daughters and fathers, or male

family members, to sons. Therefore knowledge sharing in these domains will be higher among the same sex than across genders[45].

A further dimension in the transmission of knowledge shows that learning is an organic and spatially fluid process, in which information is circulated not only in a traditional "top down" way but also through social networks such as peers, neighbours, relatives and even strangers. Young women and men exchange knowledge about plants among each other and discover new uses in childhood, as was illustrated by young participants who use certain grasses and sedges as food which older participants considered as weeds. Through the increased ethnic mixing with the Fulbe, names and uses of plants that are not part of the traditional Mambila ethnobotanical repertoire or are newly introduced plants, can be learned via these channels, and can be incorporated into the local knowledge system. The field guide that I will prepare as compensation for the village will represent such a contribution in knowledge transmission, as I will list names and cross- culturally applied uses of plants encountered in the Somié area, but which are new or unknown to the Mambila population.

### 7.1.6. Socio- economic change

Even though the Mambila are a subsistence- based society depending largely on the environment for their survival, socio- economic changes based on varying levels of integration into the cash economy have influenced the young generations' attitude towards subsistence and, hence, towards their environment. Most young women today engage with the market to some extent and spend, in general, more time on " own account enterprises"(Roberts, 1988: 103) within "female farming systems" (Roberts 1998) than did their mothers and grandmothers, as they are living "in the times of the money"[46]. While they still have to bear the burdens of child rearing and farming, often as single mothers, these time constraints affect the ways in which they learn about plants with a focus on utilization in the household or as trade goods and commodities.

Similarly, new, cash- based subsistence choices have been adopted by young men affecting their relationship with plants. Young men engage in businesses such as bars, shop keeping, driving motor bike taxis, and their pastime activities (card games, drinking, watching movies, socializing in the market place) and conversations often reveal a more pronounced

[45] See Appendix II, table 16
[46] Quote from Barmi Marie (in her late forties) in an informal interview.

preoccupation with " finding money" than I observed among the older men. However, I felt that data might have been biased by the fact that young women and men were less cooperative in telling me everything they knew about plants than were older village members who were eager to share their knowledge and memories of plants.

### 7.1.7. Individual motivation and preferences

Personal tastes and preferences can often influence what plants are in our consciousness. Lacking more data that could have been obtained from pile sorting and weighted ranking exercises, certain differences in the free listing of plants can be also potentially ascribed to such individual factors. Similarly, personal attitudes toward the research and interest in specific domains such as 'ritual' medicine explained why a 30 -year old man insisted on being part of the study and why his responses displayed a high level of phyto-therapeutic and 'ritual' plant knowledge. As the son of a highly reputed traditional healer, this man was exceptional for his age group in the unusually early choice to apprentice in traditional medicine and to maintain the practice of ritual. His individual character, as well as a tragic accident that left his father dependent on his son's help to bring plants from the forest influenced his early specialisation in the field.

Disagreements can also indicate participant responses influenced by spatial -temporal factors. As shortages of firewood began to set in, people had to go further afield into the forest or the savanna, or revert to cutting trees in the village. Consequently, they might have prioritised a certain species' use as firewood over its use as traditional medicine or food. However, this is not clear proof that they don't know other uses they omitted to mention. One trail walk was conducted with a focus group of three older women between the ages 54 to 70 and above, and the women agreed on **mvuúr** (*Vitex doniana*) as firewood, which does not mean that they don't know its fruit as a wild food resource but might have found it too obvious to mention, simply forgot to mention it, or rather wanted to share with me and amongst each other their knowledge of various other plants encountered in the field.

### 7.1.8. Knowledge loss

Knowledge loss has been found to be partly related to environmental and socio- cultural changes. The younger generation has grown up with the availability of Western medicine, which is considered to be a potent remedy and is often preferred to herbal remedies. Thus, the theoretical knowledge of certain medicinal plants might prevail but knowledge of its practical

application is beginning to erode. Similarly, certain plant species that have been traditionally employed in use contexts such as roof thatching, salt production, sources of fuel for lamps or in clothes manufacturing and cosmetics, are being increasingly replaced by material goods purchased on the market and have faded in the memory of the people.

Increased logging has resulted in the loss of certain plant species, which were mentioned by a few older participants as "too rare to find in the forest, anymore". None of the younger participants knew the culturally important tree **tuú beér** (*Bathidia nida*), the bark of which supplies the red dye for the ceremonial red ointment used by women in the **sua** dances and at weddings. I was told that the last big tree in the area had been cut approximately 20 years ago to build a bridge and, since then, the bark has been sold on the market by non- Mambila vendors who "bring it from far away".

7.2 Methodological constraints and inconsistencies

Free listing as a method is a good first approximation of plant knowledge in a broad domain such as ethnobotanical knowledge. Although general patterns relating to age, interest and expertise, and the salience of certain plant species could be identified through quantitative analysis of free list mentions by groups, it proved advisable to maintain a critical attitude toward some of the data.

In free lists, old men came up with the highest number of plant names, but walks into the field with older women clearly showed that they know many more plants and their uses than they mentioned in the free lists. A further example are data obtained on the oil palm **teér** *(Elaeis guineensis*), which supplies the highly nutritious palm oil, a Mambila staple food. **Teér** was only mentioned a total of five times in free lists, and only once by a young woman. However, women are responsible for the production of the oil and both theoretical and practical knowledge of the plant, its management and its many uses are widely shared among everyone in the community. In several cases, uses for the same plant were mentioned in the free listing environment and not mentioned when asked during the trail walks or vice versa, making comparisons between individuals' plant knowledge inaccurate.

Similarly, trail walks present only a snapshot of plant knowledge and are subject to influences as far ranging as weather conditions, researcher – participant rapport, and personal attitudes toward the research, which, in turn depend often on factors such as an individual's

character or their state of health. One young man who had difficulties identifying some plants in the field and initially confused some of their uses, admitted that he had taken several painkillers because of back pains, and that his " thoughts were with his wife", who had fallen ill with malaria. On other occasions, I perceived two young women to be slightly embarrassed about their lack of good conversational French and to rush through the naming of plant uses. Inadvertently, I cannot assume that what they told me is truly all they know.

Knowledge scores designed for the trail walk exercises were too broad and included both elicitation for use and identification. It might have been better to separate these exercises and give separate scores for each.

Consistent eliciting of uses from all informants about all plants on their free lists would have also helped to analyse disagreements on uses encountered on the trail walks and supplied more accurate data about certain conspicuous food plants with multi-contextual uses such as **yoó** *(Vernonia amygdalena).*

Working with translators often distorted data, and I believe that some of the details and nuances of plant knowledge in the interviews with older men and women got lost due to the translators' casual attitude. On one occasion a mentioned tree (**luú)** was repeated by the translator as a completely different plant species **(yoó),** which I only noticed after listening intently, and repeatedly, to the interviews.

It would have been beneficial to repeat some of the free list based interviews once I had more understanding of the mentioned plant species, as often plants were only mentioned with their generic name and specifics or binomials would have clarified which plant was meant. In this perspective, the free lists proved a little too vague and broad but a good approximation for getting a basic idea of folk classification principles.

I also experienced difficulties in accurately translating plant names and determining their referents, which made the explanation of their overall meaning and significance in Mambila culture difficult.

Voucher specimen collections presented a challenge due to time and equipment constraints, and I feel that it would be beneficial and important to return to the field in order to complete collections of elicited plant species in flowering season, and with better equipment (such poles and saws for tall trees) or hired climbers.

## 7.3 Conclusion

The outcome of this study has successfully provided the Mambila Dictionary Project with Mambila names for 173 vascular plants, which comprised of 73 trees and 100 plant species (grasses, herbs, vines and bulbs). It has also supplied uses for 92% of the trees and for 62% of grasses, vines, herbs and bulbs. Furthermore, it has provided the herbaria at Yaounde and at Kew with 60 well-presented voucher specimens, which are the first plant collections made in the area around Somié[47].

The results of this study suggest that differences in the individual ethnobotanical knowledge of Mambila women and men in Somié vary considerably and are patterned with regard to age, domain specific specialisation and, to a lesser degree, gender.

While different areas of specialisation, between women and men might account for gender-based differences for the elder and adult generation, specifically in the domain of medicine and ritual, variations of individual plant knowledge among men suggested other variables to be of influence.

Variations in the knowledge sharing of men were to some extent explained by individual case stories relating to ethnic mixing, specialisation, personal interests and place of origin. However, I suggest that socio- economic changes could potentially be affecting traditional patterns of knowledge transmission from old to young, gradually altering young men's' repertoire of plants. The traditional Mambila social structure, as referred to by the chief of Somié, in which knowledge is passed on through "stories around the fireplace" or by accompanying parents into forest and field might possibly get affected by changing subsistence choices as young men search for alternatives to supplement their income in areas such as commerce or wage labour, or through continuing in formal education outside the village.

Similarly, young women's' growing focus on managing plants in 'own account enterprises' and increasing numbers of imported material goods available on the market can be expected to influence their plant knowledge, in the future, eroding knowledge of plants used in cosmetics, crafts, and medicine.

[47] See Appendix III. 1,Figure 9.

Shifting preferences for Western medicine among the younger generation have been furthermore observed to cause a potential loss of both theoretical and practical medicinal plant knowledge.

With regard to lexical knowledge of plants, data suggest a high level of knowledge sharing and confirm the qualitatively observed ethnic and linguistic unity among the Mambila community of Somié. Elders and older adults of both sexes expressed an explicit interest in the preservation of this cultural heritage, which includes traditional uses of plants in medicine, and in ritual contexts. Young adults supported this attitude, but tendencies of increased inter-ethnic knowledge sharing and Fulbeisation, both in lexical plant knowledge and practical uses of plants, were observed to varying degrees among young women and men.

Methodological shortcomings and a small sample size made the examination of education as a factor influencing individual ethnobotanical knowledge difficult. Although quantitative data suggested a positive correlation between plant knowledge and years spent in formal education, qualitative observation did not support this relation and has led me to conclude that further, and more case specific research would be necessary to validate the quantitative results obtained in this study.

The collection of voucher specimens, Mambila plant names and uses relates to an academic concern with the preservation of bio-cultural diversity, and more specifically the link between language, as part of culture, and biological diversity.
From informal discussions, it has become apparent that, in the light of climate change and the increased pressures of immigration, commercialisation and integration into the market, adaptations to new, more productive and reliable plant varieties might be required, which are expected to alter variations in ethnobotanical knowledge as well as the biological and cultural diversity of the area. The planned ethnobotanical field guide of Mambila plants explored in this study presents a contribution to the preservation of this bio-cultural diversity.

Change is an intrinsic part of the human condition, and changing patterns in the sharing of ethnobotanical knowledge within a community are indicative of both the health of a culture seen as a “pool of shared knowledge”, and of the health of the environment they call their

home. Therefore, they inform both ethnobotanical and linguistic debate concerning intra-cultural knowledge diversity and help develop more integrative approaches for the preservation of biocultural diversity in traditional societies currently facing the challenge of adaptations to changing ecological, socio- cultural and socio- economic environments.