ETHNO-ECOLOGICAL LINGUISTICS:
BIO-CULTURAL DIVERSITY AND THREATENED LINGUISTICS

The ways To Maintain and Develop The Traditional Knowledge
Empowering Local Culture
Bajo Torosiaje Fishing Community

Abstract

I am a reader in ethno-ecology and linguistics in general, neuropsycholinguistics, and ecolinguistics studies in an international context; the author of Ethno-ecological Linguistics: My Grounded and Fieldwork Experiences. (Forth coming). I have a background both in linguistics and ethno-ecology/ human ecology and teach a range of course including ecolinguistics and cultural studies. I arise a new field of ethno-ecological linguistics as an area of transdisciplinary research concerned with investigating the links between the world’s people and cultural, ecological and linguistic diversity as manifestations of the diversity of life. The idea for the emergence of this field came from the observation that all three diversities are under threat by some of the same forces and from the perception that loss of diversity at all levels gives consequences for humanity and the earth. Accordingly, the new field of ethno-ecological linguistics has developed with both a theoretical and a practical side; the first, a theoretical side focusing on my first dissertation on Typological Linguistics of the Gorontalo Language and the second dissertation on Ethnoecology of Bajo fishing Community: the latter, a practical side focusing on-the ground and fieldwork experience. This review provides some background and beginnings of this new field and on its philosophical science and belief, and then surveys the key literature on ethnology, ecology and linguistics, concentrating on three main aspects: global and regional studies on the links between cultural, ecological and linguistic diversity; The review concludes with some considerations about future prospects for this emerging field.

Keywords: ethno, ecology, linguistics

(For personal use only)
Before doing anything, I need to convince one’s audiences that there is a problem. After all there is a very widespread popular perception that diversity is dysfunctional and that the world be a better, friendlier and more efficient place if everybody spoke the same language. Not so very long ago Australia subscribed to a policy of linguistic streamlining or assimilation and such an assimilation policy is pursued in many of its neighbouring countries today: Indonesia, Malaysia, Singapore, Brunei, Taiwan, Mainland China, Vietnam and so on.

Ethno-ecological linguistic arguments against monolingualism include:

a) moral arguments. Linguistic human rights as advocated by major international bodies emphasize the right of each human being to speak their language as a marker of their identity and to be educated in it and to maintain it if they so wished.

b) scientific arguments. Different languages contain different knowledge and other people’s knowledge may be a resource for solutions to our own problems, a pool of natural ideas. Moreover different languages use slightly different parts of the brain and becoming multilingual, especially in a language that is historically or typologically distant, significantly increases a multilingual’s ability to make use of parts of the brain that otherwise would remain atrophied. In addition, it enables connections between different parts of the brain to be established with the net outcome that multilinguals perform better in all areas of knowledge than monolinguals.

Once these and other positive functions of linguistic diversity have been realized, its maintenance begins to appear desirable. As time for arresting the decline of diversity is short and as expertise is not widely developed, any approach that wishes to base itself on a fully developed scientific knowledge is unrealistic. I have started developing a different, more manageable solution: that of writing linguistic impact assessments that seek to clarify the impact of proposed social, technological and other developments on the language ecology.
Supplementing the ethno-ecological linguistics approach is the study of the role of language in talking about ecology. Available studies often take the form of technical stock taking exercise in language assessment, employing the standard techniques of language planning and assessing existing languages in terms of:

1) referential adequacy (does the language like English have a word for important aspects of the physical environment or species?)

2) systematic adequacy - do existing words conform to the pattern of a language, are they easy to process, not liable to create ambiguity or misunderstanding?

3) social adequacy - is existing language suited to serving the aims of equity, responsible environmental behaviour, informed discussion and so on?

As regards referential adequacy, it is now widely argued that the existing language resources are wanting. English is poor in lexical distinctions, of for example: names for endemic plants or endemic fish names, and so on. As regards systematic adequacy, much of the available environmental discourse is difficult to read. Terms such as ‘environment’, ‘sustainable’, ‘impact’ and so on, are highly ambiguous, whilst terms such as ‘greenhouse’, ‘ozone hole’ and others are potentially misleading.

There have been a number of significant breakthroughs in making a language more capable of coping with changed conditions, but in environmental discourse, more than almost anywhere else, we are still governed by the principle that in times of rapid technological and social change, language tends to lag behind other developments. Ethno-ecological linguistics combines the insights of ethno-ecology of language and ethno-language of ecology studies, in a single integrated sub-discipline.

2. Connection Between Linguistics, ethnic (people and culture) and biological Diversity

These three types of diversity might co-evolve each other. Fundamental issue:

‘Diversity’ is one perspective simply a measure of ‘density of difference’ which may be realized by counting how many kinds of something exist within a bounded area of a certain size. The meaning of culture diversity, by analogy with measures of bio-diversity, we might suppose
that *cultural diversity* can be defended in terms of the variation in culturally heritable information and its distribution across cultural lineage (Mishler).

3. Ethno-ecological linguistics

Ethno-ecological linguistics is concerned with two main issues:

A. Ecological embedded of human communication (i.e. language not being a self-contained system but an integral part of a larger system)

B. The analysis of environmental discourses (i.e. both how people talk about the *local environment*, and the discourse of *environmentalism*). Its key concepts are those of diversity and of functional interrelationship.

The chance of a productive symbioses between linguistic – cultural and biological diversity is constrained by *two major factors*:

A. The rapid disappearance of biological species

B. The even more rapid disappearance of linguistic diversity

Of more than 6000 languages estimated to be spoken, as many as 95% are believed by some linguists to be on the dangered list, and their rate of extinction appears to be greater than that of biological species (see e.g. of Papuan Language on lexicon of Enga: tree (Lang, 1975).

4. Threats to the world’s diversity

Although estimates the number of species in the world vary greatly, experts consider it a strong possibility that 20 percent that the world’s existing species will be lost over the next thirty years (Wilson, 1992), even higher (Stork 1997). Calculating that perhaps only 10 percent of existing species have been discovered and named, scholars point out that scores of the species will go extinct before they are scientifically identified and studied. Biologists stress that, while species extinctions have occurred throughout the history of life in earth, the present extinction is the first to be overwhelmingly to due the direct or indirect impact of humans on the environment. To human disruption or destruction of ecosystem and the habitats of plants and species. Less widely know, although attracting increasing attention, is the diversity loss that is affecting the
world's languages and cultures (Harmon, 1995; Dixon, 1997; National Geographic Magazine, 1999). There are an estimated 6000 or more oral languages spoken today. Most of these languages, however, pertain to small communities of speakers – the indigenous and minority group of the world.

Harmon calculates that about half of the world's languages are spoken by communities of 10,000 speakers or less; half of these languages, in turn, are spoken by communities of 1000 or fewer speakers. Over all, linguistic communities with up to 10,000 speakers, total about 8 million people, less than 0.2 percent of an estimated world population of 5.3 billion. On the other hand, of the remaining half of the world's languages, a small group of less than 300 (such China, English, Arabic, Indonesian and so forth, are spoken by communities of 1 million speakers or more, accounting for a total of over 5 billion speakers, or close to 95 percent of the world's population (Harmon, 1995). These are the linguistic communities that have been and continued to be under threat, due the ever growing assimilation pressure that promote into , mainstream, society and the collective abandonment of the native languages in favour of majority languages (the phenomenon known as 'language shift').

Harmon (1995) suggest that virtually all languages with fewer than 1000 speakers are threatened. Many of these smaller languages are already at risk of disappearing because of a drastic reduction in the number of the speakers. Younger generations decreasingly or no longer learn their language of heritage. Nearly extinct (moribund) languages are estimated make up between 6 percent and 11 percent of the currently spoken languages. In some projection, as many as 90 percent of the world's languages may disappear or become 'moribund' during the course of the twenty-first century (Krauss, 1992). These figures portray a threat to linguistic diversity that may be far in magnitude than the threat facing bio-diversity.

Along with languages, much of the cultural knowledge and wisdom, the ways of life and world's views of their speakers are under threat. While not all knowledge may be linguistically encoded, language does present the main tool for humans to elaborate, maintain, develop, and transmit knowledge (Harmon, 1995; Maffi, 1998). When external forces begin to undermine traditional societies, local peoples generally end up losing control over with their traditional natural and cultural environment. Global socio-economic change disrupts traditional ways of life.
promoting poverty, over-exploitation of the environment by outside forces and by local groups themselves; as well as conflicts over local peoples’ land and resource rights.

Under such conditions of rapid and drastic change, traditional knowledge, beliefs, and wisdom, and the languages in which they are encoded, tend to lose their functions for local peoples and begin to erode. Further more, local knowledge does not translate easily into the majority languages to which minority language speakers switch. Generally, the replacing language does not represent an equalent vehicle for linguistic expression and cultural maintenance (Woodbury, 1993), and along with the dominant language usually comes a dominant cultural framework that begins to take over and displace the traditional one. Because in most cases indigenous knowledge is only carried by oral tradition, when the rapid shift toward ‘modernization’, and dominant languages occurs and oral tradition in the native languages is not kept up, local knowledge ends up being lost (Maffi). At an especially high risk is disappearing traditional ecological knowledge, that is, local people classification, knowledge, and use of natural world, their ecological concept, and their resource management institutions and practices. The consequences of such global and local process of cultural and ecological change are everywhere to be seen, in the progress depletion of the world’s forest, deterioration of water and air mounting violation of indigenous and other peoples’ land, resources, cultural and linguistic rights, and humans’ increasing inability to live sustainably and harmoniously on earth (Norgaard, 1994).

Interestingly, when in the late 1980s linguists and anthropologists were beginning to voice concern about the state of the world’s languages and of traditional knowledge, they sometimes drew parallels with the loss bio-diversity, as a way of suggesting comparable damage to humanity’s heritage (Halle, 1992, Krauss, 1992). But in these initial pronouncement, linguists made no significant attempt to go beyond such parallels and ask wether there might be more than metaphorical relationship between linguistic and biological diversity and the loss thereoff (Krauss’ 1996). Anthropologists and other scholars and advocates did point to connection between biological and cultural diversity, but in most cases did not devote attention to linguistic diversity Toledo, 1994; Keeton, 1995; Wolf, 1997).

It is only recently that this issue has been explicitly raised and the idea has begun to emerge that, along with cultural diversity and as a central part of the latter, linguistic diversity
should also be seen as inextricably linked to biodiversity as stated in *International Society of Ethno-biology’s Code of Ethics 1998*. Culture and language are inextricably connected to land and territory, cultural and linguistic diversity are inextricably linked to biological diversity (Maffi. 2001).

A 1995 study (Harmon, 1996) showed some striking global correlations between linguistik and biological diversity. Starting from the observation that the majority of the world’s smaller languages, labeled as ‘endemic’ and comparing a list of countries by number of endemic languages with the World Conservation Union, found that 10 out of the top 12 megadiversity countries (or 83 percent) also figure among the top 25 countries for endemic languages. Harmon (1966) pointed out that several large-scale bio-geographical factors might account for these correlation, in that they might comparably affect both biological and linguistic diversity and especially endemism such as climates, and ecosystem: fostering higher numbers and densities of species. Harmon proposed a small-scale ecological phenomenon as also accounting for biodiversity – linguistic diversity correlations: a process of coevolution of small human groups with their local ecosystems, in which over time humans interacted closely with the environment, modifying it as they adapted to it and developing specialized knowledge of it.

Using a geographic area – scale case study, specifically I examine the correlation between measures of biodiversity (fish species) and measures of both linguistic and cultural diversity for indigenous culture areas in Bajo Torosiaje fishing community in Torosiaje village and Gorontalo fishing community in Bone Pante and Bone Raya, both in Gorontalo Province. (SEE THE TABLE). Linguistic Diversity in Native Bajo Torosiaje and Gorontalo Fishing Community (Usman, 2008) by using (culture area), languages –*the Bajo Language, the Gorontalo Language and the Indonesian Language*, GENUS (language phyla),species (families)
### NAMES IN THE BAJO LANGUAGE

<table>
<thead>
<tr>
<th>Bajo Language</th>
<th>Gorontalo Language</th>
<th>Genus</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilangang</td>
<td>Tantulude'o</td>
<td>Roa</td>
<td>Tylosurus</td>
</tr>
<tr>
<td>Timbaoa</td>
<td>Toi</td>
<td>Sori</td>
<td>Not known</td>
</tr>
<tr>
<td>Gogoro</td>
<td>Tola lo gogoro</td>
<td>(ikan batu)</td>
<td>T.sp</td>
</tr>
<tr>
<td>Subatang</td>
<td>Dehu</td>
<td>Cakalang</td>
<td>K.pelemis</td>
</tr>
<tr>
<td>Turinga</td>
<td>Buyu</td>
<td>Cakalang</td>
<td></td>
</tr>
<tr>
<td>Duppo</td>
<td>Bulala'o</td>
<td>Belanak</td>
<td>Mugil</td>
</tr>
<tr>
<td>Dayak tana</td>
<td>Lamanuto</td>
<td>Ikan merah</td>
<td>L.fltuatus</td>
</tr>
<tr>
<td>Baba camba</td>
<td>Bulalahu</td>
<td>Kakap merah</td>
<td>Not known</td>
</tr>
<tr>
<td>Bambangan</td>
<td>Darise</td>
<td>Katamba</td>
<td>Not known</td>
</tr>
<tr>
<td>Ohok</td>
<td>Katamba lata'o</td>
<td></td>
<td>L.sp</td>
</tr>
<tr>
<td>Kalampeda daya</td>
<td>Tola ngopita</td>
<td>Ikan sebelah</td>
<td>Cyanugiasus</td>
</tr>
</tbody>
</table>

### Other Names

<table>
<thead>
<tr>
<th>Kalora nyuko</th>
<th>Hele lo bunggo</th>
<th>Udang bambu</th>
<th>Panaeus</th>
<th>Psa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kalora igak</td>
<td>Hele lo ayabu</td>
<td>Udang kipas</td>
<td>Thenus</td>
<td>T.orientalis</td>
</tr>
<tr>
<td>Kalora</td>
<td>Hele lo bulu</td>
<td>Udang biru</td>
<td></td>
<td>Not known</td>
</tr>
<tr>
<td>Kalabutang</td>
<td>Suntung</td>
<td>Suntung</td>
<td>Sepia</td>
<td>S. latimanus</td>
</tr>
<tr>
<td>Kendara</td>
<td>Suntung bunga</td>
<td>Suntung bunga</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Karidau</th>
<th>Taripa goro</th>
<th>Teripang karet</th>
<th>Holothuria</th>
<th>H. edulis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karidau pang' a</td>
<td>Taripa tulidu</td>
<td>Teripang</td>
<td>Holothuria</td>
<td>H. natalis</td>
</tr>
<tr>
<td>Gama kunek</td>
<td>Taripa gama</td>
<td>Teripang</td>
<td>Holothuria</td>
<td>H. scabra</td>
</tr>
<tr>
<td>Bala kokok</td>
<td>Koko</td>
<td>Teripang koko</td>
<td>Holothuria</td>
<td>H.sp</td>
</tr>
<tr>
<td>Bala koro</td>
<td>Taripa lo koro</td>
<td>Teripang koro</td>
<td>Holothuria</td>
<td>H.sp</td>
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</tbody>
</table>

Sumber: informan PR, PB, dan nama ilmiah dari *S dan *AT
In the analysis presented below, I utilize this literature to examine the degree to which biodiversity correlates with linguistic and cultural diversity in native Bajo Torosiaje and native Gorontalo fishing community in Gorontalo Province. To do this, I must first decide how to measure the three different kinds of diversity.

Native Bajo Torosiaje and Gorontalo fishing community cultural diversity is conventionally categorized according to ‘cultural area’.

a. Linguistic diversity, I chose a crude but feasible measure, the minimum estimated number of distinct spoken in each culture area at time of contact, although the table also provides some information on diversity of higher level taxonomic units (language family and phyla or species and genus)

b. Cultural diversity, I just employed the qualitative measure of culture trait diversity shared between the ethno-linguistics group in a given culture area.

c. Bio-diversity is measured in a variety different ways, for present purposes I settled on a crude but feasible measure, species richness. Given the available data, I chose to measure species richness for selected taxonomic categories, namely fish.

3. Future

Ethno-ecological linguistics has, in my view, excellent prospects if it can avoid falling into the trap of becoming yet another offshoot of linguistics, such as psycholinguistics and sociolinguistics. Also to be avoided is a rhetorical greening of linguistics without serious studies of the nature and function of diversity. To attempt developing it into a self-contained, fenced off sub-discipline, would seem counterproductive. The ‘ethno’ part of ‘ecological linguistics’ needs to be understood as a reminder that one should maximize functional links to unite as many disciplines as possible concerned with the environment. If the practitioners of ethno-ecological linguistics continue to ‘dirty’ their hands with the real world by participation in environmental work, environmental politics and environmental practice such as permaculture, such links can be maintained.

Ethno-ecological linguistics also has a role in informing both linguistic cultural and environmental studies. The former, by falsifying the claim that language is something like an abstract object or mental organ which can be studied in isolation and by demonstrating that language is an ecological phenomenon situated in and interconnected with the rest of the world. For environmental studies this means to demonstrate to environmental scientists and other
environmentalists that language is not a neutral instrument. All researchers need to make explicit the implicit theories that are necessarily found even in their most objective scientific discourse. Ethno-ecological linguistics needs to and by demonstrate that by learning to control language both environmental theory and practice will benefit. I believe both goals are attainable though I have found it more difficult at times to preach to my colleagues in linguistics than to my colleagues in environmental studies.

THANK YOU
A. DISERTATION:

B. SUGGESTED READING BOOK


----------. 2009. From Theoretical Linguistics to Biolinguistics: different perspective on minimalism.


---------- 1993 A minimalistic program for linguistic theory. In The view from Building 20, ed.


C. METHODOLOGY :

Linguistic Computational Approaches to Biological Text Mining: The Linguist's Shoebox: Tutorial and User Guide

I use THE TOOLBOX PROGRAM in analyzing descriptive linguistic data

We can use THE FLEX PROGRAM AND LANGUAGE EXPLORER in analyzing Ethnolinguistics /anthropological linguistics and (Ethno-)ecological linguistics)
We can also use THE MINIMALIST PROGRAM = REDUCTIONIST MODELS. Reductionist model are essential in science such as biolinguistics; all analysis of ‘reality’ reduce and simplify.

D. MY GROUNDED FIELDWORK AND SEMINAR ARTICLE:


Penelitian Mandiri dan Artikel Seminar:


Etnoekologi dan Ekologi Budaya Nelayan Suku Bajo Torosiaje Teluk Tomini di Propinsi Gorontalo. Universitas Hasanuddin. 2011

Etnoekologi Empiris vs Ekologi Sains: Kajian Eko-linguistik tentang Spesies Ikan (Studi kasus Etnoekologi Masyarakat Nelayan Bajo Teluk Tomini Di Provinsi Gorontalo. Universitas Hasanuddin. 2011)

Etno-ekologi dan Pembangunan Berkelanjutan: (suatu kajian antropologi Ekologi Tentang Sumber daya alam dan Masyarakat Nelayan PesisirTeluk Tomini Kecamatan Walea Besar. Universitas Hasanuddin2012


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