J. Ethnobiol. 1 (2): 238-261 December 1981

THE PERVASIVENESS OF ONOMATOPOEIA IN AGUARUNA AND HUAMBISA BIRD NAMES

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ABSTRACT.—As part of our continuing research on the nature of ethnobiological knowledge among the Aguaruna and Huasbisa, two Jivaroan populations of the rain forests of northcentral Peru, we have discovered that a major portion of the vocabulary for birds is onomatopoetic in origin. The purpose of this report is to provide evidence for the pervasiveness of onomatopoeia in these languages and to offer some initial speculations as to the significance of this pattern of naming. A rapid perusal of the literature suggests that onomatopoeia of this type is not uncommon in languages spoken by peoples of small-scale, technolgially simple, non-literate societies. The study of ethnobiological onomatopoeia might enlighten us on issues concerning the relation of vocabulary and cultural complexity.

INTRODUCTION

The Jivaroan Languages

The Jívaro language family comprises four closely related groups: Aguaruna, Huambisa, Shuar, and Achuar (McQuown 1955; Loukotka 1968; Greenberg 1960). The approximately 20,000 speakers of Aguaruna (Uriarte 1977) are found along the upper Marañón River of northcentral Peru, beginning around the Pongo de Retema and extending below the Pongo de Manseriche, as well as along the Marañón's major tributaries in this area, the Cenepa, Comainas, Numpatkaim, Nieva, lower Santiago, Apaga, and Potro. Some Aguaruna are to be found on the upper Mayo River, a tributary of the Huallaga (Brown 1980). Huambisa is spoken by approximately 5,000 speakers (Chirif and Mora 1977). Huambisa villages begin at the community of Galilea on the lower Santiago River and extend northward along the upper reaches of the Santiago and its tributaries to the Ecuadorian border. Shuar, with about 10,000 speakers (Grimes 1978), is primarily restricted to the upper Santiago, upper Morona, and upper Pastaza drainages of Ecuador's Oriente, though some Shuar speakers are found in Peru along the upper Corrientes River (Shell and Wise 1971). Speakers of Achuar, approximately 3000 in number (Grimes 1978), are found in both Ecuador and Peru along the Pastaza, Bobonaza, Corrientes, and Tigre Rivers, often passing freely across the international border that separates the two countries.

The Jivaroan languages are quite closely related, and our unsystematic observations indicate that they are, in the main, mutually intelligible with one another (see also Larson 1957; Shell and Wise 1971). Aguaruna and Huambisa apparently have little difficulty in interpreting Shuar language radio broadcasts of the Ecuadorian Shuar Federation. Of the four ethnolinguistic groups, however, Aguaruna appears to be the most distinctive phonologically and lexically.

Taxonomic Phonemes of Aguaruna and Huambisa

The most comprehensive work on Aguaruna descriptive linguistics is that of Larson, Fast, Payne, and Pike (Larson 1963, 1966, 1978; Fast and Larson 1974; Payne 1974; Pike and Larson 1964). Descriptive linguistic research on Huambisa has been carried out by Beasley and Pike (1957). Published comparative analyses relating to the two ethnolinguistic groups can be found in Larson (1957) and Shell and Wise (1971). An unpuslished comparative treatment is seen in Turner (1962, cited in Payne 1974).

Reference to the above work, as well as that of the present authors, lead us to state that the taxonomic phonemic inventories of Aguaruna and Huambisa are identical, with the exception of the presence of voiced bilabial and alveolar stops (b, d) in Aguaruna which are absent in Huambisa. Segmental consonants are: p, t, k, ʔ, (b, d), ʧ, ʧ̬, s, s̬, m, n, ɔ̃, w, y, h, r. Vowels are: i, i̬, a, u. Vowel nasalization (indicated by underlining the affected vowel, e.g., i̲, i̬̲, a̲, u̲) is phonemic, as is stress. A detailed analysis of Aguaruna phonology, with special reference to nasalization, can be found in Payne (1974).

Types of Onomatopoeia in Jivaroan Vocabulary

Stereotypic conventions for vocalizing natural sounds represent an active phonological process in the Jivaroan languages. It is most apparent in certain areas of the extensive ethnobiological lexicon, notably in native speakers' characterizations of the sounds of the calls of animals, especially birds, frogs, mammals and certain insects. The calling and signaling behavior of animals may be rendered in one of two ways in Aguaruna and Huambisa. (1) The calls may be *literally mimicked* or *imitated* by resorting to whistling, humming, grunts, hissing, smacking or clicking (cf. the whistled rendition of the song of the Bobwhite quail, *Colinus virginianus).* Efforts to literally mimic a call may be accomplished at times with the aid of double-cupped hands, appropriately held leaves, or by animal bone whistles. The regular speech sounds of the language are not employed in literal imitation. (2) The calls of an animal may be *phonologically vocalized,* employing the resources of the regular speech sounds of the language in combination with such paralinguistic processes as *stress, intonation, tempo,* and *vocalic quality.* In both Aguaruna and Huambisa ornithology, we have found that all birds that *call* can be literally mimicked. In addition, and of more linguistic interest, a large majority of the birds that can be mimicked also have conventionalized *onomatopoetic vocalizations.*

An *onomatopoetic phonological vocalization* of a particular animal's call and the *name* of that animal may be related in at least one of two ways: (1) the vocalization may bear no resemblance to the name (cf. the stereotypic calls of certain domesticated animals--cat: meow-meow, pig: oink-oink). (2) the vocalization may be similar to the name in that some or all of the speech sounds of the name comprise a fragment of the vocalization (cf. the British English name *cock* (synonym *rooster)* and the call, *cockadoodledoo;* or the name *Bobwhite,* which is a complete phonological replication of the call of *Colinus virginianus).*

These expressions are phonologically onomatopoetic in the strict sense in that, to use the terminology of Otto Jespersen, " . . . the echoic word designates the being that produces the sound" (1921:399). We will restrict our description in this paper to only those terms which are onomatopoetic in this strict sense.

Data base

We have earlier pointed out that ornithological knowledge is not uniformly shared by all members of Aguaruna society (Berlin et al. 1981). This knowledge is closely related to an Aguaruna's age and sex, and the same findings hold true for the Huambisa. If one is a male in either of these societies, one will know more bird names and be able to name reliably and identify a wider variety of bird species than if one is an adult female.

In general, even adolescent males know more than do adult females. These patterns of knowledge directly reflect the different social roles of men and women.

At the present time, it is difficult to provide an exact number for the total inventory of bird species known to mature, knowledgeable males, but on the basis of extensive interviewing with five principal informants, in addition to detailed survey work, we now calculate that at least 250 distinct species of birds are recognized linguistically in both Aguaruna and Huambisa. We were able to obtain taped recordings of 224 bird names and their vocalizations in Aguaruna and 206 names and accompanying vocalizations in Huambisa. Of the 224 recorded names in Aguaruna, 86 (38%) were onomatopoetic in character. In Huambisa, 71 (34%) of the 206 recorded names were onomatopoetic. The proportions would probably be a bit higher had the complete inventory been examined.

METHODS

The Aguaruna data reported here were drawn from tape recordings made in 1978 on the Cenepa River. The interviews were carried out with a monolingual male, approximately 50 years of age. Earlier sessions with this informant had been conducted to determine the perceived genetic relationships among known bird species in the area. Utilizing an alphabetical list of Aguaruna bird names (elicited from other informants as well as written sources [Larson 1966; Guallart 1964]), the informant was first read a name and then asked, "X, does it have any relatives?" [X, kumpahí aɣáwak]. Names of the perceived "relatives" of the named bird were then written on 5x8 inch cards. Following the establishment of groups of related species, we worked systematically through each group, querying of every bird, "X, how does it talk?" [X, wahítu čičáwak]. (The question frame "X, wahítu uhímawak" 'how does it whistle?' elicits a whistled or hummed imitation of the call.) The response was recorded on Ampex tape (Plus Series) using a Sankyo ST-60 cassette recorder. Biological referents of the bird names were obtained in subsequent naming and sorting experiments with the same informant utilizing prepared specimens as stimuli.

The Huambisa data were taken from taped interviews made in 1979 on the Santiago River. Three Huambisa males, all in their mid-forties, particpated in the interviews. One informant was monolingual, the other two spoke minimal Spanish. In these sessions, informants systematically sorted prepared bird specimens into groups considered to be related to one another. The names of each bird in the groups, as well as missing "relatives," were recorded on 3x5 inch paper slips. Of each specimen, we asked, "X, how does it talk?" [X, warítu čičáwak]. (To elicit a whistled or hummed indicator, the appropriate question form is, "X, urúk uhímawak"). Recordings were made on Memorex MRX_3 Oxide tape using a Superscope C-10 cassette recorder.[1]

DATA

Birds and Their Calls

For ease of reference and to facilitate future comparisons, we have presented individual bird species according to their biosystematic order as given in Meyer de Schauensee (1966). As will be seen, some species of birds are given onomatopoetic names in both Aguaruna and Huambisa. Other species, however, will show an onomatopoetic name in just one of the two languages. We will, nonetheless, present the vocalizations of the species involved in both languages if these data are available. Data on the names and vocalizations of 118 species of birds are transcribed.

Most of the bird vocalizations are repeated several times. In order to make the relationship between the bird name and the call more explicit, the first onomatopoetic segment of the call appears in bold print.

Our conventions for the transcription of bird vocalizations are broadly phonetic. We have attempted to employ standardized American linguistic phonetic notation throughout. We believe that the transcriptions, in conjunction with comments such as "staccato," "falsetto," "irregular tempo," etc., are easily replicated by the interested reader with minimal effort. (A more detailed phonological representation of these onomatapoetic vocalizations is in preparation.) For the non-linguistic specialist, the following key may be of use:

Key to special symbols

ʔ	= glottal stop	γ	= velar spirant
R	= uvular trill	Ṽ	= nasalized vowel
u̯	= w	_/‾‾_	= intonation contour
i̯	= y	V́	= stressed vowel
C̥	= voiceless consonant	V̂	= sustained vowel
V̥	= voiceless vowel	.	= syllable division
V̭	= h	C̩	= syllabic consonant
r̃	= trilled r	C˺	= unreleased consonant
ř	= flap r	#	= pause
ŋ	= velar nasal	C̱	= fortis onset
		b̃	= bilabial trill

SCREAMERS, Anhimidae

Anhima cornuta 'Horned Screamer'

Ag: amúntai [ɨ̥u.ɨ̥ik. ɨãũ. ɨãũ. ɨ̥u.ɨ̥ik. ɨãũ.ɨãũ.ɨãũ.]

Hu: amúntai [a.mún.tai. ɨ̥.au. a.mún.tai. ɨ̥.au

[a.mún.tai. ɨ̥.au.]

falsetto, lilting, overloud

HAWKS, Accipitridae

Ictinia plumbea 'Plumbeous Kite'

Ag: (no data)

Hu: isíp [i.si. i.si. i.si.] falsetto

Spizaetus tyrannus 'Black Hawk-eagle'

Ag: ukukúi [u.ku.ku.ku.ku.kúi. u.ku.ku.ku.ku.kúi]

Hu: ukukúi [u.ku.kúi. u.ku.kúi. ku.ku.ku.u.ku.kúi]

falsetto

FALCONS AND CARACARAS, Falconidae

Daptrius ater 'Black Caracara'

Ag: šanášna [ša. ša. ša.] slight falsetto

Hu: šanášna [ša. ša. ša.]

Falco rufigularis 'Bat Falcon'

Ag: tiú tiú (not recorded)

Hu: ɸiártik [tsi.tsi.tsi.tsi.tsi.tsi] falsetto

CHACHALACAS, GUANS, and CURASSOWS, Cracidae

Ortalis guttata 'Speckled Chachalaca'

Ag: wakáɸ [sa.sa.sa.sa.sa.sa.sa.sa.sa.
uš.ta.ra.ka. ua.ta.ra.ka. ua.ta.ra.ka]

Hu: wakáɸ [ua.ta.rak.a. ua.ta.rak.a. ua.ta.rak.a. kau]

Penelope jaquacu 'Spix's Guan'

Ag: aúnɸ [a.uui. a.uui. a.uui. auR.uaR. uaR.uaR.]
falsetto, first phrases lilting

Hu: aúnɸ [au.uui. au.uui. au.uui. auR.auR.auR]
falsetto, first phrases

Aburria pipile 'Blue-throated Piping-Guan'

Ag: kúyu [kun.tšu.ii. kun.tšu.ii. kũ.iu.ui. kũ.iu.ui.
kũ.iu.ui. kun.tšu.ii.]

Hu: kúyu [ku.iu.ku.iu.ku.iu.kun.tsai. ku.ku.ku.kun.tsai]

Aburria aburri 'Wattled Guan'

Ag: uwačáu [u.uai.ua. u.uai.ua.] gentle rising to 2nd syllable,
gently falling, vowels heavily sustained

Hu: awačá [tša.rai.ua. tša.rai.ua. tša.rai.ua]

Crax globulosa 'Wattled Curassow'

Ag: piiwi [pis.pi. pis.pi. pis.pi paa.uu.uu.uu.]

Hu: pii (bird name known, but no knowledge of its vocalization)

HOATZIN, Opsthocomidae

Opisthomcomus hoazin

Ag: saasá (not recorded)

Hu: saasá [sa.sa.sa.sa.sa.sa.sa.sa]

RAIL, Rallidae

Aramides cajanea 'Gray-necked Wood-Rail'

Ag: kuácau (not recorded)

Hu: kuncár [kun.tsar.kun.tsar.kũ.kũ.kũ.kũ.kũ.
[kun.tsar.kun.tsar.kũ.kũ.kũ.kũ.kũ.]
lilting tempo

Anurolimnas castaneiceps 'Chestnut-headed Crake'

Ag: pílhuak (not recorded)

Hu: pítur číŋki [pi.tu.ru. pi.tu.ru. pi.tu.ru.
pi.tu.ru] lilting tempo, falsetto

SUNBITTERN, Eurypygidae

Eurypyga helias

Ag: tiinkin [tin.tin.tin. tin.tin.tin. tin.tin.tin.]
regular tempo

Hu: tiŋkía (not recorded)

PLOVERS, Charadriidae

Hoploxypterus cayanus 'Pied Lapwing'

Ag: tiutiu [tiu.tiu.tiu.tiu.tiu. tiu.tiu.tiu.tiu.tiu.]

Hu: tuintui (no knowledge of call)

SANDPIPERS, Scolopacidae

Actitis macularia 'Spotted Sandpiper'

Ag: piampia ~ tíŋkin [pi.am.pia.pia.pia.
pi.am.pia.pia.pia.] rapid tempo

Hu: piampia [sui.sui.sui.sui.sui.sui.sui.]

DOVES AND PIGEONS, Columbidae

Geotrygon saphirina 'Sapphire Quail-dove'

Ag: pukuí [pu.kui. pu.kui. pu.kui.]

Hu: pupui (hummed imitation)

PARROTS, Psittacidae

Ara manilata 'Red bellied Macaw'

Ag: kayák [kiã.ku.ka.iã.ku. ki.iã.ku.ki.iã.ku.]

lilting falsetto

Hu: kayák [kã.iãk. kã.iãk. kã.iãk.]

falsetto, irregular

Aratinga leucophthalmus 'White-eyed Parakeet'

Ag: čipi [ki.ki.ki.ki.ki.ki.ki.] falsetto

Hu: kiiki [ki.ki.ki.ki.ki.ki.ki.] rapidly, falsetto

Aratinga weddellii 'Dusky-headed Parakeet'

Ag: (not in Cenepa area?)

Hu: šiši ∿ pirtunyis ∿ šantanta [si.si.si. si.si.si.

si.si.si.] falsetto

Pyrrhura picta 'Painted Parakeet'

Ag: manɸiit [tsit.tsit. tsit.tsit. tsit. tsit.]

irregular

Hu: ɸiip [tsit.tsit. tsit.tsit. tsit.tsit. tsit.]

irregular falsetto

Forpus xanthopterygius 'Blue-winged Parrotlet'

Ag: šiwim [ši.ui. ši.ui. ši.ui] irregular tempo

Hu: nuinui [sic] [nui.nui.nui. nui.nui.nui. nui.nui.nui]

cf. Ag *Touit huetii* falsetto

Brotogeris cyanoptera 'Cobalt-winged Parakeet'

Ag: kihus [ki.ii.ki.ki. ki.ii.kik. tsim. tsim. tsim]

Hu: čiimp [tsi.rim. tsi.rim. tsi.rim]

first syllable in each phrase clipped

(Note: the last segment of the vocalization of this species in Aguaruna is cognate with the name of the bird in Huambisa.)

Touit huetii 'Scarlet-shouldered Parrotlet'

Ag: nuinuí [sik.sik.sik.sik. šai.ook.šai.ook.šai.ook.
[sa.kas.kas.kas.kas.]

Hu: šai [sãi.sãi.sãi. sãi.sãi.sãi.]

(Note: Huambisa name is identical to part of the vocalization in Aguaruna.)

Pionites melanocephalus 'Black-headed Parrot'

Ag: čirikás [tsi.rik. tsi.rik. tsi.rik]

irregular falsetto

Hu: čirikás (vocal information not recorded)

Pionopsitta barrabandi 'Orange-cheeked Parrot'

Ag: (bird not known)

Hu: muí [mui.mui. mui.mui. mui.mui. mui.mui.]

Pionus menstruss 'Blue-headed Parrot'

Ag: tuiš [tuis.tuis.tuis.tuis.tuis.tuis.]
[kũ.ia.tsik. kũ.ia.tsik.]

Hu: tuiš [tuis. tuis.tuis.tuis.tuis.tuis.]

vowels clipped

Amazona ochrocephala 'Yellow-headed Parrot'

Ag: kawáu [tsa.tsa.tsa.tsa.ii .ka.ra.ra.ra.ra]

Hu: awarmás [au.ra.au.ra.au.ra.au.ra] falsetto

Amazona festiva 'Festive Parrot'

Ag: čawít (not recorded)

Hu: čawít [tša.ui.ta.tša.ui.ta.tša.ui.ta. ka.rãŋ.
[ka.rãŋ .ka.rãŋ .ka.rãŋ .] falsetto

Amazona amazonica 'Orange-winged Parrot'

Ag: pahái [pai.pai.pai. pai. pai.pai. pai.]

irregular tempo

Hu: paraí [sa.ta. sa.ta. sa.ta. sa.ta.]

falsetto, lilting

CUCKOOS, Cuculidae

Crotophaga major 'Greater Ani'

Ag: kuákua [qxR.qxR.qxR.qxR.sa.ra]

Hu: kuákua [sak. au. .kuR]

Crotophaga ani 'Smooth-billed Ani'

Ag: báit [mai.mai.mai.mai.] falsetto

Hu: mawaí [ma.uai.ma.uai.ma.uai] falsetto

OWLS, Strigidae

Glaucidium brasilianum 'Ferruginous Pygmy-Owl'

Ag: takínt [tãŋ.tãŋ.tãŋ. ta.kin.ta. ta.kin.ta] repeated

Hu: (not recorded)

POTOOS, Nyctibiidae

Nyctibius 'Great Potoo'

Ag: káu [qxauR.qxauR.qxauR.qxauR]

Hu: káu [qxauR. ia.tsu.ru. ia.tsu.ru. ia.tsu.ru. qxauR] falsetto

Nyctibius aethereus 'Long-tailed Potoo'

Ag: autám [auu. auu. auu.] note distinct vocoids,

falsetto

Hu: (not recorded)

Nyctibius griseus 'Common Potoo'

Ag: aúhu [ã. aiš.ua.suã.suã. ã. aiš.uã.suã.suã] falsetto

Hu: aúhu [au. uu.uu.uu.uu. au. uu.uu.uu.uu.] falsetto

NIGHTJARS, Caprimulgidae

Hydrosalis climacocerca 'Ladder-tailed Nightjar'

Ag: papáhu [uũ̀.uṹ.uũ̀.uṹ. uũ̀. uṹ. uũ̀.] irregular

Hu: papár (not recorded)

SWIFTS, Apodidae

Reinarda squamata 'Fork-tailed Palm-Swift'

Ag: (not in, or very rare in, Cenepa area)

Hu: ačúnmaya šúrpip [ᵐbis. ᵐbis. ᵐbis. ᵐbis. šú.ru.ru.]

HUMMINGBIRDS, Trochilidae

Eutoxeres aquila, E. condamini 'Sicklebilled Hummingbirds'

Ag: jimpíčau [iim.pi.wis.wis.wis.wis. iim.pi.tsau.wis.wis.

[iim.pi.wis.wis.wis.] melodic

Hu: uhúh jimpi (no known call)

TROGONS, Trogonidae

Trogon viridis 'White-tailed Trogon'

Ag: táwai [tàu.tàu.tàu.tàu.tàu.tàu.] staccato falsetto

Hu: táwai [tà.tà.tà.tà.tà.tà.tà.tà.] rapid tempo falsetto

Trogon collaris 'Red-bellied Trogon' (perhaps other red-bellied species as well)

Ag: čákua [tša.kũ̀ã́.kũ̀ã́.kũ̀ã́.kũ̀ã́. tša.kũ̀ã́.kũ̀ã́.kũ̀ã́.kũ̀ã́.]

falsetto, some whisper

Hu: (no information)

KINGFISHERS, Alcedinidae

Ceryle torquata 'Ringed Kingfisher'

Ag: mun čáhi (not recorded)

Hu: taráš [ta.ráš. ta.ráš. ta.ráš.]

Chloroceryle amazona 'Amazon Kingfisher'

Ag: čáhi (not recorded)

Hu: čáhi [tša.ĩ̀.tša.ĩ́.tša.ĩ̀.tša.ĩ́]

rapid regular tempo, falsetto

MOTMOTS, Momotidae

Baryphthengus ruficapillus (martii) 'Rufous Motmot'

Ag: yukúhu [uu.ru. uu.ru. uu.ru. uu.ru. uuru]

Hu: yukúru [uu.ru. u.ru. u.ru. tru] falsetto

PUFFBIRDS, Bucconidae

Bucco capensis 'Collared Puffbird'

Ag: bukítau [bu.kia.tau. bu.kia.tau. bu.kia.tau]

lilting

Hu: maukátarar [mo.ka.ta.rar. mo.ka.ta.rar.

mo.ka.ta.rar]

Monasa morphoeus 'White-fronted Nunbird'

Ag: tawíkuru ~ tíhu [iiu.iiu.iiu.iiu.iiu.iiu.ta.ui.kruk.

[tauik.ta.uik.ta.uik.ta.uik. ta.ui.

kuru.]

[ta.ui.ku.ru.]

Hu: tawikuru [ta.uik.ta.uik.ta.ui.ku.rur.

ta.ui.ku.rur]

BARBETS, Capitonidae

Capito aurovirens 'Scarlet-crowned Barbet'

Ag: (not present in Cenepa area; inhabits flooded forest lacking there)

Hu: apú púr [pur.pur.pur.pur.pur.] falsetto

Eubucco richardsonii 'Lemon-throated Barbet'

Ag: púu [bu.bu.bu.bu]

Hu: wincú púr [br.br.br.br.br.br.] falsetto

Eubucco bourcierii 'Red-headed Barbet'

Ag: tíwa [tiu. tiu. tiu. tiu]

Hu: tíwa [ti.ua. ti.ua. ti.ua.] falsetto

TOUCANS, Ramphastidae

Aulacorhynchus derbyanus 'Chestnut-tipped Toucanet'

Ag: ikaúk ~ wáak [ũãk ũãk ũãk ũãk]

continuous breathy

Hu: ikiák [ũãk ũãk ũãk ũãk]

continuous

Pteroglossus castanotis 'Chestnut-eared Aracari'

Ag: piristan pininc [pris. pris. pris. pris. pris]

Hu: piristín [pi.ris. pi.ris. pi.ris. pi.ris]

Pteroglossus flavirostris 'Ivory-billed Aracari'

Ag; sáitam pininc [ka.ka.ka.ka.ka.ka.ka.ka.ka.ka.ka.ka.ya.

[ka.ka.ka.ya. ka.ka.ka.ka.ka.ka]

Hu: kakarpáɣ [kar.kat.kar.kat. kar.kat. kar.kat.

kar.kat.] vowels slightly whispered

Selenidera reinwardtii 'Golden-collared Toucanet'

Ag: kahúnɣam [kau.kau.kau.kau.] rasping

Hu: karúnɣam [kau.kau.kau.kau] rasping

Ramphastos culminatus 'Yellow-ridged Toucan'

Ag: kihua [kiau. kiau. kiau. kiau. kiau.]

falsetto, breathy

Hu: kírua [ki.rua. ki.rua. ki.rua]

R. ambiguus 'Black-mandibled Toucan'

Ag: sáatak [sa.ta.rak.ta.rak.ta.rak. sa.ta.rak.ta.rak.

[ta.rak. sa.ta.rak. sa.ta.rak.ta.rak.]

falsetto

Hu: sártik [sar.tik.tik.tik. sar.tik.tik.tik.

[sar.tik.tik.tik.] falsetto

Ramphastos cuvieri 'Cuvier's Toucan'

Ag: yaríka ɣukaŋ ká ~ apú ɣukaŋ ká

[ia.ri.ka.ka.ka.ka. iiu.ka.ka.

ia.ri.ka.ia.ri.ka. iiu.ka.ka.ka. ia.ri.ka]

Hu: apú ɬukaŋ ka [ia.kuiŋ.kuiŋ.kuiŋ. ia.kuiŋ.kuiŋ.]

continuous

WOODPECKERS, Picidae

Celeus elegans 'Chestnut Woodpecker'

Ag: yawá sawáki [ia.uã.uã.uã.uã.uã.] breathy falsetto

Hu: apú sawákia [sa.uá.kia. sa.uá.kia]

rapid fall on final syllable

Melanerpes cruentatus 'Yellow-tufted Woodpecker'

Ag: tihasá (no vocalization, whistled only)

Hu: tirakšá [ti.rak.si.sa. ti.rak.si.sa. ti.rak.si.sa.]

falsetto

WOODCREEPERS, Dendrocolaptidae

Campylorhamphus trochilirostris 'Red-billed Scythebill'

Ag: bikuamkuas [bi.kuam.kuam.kuam. bi.kuam.kuam.kuam.

[bi.kuam.kuam.kuam. tsi.tsi.tsi.

[bi.kuam.kuam.kuam.]

Hu: šaawia [tsia.tsiau.tsik.tsik.]

ANTBIRDS, Formicariidae

Thamnophilus schistaceus 'Black-capped Antshrike'

Ag: čihikiu ~ čikiu [tsi.kiau. tsi.kiau. tsi.kiau.

[tsi.tsi.tsi. tsi.tsi.tsi. tsi.kiau]

falsetto throughout

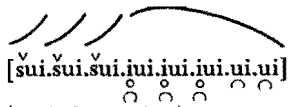
Hu: čičikia [tsi.tsi.kia. tsik. tsik.

tsik.tsik. tsi.kia]

vowels strongly clipped

Thamnomanes ardesiacus 'Dusky-throated Antshrike'

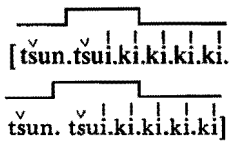
Ag: kunčačám [kun.tsa.tsat. kun.tsa.tsat.



[sui.sui.sui.iui.iui.iui.ui.ui] falling tone

Hu: (no information)

Myrmotherula (striped species, ie *brachyura* or *obscura)*

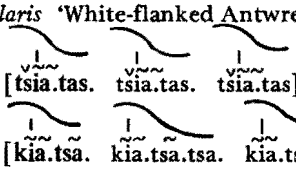


Ag: cuncuikit [tsun.tsui.ki.ki.ki.ki.

tsun. tsui.ki.ki.ki.ki]

Hu: cuncuikit (not recorded)

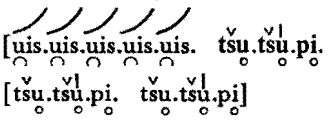
Mymotherula axillaris 'White-flanked Antwren'



Ag: čiatas [tsia.tas. tsia.tas. tsia.tas]

Hu: kiatsa [kia.tsa. kia.tsa.tsa. kia.tsa.tsa.]

Myrmotherula schisticolor 'Slaty Antwren'



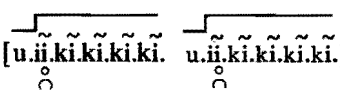
Ag: cucup [uis.uis.uis.uis.uis. tsu.tsu.pi.

[tsu.tsu.pi. tsu.tsu.pi]

rapid, short syllables

Hu: cucup [tsik.tsu. tsik.tsu] vowels whispered

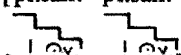
Myrmoborus myotherinus 'Black-faced Antbird'



Ag: uhikias [u.ii.ki.ki.ki.ki. u.ii.ki.ki.ki.ki.]

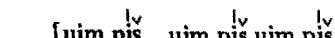
falsetto

Hu: pisak [pi.sak. pi.sak. pi.sak] falsetto



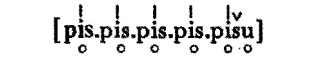
[pi.si.ri. pi.si.ri] danger call

Hylophalax naevia 'Spot-backed Antbird'



Ag: wiimpis [uim.pis. uim.pis.uim.pis.uim.pis]

staccato



Hu: pisipis [pis.pis.pis.pis.pisu]

Chamaeza sp. 'Antthrush species'

Ag: (no data)

Hu: tuas [tua.tua.tua.tua.tua.tu.tu.tu. tuk.tuk.tuk.]

falsetto, dropping pitch on last three syllables

Formi carius analis 'Black-faced Antthrush'

Ag: takínč [tin.ki.aa. tin.ki.aa. tsu.kip. tsu.kip]

Hu: tukímp [tikimp. tikimp. tikimp. tikimp]

Myrmothera campanisona 'Thrush-like Antpitta'

Ag: puámpua [puam.puam.puam.puam.puam]

Hu: puámpua [pu.am.pu.am.pam.pam.pam.]

rapid tempo, pitch gradually falling

COTINGAS, MOURNERS AND PIHAS, Cotingidae

Rhytipterna simplex(?) 'Grayish Mourner'

Ag: ukúntuč [u.ku.ku.ku.tu.tsia.tsia.tsia.

u.ku.ku.ku.tu.tsia.tsia.tsia]

Hu: ukúrpip [ku.ru.ku.pi.pi.pip. ikan.tsam.kan.tsam]

repeated

Lipaugus cinerascens 'Screaming Piha'

Ag: pápainč [pai.pain.tsa. tu.uia.tu.uia. pai.pain.tsa.]

[tu.uia.tu.uia]

Hu: pápainč [pa.pain.tsa. pa.pain.tsa.] falsetto

[tu.uia.tu.uia. tu.uia.]

Querula purpurata 'Purple-throated Fruit-crow'

Ag: pauwái [pau.uai. pau.uai. pau.uai.

[ii.ia. ii.ia. pau.uai] irregular tempo

Hu: paučiŋki (no data)

Phoenicircus nigricollis 'Black-necked Red Cotinga'

Ag: pi̯a [tsia. tsia. tsia. tsia.] regular tempo

Hu: ɾaánč [tsants. tsir.tsir.tsir.tsir.tsants

[tsants. tsir.tsir.tsir.tsir.tsants] rapid tempo

Rupicola peruviana 'Andean Cock-of-the-Rock'

Ag: ɨŋátin↷[ɨɣâɨɣâɨɣâɨɣa.]
súŋka

Hu: iátinu↷[ɨa.ɨa.ɨa.ɨa] — falsetto, overloud, yell-like
súŋka

MANAKINS, Pipridae

Pipra pipra 'White-crowned Manakin'

Ag: k<u>aa</u>wía [kã.uia?.kã.uia?.p̃.p̃.p̃.
kã.uia?.kã.uia?.p̃.p̃.p̃.]

Hu: k<u>aa</u>wía (not recorded)

Tyranneutes stolzmanni 'Dwarf Tyrant-Manakin'

Ag: čúup [tšuu.pi?. tšuu.pi?. tšuu.pi?] — slight whisper

Hu: čúup (not recorded)

FLYCATCHERS, Tyrannidae

Contopus virens 'Eastern Wood Pewee'

Ag: (no data)

Hu: tíwi [ti.ui. ti.ui. ti.ui.] — falsetto

SWALLOWS, Hirundinidae

Stelgidopteryx ruficollis 'Rough-winged Swallow'

Ag: činím [tši.tši.tši.tši.tši]

Hu: činím [ši.ši.ši.ši.ši.ši.ši.]

Atticora fasciata 'White-banded Swallow'

Ag: šuímpip [šisiš. šisisiš. šisisiš.] — slight whisper

Hu: namakáya šúrpip [šu.řip.šu.řip.šu.řip.šu.řip] — slight falsetto, lilting

JAYS, Corvidae

Cyanocorax violaceus 'Violaceous Jay'

Ag: kíhuančam [kiau.kiau.kiau.kiau.] some falsetto

Hu: kírhuančam [kia.kia.kia.kia.kia.]

WRENS, Troglodytidae

Troglodytes aedon 'House Wren'

Ag: čuíčuiŋ [tsui.tsui.tsui. tsui.tsui.tsui. kuaŋ .

[kuaŋ .kuaŋ .kuaŋ .] rapid tempo

Hu: čuíčuiŋ (not recorded)

Microcerculus marginatus 'Nightingale Wren'

Ag: tiŋkís [ti.ti.ti.ti.ti.ti. si.si.si.si.si.si.]

repeated

Hu: tiŋkís [ti.ti.ti.ti.ti.ti.] pitch falls and tempo slows toward end of call

AMERICAN ORIOLES AND BLACKBIRDS, Icteridae

Scaphidura oryzivora 'Giant Cowbird'

Ag: ~~ɬaŋɬiŋɬí~~ (not recorded)

Hu: ~~ɬiŋɬaŋɬi~~ [tsin.tsan.tsi.tsi.tsi.tsi.tsi.

tšin.tšan.tsi] falsetto

Clypicterus oseryi 'Casqued Oropendola'

Ag: wáuk [ua.aa. uak. oo.oo.oo.tsu.ku.tsu.ku.tsu.ku.

uā.aa.aa.aa. tsu.ku.tsu.ku.tsu.ku.tsu.ku.

iui.iui.iui.iui.iui.] falsetto

Hu: wáuk [uau.kik. uau.kik. uau.kik. tša.ra.kak.

tša.ra.kak.tša.ra.kak.] falsetto

Psarocolius decumanus 'Crested Oropendola'

Ag: suák čúwi [tsuak.tsuak.tsuak. tsua. tua.ta.uai.

[tua.ta.uai. sax. sax. sax.]

Hu: ɸáŋ ki [tsáŋ. tsáŋ. tsáŋ. tsáŋ. tsi.rik.
[tsi.rik. tsi.rik.] fortis onset

(P. decumanus is referred to by non-cognate forms here, though each term is onomatopoeic for their respective languages.)

Cacicus cela 'Yellow-rumped Cacique'

Ag: tíis [tis.tis.tis. tis. tis.tis. tis.]
irregular

Hu: čuwíkit [sa.sa. sã.sã. sa.sã. sã.sã.] irregular

Icterus icterus 'Troupial'

Ag: (no data)

Hu: huítam [uui.uui. uui.uui. uui.uui.] repeated

TANAGERS, Thraupidae

Euphonia rufiventris 'Rufous-bellied Euphonia'

Ag: táma uúsap [us.pa.kia.kia.kia.sui.sui.sui.kia.kia.
kia.]
[us.pa.kia.kia.kia.sui.sui.sui.kia.kia.
kia]

Hu: túma úsap [sic] (no knowledge of call)

Tangara chilensis 'Paradise Tanager'

Ag: simáncuk [si.tsik. si.tsik. si.tsik.] staccato

Hu: síca (not recorded)

Wetmorethraupis sterrhopteron 'Orange-throated Tanager'

Ag: incítuc [in.tsi.tu.tsia. in.tsi.tu.tsia.] melodic
(sustained ingression of air, then call repeated)

Hu: sancípu (not recorded)

Thraupis episcopus 'Blue-gray Tanager'

Ag: suwíc [sui.sui.sui.sui.sui.] irregular

Hu: suwíc [su.ui. su.ui. su.ui] final syllable falsetto

Ramphocelus nigrogularis 'Masked Crimson Tanager'

Ag: čáŋki [tsáŋ. tsáŋ.tsáŋ. tsáŋ. tsáŋ.tsáŋ]

irregular, staccato

Hu: čáŋki [si.tsáŋ. si.tsáŋ. tsáŋ.ki.si.tsáŋ. tsáŋ.ki]

vowels strongly clipped

Piranga rubra, P. olivaceus 'Summer and Scarlet Tanagers'

Ag: (no data)

Hu: pičurkik [pi.tsur̃.kik. pi.tsur̃.ki.ki. pi.tsur̃.

[pi.tsur̃.ki.ki.ki]

Tachyphonus surinamus 'Fulvous-crested Tanager'

Ag: wampaŋkit [tsit.tsi.tsi.tsi.tsi.] irregular tempo

Hu: čanǵim [tsán.tsi.tsi.tsi.] ~

[tsán.tsin.tsin.tsi.tsi.tsi.]

Cissopis laveriana 'Magpie Tanager'

Ag: pisi [pist. pist. pist.] rapid, irregular

Hu: pisi [pis. si. pis. si.] last syllable falsetto

Unidentified onomatopoeic bird species, Aguaruna

kunŋki. (probably an antbird)

[kuŋ.ki. ii.ii.ii.ii. kuŋ.ki. sa.sa.sa sa.sa. ii.

kuŋ.ki. sa.sa.sa.sa.sa.]

wíncuncu (probably an antbird)

[na.ya.tu.wi.tat.mi. uin.tsun.tsu.]

repeated, melodic quality

táŋ taŋ (probably an antbird)

[taŋ. taŋ. taŋ. taŋ. taŋ. taŋ.]

tuátua (probably an antbird)

[tuat. tuat. tuat. tuat. tu. tu. tu.]

~~ɨɸ~~á wisuí (a cotinga?)

[uis. uis. uis. uis. uis. uis.]

piúnčik (a flycatcher?)

[piun.tsik. piun.tšik. piun.tsik.]

[tšik] syllable strongly staccato

kíhim (a flycatcher)

[ki.ki.ki.ki.ki.ki. ki.ki.ki.ki.ki.ki.]

slightly falsetto, slightly nasalized

kistonkái (yellow breasted flycatcher)

[tip.tip.tip. tip.tip.tip. kis.ton.kai. tip.tip.tip.
kis.ton.kai]

short, irregular tempo

wíswiswis (yellow breasted flycatcher)

[uis.uis.uis.uis. uis.uis.uis.uis. uis.uis.uis.uis.]

máakua (a hawk, probably *Herpetotheres cachinnans* 'Laughing Falcon'

[mã.kũã. mã.kũã. mã.kũã. uã. uã. uã.]

soft, whispered quality

kaúta (a hawk, probably *Micrastur* sp.)

[ãũ. ãũ. ãũ.] breathy quality

šiíki (a parrot)

[ki.ki.ki.ki.ki.ki.ki.ki. tši.tši.tši.] rapid tempo

wawík~ apu šiík *Notharchus macrorhynchus* 'White-necked Puffbird'

[ua.uik. ua.uik. ua.uik. ua.uik.ua.uik.]

breathy, increasing in tempo toward end of call

wiú (a puffbird)

call begins with a whistle– [uiu.uiu.uiu.uiu.]

čais (a tanager?)

[tšaĩs. tšaĩs. tšaĩs. tšaĩs. tšaĩs.] irregular tempo

ćičákaim (a tanager?)

[tsi.tsi. tsi.tsi. tsi.tsi. tsi.] irregular tempo

dáhun (a trogon?)

[dá.uũ. dá.uũ. dá.uũ. dá.uũ. dá.uũ.] staccato

yámakiu (a trogon?)

[ya.mak. kĩãũ. kĩãũ. kĩãũ. ya.mak. kĩãũ.kĩãũ.kĩãũ.]

kúp (a thrush)

[ku.pí ku.pi. ui.ki.pu.uus.ai.ši. ku.pi.]

wiúm (a flycatcher)

[uiú.uiú.uiú.uiú.uiú.uiú.uiú.] rapid tempo

piúsa (a flycatcher)

[piúš. piúš. piúš.piúš.] irregular tempo

Unidentified onomatopoeic bird species, Huambisa

paráiparái (a flycatcher?)

[pa.rai.pa.rai.pa.rai.

pa.rai.pa.rai.pa.rai.

[pa.rai.pa.rai.pa.rai.] falsetto

~~it~~irtukaip (a flycatcher?)

[~~it~~sir.tu.kaip.ts~~ir~~.tkaip.ts~~ir~~.tkaip]

CONCLUSION

The foregoing data demonstrate that onomatopoeia in Aguaruna and Huambisa ornithological vocabulary is pervasive. More than a third of the terms of both languages for bird species are onomatopoetic in origin. These figures are comparable to those obtained for several other languages spoken by peoples of comparable socio-technological level of development. The Tzeltal Maya show 49% onomatopoetic bird names (Hunn 1977:84, Berlin n.d.). In Kaluli, a language of Highland Papua New Guinea, Feld reports that 49 of the 125 bird names (39%) are onomatopoetic (Feld 1979:149). These species as a group are recognized in Kaluli as those that "say their names" (ibid.:156). In Selepet, another Papua New Guinea language, McElhanon (1977) describes 131 of 355 bird names to be onomatopoetic (37%). Speck reports that 23 of the 63 bird names he recorded in Canadian Delaware (some 37%) were derived from the perceived sounds of the birds' calls (Speck 1946).

While onomatopoeia is most obvious in ornithological vocabulary, it is also highly productive in the naming of frogs, toads, some mammals, and some insects in both Aguaruna and Huambisa. Hunn has suggested for Tzeltal ethnobiological vocabulary that "The distribution of [onomatopoetic] terms closely parallels the distributions of highly developed auditory signaling behavior among animal forms" (1977:83-84).

We believe that onomatopoetic naming plays a productive mnemonic role in naming certain animals. Our evidence is anecdotal but suggestive. During the process of our investigations (Berlin et al. 1981; in preparation), large numbers of Aguaruna and Huambisa subjects participated in experiments where they were asked to name specimens of animals sequentially arranged along long work tables. Many subjects, when confronted with a specimen whose name they had temporarily forgotten, be it a bird or a frog, would (unconsciously?) begin to vocalize the animal's call, then, with a flash of recognition, proudly pronounce the appropriate name. It appeared to us that the process of phonological vocalization aided these subjects in recall. Jespersen, noting the tendency of children to use stereotypic vocalizations for certain animals as their first names for the creature itself appears to be talking about a similar process. "These words [such as *quack quack*] are an imperfect representation of the birds' natural cry, but from their likeness to it they are easier for the child to seize than an entirely arbitrary name such as duck" (1921:150).

In languages spoken by peoples of small-scale, technologically simple, non-literate societies, one might expect to find that the natural sound signaling habits of many creatures are replicated in the actual names people assign to these animals, thus forming a direct link between the linguistic designation of the organism and an important aspect of their behavior. We speculate that such non-arbitrary names are easier to remember, and probably less difficult to learn. Naming animals after their calls would appear to be an efficient way of reducing the cognitive effort required of peoples of non-literate traditions who must learn, retain, and actively employ rather sizable ethnobiological vocabularies. Conversely, we further argue that the functional load carried by ethnobiological onomatopoeia will lessen and ultimately be lost altogether as societies move to higher and higher levels of socio-technological complexity and individuals become less and less aware of their biological environment. Ethnobiological onomatopoeia might serve, then, as a useful index of cultural evolution, the process being highly elaborated in the languages of non-literate peoples and gradually diminishing with the growth and development of complex literate traditions. It is our hope that future ethnobiological research will be conducted to test the validity of such speculations.

ACKNOWLEDGEMENTS

The research reported here was made possible through the generous financial support of the National Science Foundation in the form of grant number BNS76-17485, "Field Research in Ethnobiological Anthropology", Brent Berlin and James L. Patton, Co-Principal Investigators. Collegues

who have given us special support in the development of this paper include Leanne Hinton, John Ohala, the staff of the Phonology Laboratory, University of California, Berkeley; Louanna Furbee, the Laboratory of Ornithology, Cornell University; Eugene Hunn, David French, James Boster, and Cecil Brown. We dedicate our paper to the memory of Alberto Espejo, Aguaruna ethnobiologist.

NOTES

[1]We have not addressed the problem of informant variation in this paper. We do not know to what extent the onomatopoetic bird vocalizations recorded from the four Aguaruna and Huambisa informants who participated in this study are shared for the population as a whole. This could, of course, be tested in several ways, one of which would be to play the tape recorded vocalizations to a sample of subjects and ask that they identify the bird represented. We have reason to believe, however, that the vocalizations represent rather entrenched features in Huambisa and Aguaruna ethno-ornithology by virtue of the striking similarities in the overall patterning of calls in both languages. Furthermore, a comparison of the Aguaruna and Huambisa vocalizations with those entered in a dictionary of Shuar of Ecuador (Bolla n.d.) show striking parallels, suggesting that these precise patterns of onomatopoeia are wide-spread through the family as a whole, probably characteristic of proto-Jivaroan.

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