PROTO-MUNDA CULTURAL VOCABULARY: EVIDENCE FOR EARLY AGRICULTURE

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In a recent paper (Zide and Zide 1972)[1] we attempted to identify various possible Proto-Munda morphemes with the names of specific food-plants, perhaps domesticated, and we concluded on the basis of a small number of persuasive identifications that the Proto-Mundas were probably familiar with the cultivation of rice, a few millets and several legumes. Since our corpus was limited for a number of reasons, there is no reason to think that the plants identified represent more than a small sample of, probably, the more important cultural items the Proto-Munda-speaking people knew. One general conclusion which emerged from our study is that the Proto-Mundas were more agriculturally advanced than archeologists have thought they were.

The 'typical' Munda culture, in the view of ethnographers and archeologists, was the primitive hunting and gathering culture of people like the present-day Juang or Birhor; the more advanced cultures (e.g. the Sora, Mundari or Santali) were presumed to have gotten their technology from more advanced neighbors, e.g. the Indo-Aryans. If we judge by the linguistic evidence, the reverse seems to have been the case; the primitive Juang and Birhor are

obably atypical, being examples of reversion from a re complex culture to a simpler one.[2]

Our tentative linguistics-derived conclusions e not inconsistent with the conclusions of various cheological studies of the origins of certain food ants, notably of rice in Southeast Asia. However, do not claim that linguistics-derived evidence of is sort can in any way prove or disprove theories out, e.g. the origin, domestication, or utilization cultural products.

On the other hand, the reconstruction of plant mes permits access to aspects of Proto-Munda pre- story which have not been accessible so far to cheologists, physical anthropologists, and what storical ethnologists there have been. Such recon- ructions have not been made because of the limited ture of possible archeological remains, due, for ample, to climatic conditions, and the comparative ucity of archeological excavations in many of the levant areas. Further, there is a sharp break in ltural continuity between the prehistoric cultures d present-day cultures that might be related to em,[3] at least as regards nonperishable remains. ide from an extremely limited number of agricul- ral implements, the reconstruction of Proto-Munda ol names is less rewarding than that of food-plant mes, since the Munda languages characteristically rive such forms via instrument nominalizations om verbs, and these verbs commonly originally re- rred to making particular movements rather than to ffecting particular results: for example, two verbs eaning 'to winnow' *guXm[4] and *er are reconstructi- le, but they apparently originally meant 'to move omething up and down' and 'to move something round

and round', respectively.[5]

We therefore limit ourselves, in this short paper, to the reconstruction of certain food-plant names, domesticable animals, and just those agricultural or household implements which can be shown to be used specifically for cultivation.

Those plant names which are reconstructible wit some assurance for Proto-Munda are the following:

FRUITS: 'wild fig', *lVwa, probably *Ficus glomerata*; 'mango', *uXll, *uXla (*Mangifera Indica*) and another word for 'mango', perhaps meaning 'green or unripe mango', *kaj'-er, *kag'-er; '*jamun* or Indian blackberry', NM *koXda, SM *ko?-deX;[6] 'turmeric', *R-saŋ (sasaŋ, saŋsaŋ, sisla, in various languages) *Curcuma longa*; 'tamarind', *R-tlXn and, perhaps, *(ro)joXd'.

The wild date, or dates (*Phoenix sylvestris*, and presumably *Phoenix acaulis*) are less neat: we can reconstruct words for at least two varieties, *Vn-deñ and *raloXg', but it is not clear which word refers to which variety in the proto-language.

We reconstruct several words for 'bamboo', a couple of which seem to mean specifically 'bamboo shoots' (and which have cognates elsewhere in Austro asiatic). The three forms for 'bamboo shoot' are *kV(-)led'/-led', *ta (in *ta-boŋ and *kaXl-ta), and *boŋ. The three words for 'bamboo' are *maXd', *kaXl, and something like *kV(-)reXŋ or *kV(-)ruXŋ. (see Tables 1, 1a, 1b)

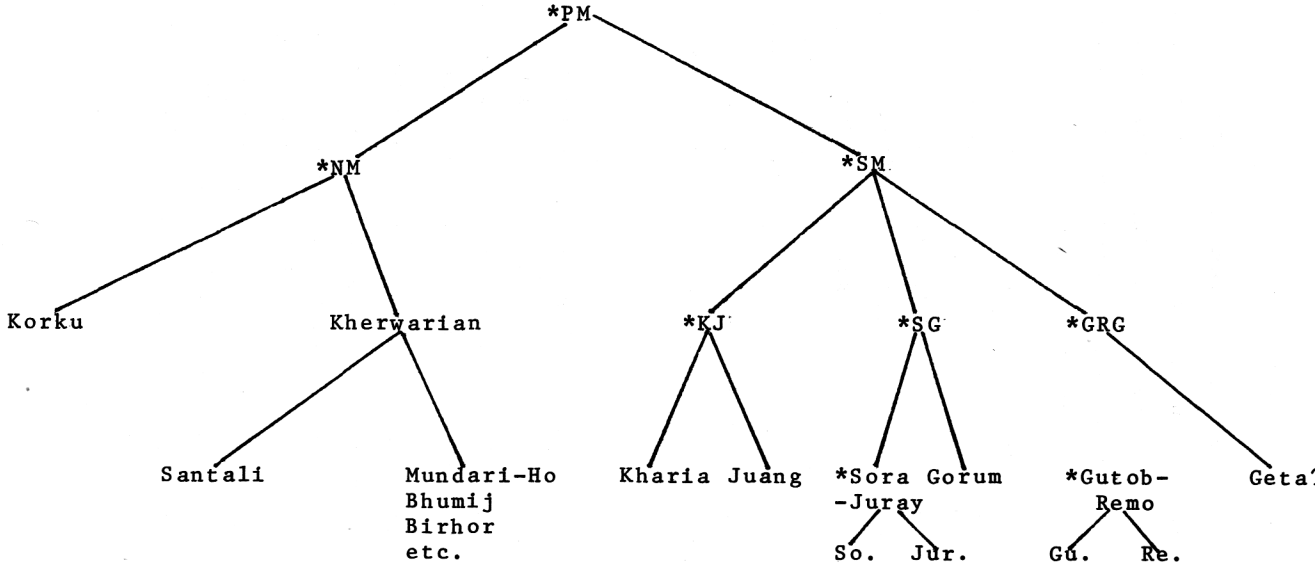
*PM
*NM
*SM
Korku
Kherwarian
*KJ
*SG
*GRG
Santali
Mundari-Ho
Bhumij
Birhor
etc.
Kharia Juang
*Sora Gorum
-Juray
*Gutob-
Remo
Geta
So.
Jur.
Gu.
Re.

Chart 1

ENGLISH	TAMARIND	TURMERIC	MANGO	GREEN MANGO	MANGO STONE
Sora	tittin	saŋsaŋ	uṛa/-ul		taŋkuŋ*
Gorum	tintin	saŋsaŋ	uṛa?/uṛa	aj-er	tãku 'gruel' siṛab
Gta?	ttiŋ/bcwe?	sisia	uli	he?wir/hia?wir	nhirtur 'gruel
Remo		sasaŋ		ayer/ager	
Gutob	soso	sasaŋ	iii	a?er	
Kharia	tenton/rojoḍ 'sour'	saŋsaŋ		k(a)yar 'mango'	
Juang	tintiṇi/ajoḍ 'sour'	saŋsaŋ	ole/ale	kayer	ukulum
Mundari	jojo	sasaŋ	uli		
Santali	jɔjɔ (also Asuri)	sasan	ul		
Ho	jojo		uli		
Korku	soso/cica	sasan	(ambe) uli		
Korwa			uka		
Asuri			ul		

*stone of any fruit

Table 1

ENGLISH	BAMBOO SHOOT	BAMBOO	(-joint)	JAMUN (Blackberry)
Sora	tabeŋ	urɨŋ/-ur	madmad	
Gorum	taboŋ	uruŋ	mad	ku=da
Gta?	hli?	gaŋ-hã		ko?de [ko?ɽe]
Remo	le?	a?a		ku?ɽe
Gutob	ile?	a?l		
Kharia	koleḍ/(karil)	konḍeŋ/(ko?deŋ)		kuḍa
Juang	bɔlɔj/bolɔj	alo/(aɽo)		
Mundari	helta/(karil)	mad'		kuda/kuɽid'
Santali	hɛlta	mat'		kod
Ho	helta	mad'		kuda
Korku	kelta/kilta	mhad/mad		
Turi	helta			kud
Nihali	júḍ(o)			
Cf. MK:				
Pal	beŋ	hriŋ		
Sre		kriŋ		
OMon	tḅaŋ			kreŋ 'Eugenia' (generic)
			mid M.	kreaŋ

Table 1a

ENGLISH	DATE-PALM: PHOENIX SYLVESTRIS	PHOENIX ACAULIS	FIG
Sora	sindi	ondɛŋ	lua
Gorum	indeŋ	indeŋ/sindi	
Gta?	ndændia?	ralo?	(lwa?)
Remo	n-doyn-da/n-dain-da	laruk'/ŋguŋ-ra	
Gutob			
Kharia	larog		luwa
Juang	taḷɔ	taḷɔ	
Mundari	kita/kendad	kita/kendad	loa
Santali	kita		loa
Ho	kita		
Korku			luwa
Korwa	kit		
Asuri	kindad		
MK:			(OMon) lwi? (etc.)
			(Khm) lvìə etc. <*lwaa?

Table 1b

GRAINS: Most important, however, as evidence agriculture are the grain names which can be restructed for Proto-Munda. For rice, *Oryza sativa*, get several reconstructible forms. 'Uncooked, ked rice' is presumably a bimorphemic form comed of *ruŋ and *kug', which seems to be prevat in South Munda; although apparently replaced in th Munda, it has clear Austroasiatic cognates in Coŋ ruko, Lawa rəko?, Rumai la-kau, Khmu rəŋko? so on.[7]

The Jeypore Tract in southern Orissa now is (and sumably has been for some time past) inhabited by arge number of different tribal groups, including e of the South Munda groups to which *ruŋ(-)kub/g' attributed. The tract is crucial to the undernding of the development of rice varieties in ia, where a great number of wild and cultivated ieties of rice are found. It falls within the a starting in Orissa in India and extending into ma and beyond, where it has been suggested rice originally have been cultivated. It is also th pointing out that in terms of the number and ersity of rice pests and the time judged necesy by entomologists to account for the development such a profusion of them, the Jeypore Tract would lify as a possible area of origin of proliferan, whereas Ahar or Lothal certainly would not.[8]

The North Munda form *baba 'paddy' (also Kharia a, Juang bua) has reflexes in MK as well: Kas ba 'rice in the husk'; Khasi k'ba Semang ba?, etc. ddy'. It also seems not insignificant that alugh we do not get a single reconstructible morme for 'cooked rice', in most instances what we do are derivatives of one sort or another from the

verb 'to eat'--i.e. 'food'. (see Table 2)

The other grain crops for which we get sets of cognate forms are the millets: for these we have no Austroasiatic material available for comparison, but would not be surprised if Austroasiatic cognates for one or more of the Munda millet names existed. Although we do not find any one proto-morpheme which w can trace throughout the Munda languages, we do get at least three lexically distinguished millets: *Setaria italica, Panicum (miliare),* and another, less obviously identifiable, but with certain consistent characteristics.

The first, *(h)oXy, clearly refers to *Setaria italica* (Foxtail or Italian millet, Hindi kãgnī, Oṛiya kãgu), i.e. the reflexes of *(h)oXy in the modern languages are invariably identified with *'Setaria'* (cf. Sora bur-oy; Remo wī-dar; Gta? ũ-hwe an Mundari oe). Early evidence for *Setaria italica* an *Panicum miliare* in India is totally lacking in the literature. Its history in Southeast Asia, and cognate forms, especially from Austroasiatic, would be illuminating. Solheim (1970) suggests there is no evidence so far to refute Ho's (1969) *contention* that the cultivation of *Setaria* and *Panicum* began i North China, but there is little aside from this an Chang's (1970) similar position in the way of evidence, one way or the other.[9]

A second millet name seems, in the same way, t refer to *Panicum miliare* (small millet, Hindi sãwã, Oṛiya suã). The Koraput Munda form, attested in three of the five languages, reconstructs to *ə-rɪg'. The word appears to be cognate with Kherwarian *ɪṛɪ, which according to Hoffmann (1930-38)

ENGLISH	RICE (raw, husked)	PADDY (unhusked)	RICE HUSK	SEED RICE	SEED	EAR OF PAD
Sora	roŋko	sərɔ; kondɛm	kɨnam	jeb-mɔl	abay	gəlɛ
Gorum	rũ(ŋ)k (-ajaŋ)	kundem (-ar)	bunɔl-anab ab-	jeb-mɔl		gali; keŗ
Gta?	rko? /-ro	condia?; kia; ja;		cmu		gli
Remo	ruŋku /ŋkuk'	kerɔŋ /-ker	anab	sumu-ker; gile-ker	sumu	gile-ker
Gutob	rukug	keroŋ /-ker	anab /ab-	suŋmol		gile
Kharia	rumkub	ba?a /bag	kuṇdag kunṛa			gole (also
Juang	ruŋkub	bua		ejaŋ	ejaŋ	
Mundari	(cauli)	baba (-sar<Rm.§) in tila-sar	ruruŋ- (v.) lupug	(baba)-jaŋ	jaŋ	gele
Santali	hɛrɛ; (ruṛuŋ- 'to husk')	(huṛhu, hoṛo 'paddy plant')	heṛe; lupug ruṛuŋ- (v.)			gɛlɛ

§Ramamurti (1938)

Table 2

ENGLISH	RICE (raw, husked)	PADDY (unhusked)	RICE HUSK	SEED RICE	EAR OF PADD
Ho	(ruuŋ- 'to husk')		ruuŋ (n. and v.)		gele
Korku	(rum- 'to husk')	baba	kere rum- (v.)	baba	gele
Asuri, Turi		(huṛu 'paddy plant')			(Kɑrwa gele);
Birhor		(huṛu 'paddy plant')			(Nihali gɛleI
				GRG *cu(ŋ)-moXl	
MK:	Pal reko etc. *rkew	OMon sro?		Riaŋ-Liaŋ *semal Prade sɪmɛ	

Table 2 continued

ENGLISH	COOKED RICE, COOKED PADDY IN HUSK	COOKED GRAIN, PORRIDGE	LIQUID GRUEL, RICE BROTH	WATER FROM COOKED R RICE SCUM
Sora	darəj;** gənaga; baba (children's word)	kuṛu /-kul jaŋ (*'Eleusine* porridge')	tuŋ-da-kul (Rm.) ə-da-roŋ ('broth')	
Gorum	goHsaŋ/-jaŋ; gaga? gag'	lai; -saŋ sima 'fermented rice'	tãk; sita-tãk; simba; simba-tãk	gaṛa?
Gta?	bole; -sia 'cooked rice; cooked grain'	-sia nturia?/-tur (<n-tur-ḍia?) 'millet gruel'		
Remo	kerɔŋ-jaŋ; kiyaŋ	-jaŋ /-yaŋ ntra 'millet gruel'	ŋkuk'-ra? 'broth' -soŋ 'rice liquid'	siniṛak 'water from boiled rice <si-da? 'to pour of water from cooked gra
Gutob	lai	ida? 'millet gruel'	ginen-soŋ 'broth'	
Kharia	pe?e /peg		manḍag 'rice broth'	
Juang	tɔŋɔ		dagtɔŋɔ 'rice broth'	
Mundari	jagu		tendaa; manḍi	

ENGLISH	COOKED RICE, COOKED PADDY IN HUSK	LIQUID GRUEL, RICE BROTH
Santali	jagu	daka
Ho		daka
Korku	jom 'food, i.e. cooked grain, normally rice'	da

(These forms are possibly interpretable in terms of PM *keŗ 'paddy ear'; *saŋ 'liquid gruel'; *yaŋ/jaŋ 'cooked grain' ('cooked rice in husk')

*goH 'cooked rice'; *tonV 'broth'; *d/rag' 'liquid from grain'

*ruŋkug' 'husked raw rice'; *(R)-ba(?) 'unhusked raw rice'; *saXro 'kind of paddy'

*gVle 'ear of grain, paddy'; *Vjaŋ/-jaŋ 'grain seed; rice in husk'

*<Vn>ab' 'to husk', husk' *g<Vn>a?, j(<Vn>)om 'eat', 'food' hence 'staple grain';

*^{C}/sɨ(N)-moxl 'seed rice'.)

**Cf. under *Eleusine coracana*

ENGLISH	BROKEN RICE	PESTLE	HUSKING HOLE	PRESSED RICE, POUNDED RICE	WET, LOW (TERRACED) PADDY FIELD
Sora		ɔnr̥j	onəl	taŋlad	
Gorum	god/godna	ɪn(d)rɪ	a?al	taŋlad - v. 'to press out water from something'	lɪ(y)oŋ
				tarlad 'a flat grilled cake'	
Gta?		toŋkæ	sabo?/-sa	torla/-tar 'a flat cake'	ləjo
Remo	turɔi	tiŋe?	sabu/gurlu	sibr̥a;-tor 'cake'	leuŋ
Gutob					lɪoŋ
Kharia		ẽ(n)r̥i/eṇdi	sol	ompeŋ	(?) lain 'canal supplying water to field
Juang			esɔd	tuŋlad	
Mundari	kudi/khudi		sɛɛl	taben; lad 'a flat grilled cake e.g. of beaten rice'	loeoŋ

ENGLISH	BROKEN RICE	PESTLE	PRESSED RICE, POUNDED RICE
Santali	khode/k(h)udi		(taben)
Ho	kudi		(taben)
Korku		NM *toko/tuki	
MK		PMK *nrəy?	
		Mon rì?	
		Khm ɔŋrè	

ENGLISH	*ELEUSINE CORACANA* AND/OR *INDICA* (ragi)	*SETARIA* (kangu)	*PANICUM* (suã)	*PHASEOLUS* m. (biri)	*VIGNA* s. (jhurung)
Sora	sidtri/-sid; gamad<Rm.)	bur-ɔy	gaŋga/saʔa saʔa-roŋ 'husked'	munu<Tel.	kənrom
Gorum	deray=siday/samel		arig	goŋo/rogo	gaŋ
Gtaʔ	dira/-dir	ũhũẽ	ũhũãʔ (but * -ræg)	romiaʔ/roʔmia /-roʔ	gbe/(-gia) / *gaʔŋ 'aṛha
Remo	saʔme=siʔme/-saʔm/ (siḍ-) /-dar 'grain'	ui-dar	rig/-ri	rumak'	gibe-gaŋ
Gutob	saʔmel	kaŋu (L.)	irig	rumag	gaʔŋ *?Vigna*
Kharia	kuda; leṭo (cooked)			rambara	
Juang	(kudu 'kind of gram')			rantiḷa	akogaŋ 'mille
Mundari	koḍe	oe	iṛi	rãbṛa	rãbṛa
Santali	kodɛ		iṛi	ram(b)ra ('urad')	
Ho	koḍe/kodeŋ			ramba	
Korku	koda				
Bhumij	kɔdɛ				

Table 3

designates a wild variety of *Panicum* (now reclassified as *Echinochloa*), *Panicum crus-galli*.

We also get forms which are presumably cognate in Kherwarian, Kharia-Juang, and Koraput Munda for (in different languages) sorghum (*Andropogon sorghum* var. *roxburghii*, similar to Hindi juwār), bulrush millet (bājra, i.e. *Pennisetum typhoides*), and elsewhere maize or other large cereal grain-bearing plants. These various meanings point to a core meaning 'a tall plant with leaves characteristic of maize, bājra, and sorghum, with millet or millet-like grains.' The tentative PM reconstruction is *gaŋ(-)gay. A more specific reconstruction cannot be made.

Eleusine coracana (Hindi ragi) does not seem to have one reconstructible form for the whole family, but it is now used widely and has various names, not identifiable as loans, in both NM and SM. In Koraput Munda one set of forms leads to the reconstruction of KM *deray which probably referred to the staple grain (excluding rice?), its meaning perhaps changing with shifts in the predominant grain in use. There are no obvious cognates for *deray outside Koraput Munda, although conceivably Mundari ḍoṛe, ḍoṛom may be related.

In NM and Kharia ragi has forms like kode, kɔdɛ, kuḍa but the NM and SM forms cannot be related. Further, the SM form seems rather to be derived from a term referring to something more general than *Eleusine*. Meanings range from 'cooked rice, cooked grain, gruel', to 'grain in general, hill millet' (*Eleusine indica, Eleusine coracana* etc.) and specifically ragi (*Eleusine coracana*). (See Table 3)

ENGLISH	*DOLICHOS* (kulthi, 'horsegram')	LARGE MILLET: variously 'sorghum, bajra, maize'	RED GRAM
Sora	ɔɽa'j/səremoñ	gaŋga/kɔrɔ'j 'large millet' kəmbur/=buj 'sorghum'	səraj/-san səremoñ goŋgo (children's lang.<Rm
Gorum	goŋo (*Phas.*?); gaŋ 'biri' (*Vigna*)		
Gta?	hɔlæ?	ggia?-jo 'sorghum'<*R-gag	
Remo	ga?ŋ 'black-seeded *Dolichos*'		
Gutob	ga?ŋ		
Kharia	koɽa'j	gaŋgai 'bajra, maize'	
Juang	kɔrto/kora'y/kulto	goŋgei 'millet' gaŋgai 'sorghum'	suluid
Mundari		gaŋgae/i 'maize, sorghum'	sirum
Santali	hɔɽɛ'c	gaŋgai 'maize'	sira/om
Ho	hɔɽe?	gaŋgai 'maize, sorghum'	sirum

Table 4

LEGUMES: Grams or pulses play a very important part in the diet of the present-day Munda. Historically, we can reconstruct at least two varieties of gram for Proto-Munda: *kodaXj' 'horsegram', *Dolichos biflorus* (Skt. kulattha, Oṛ. kɔlɔth); and *rVm 'black gram', i.e. *Phaseolus mungo* (Oṛ. biri) or something like it.

Dolichos biflorus is the likeliest example of a PM word which was borrowed into Sanskrit.[10] (Another--messier--case is that of 'tamarind', where the Skt. tintiḍika may be borrowed from a PM *R-tiXn, or *teXn. In some of the Munda languages the forms are derived from the IA forms but in others this seems *not to be the case.*)

*kodaXj' is widely attested in Munda with the meaning 'horsegram' consistently found for its reflexes in the modern languages. In contrast, *rVm has a variety of similar but not identical glosses for its reflexes--sometimes designating *Vigna*, sometimes *Phaseolus*, but referring in all instances to a small black, oval legume. More equivocally, since we have no trustworthy botanical identifications for it, a third legume has been glossed everywhere as 'some sort of small red gram'. One would tentatively reconstruct a morpheme *sVṛ/ḍ- +u/aj' and/or +oXm. (T.4

GOURDS: A form for *Cucurbita lagenaria*, the 'bottle gourd' and alternatively a 'ladle or drinking gourd made from *lagenaria*,' can be reconstructed for Proto-Munda to something like *su(-)ku(g). In addition to this form for at least Koraput Munda there is a set of forms reconstructing to *N-ṭuŋ with the meaning 'gourd'.

Aside from the food plants themselves additional

ENGLISH	GOURD	LADLE	LIQUOR	"SOLOP" LIQUOR (*Caryota urens*)	EGGPLANT
Sora	atuŋ	ko?o	ali/-sal	salpəm	ənḍəṛaj
Gorum	aṭuŋ	ku=deb	ali	salpoŋ	reŋra?
Gta?	ntoŋ	sko?		sapuŋ	ko?ḍæ-hã
Remo	ku-tuŋ	sukug	li/ili	sapuŋ	iñɔm/ñiyɔm
Gutob		sukug	ili	salpoŋ	eyom/ko?
Kharia		karu?ul			kanraj/kõḍraj
Juang	sukuḍag				hañje?d-dar
Mundari	suku		ili		beŋgaṛ (L.)
Santali	thoŋga ('a bamboo bottle')				beŋgaṛ (L.)
Ho			ili		baiŋga
Korku			siḍu		ẽgan

Table 5

suggestive evidence for early agriculture among the Munda-speaking peoples may be had from other kinds of reconstructed items; for example, we can reconstruct words for 'pestle' and 'mortar', the pestle being used by the Mundas not for grinding but for husking rice, and/or pounding larger millet grains, mango pits and gram for gruel. The words for this pestle or husking stick are obviously cognate in SG and Kharia and appear to be cognate with forms elsewhere in Austroasiatic. The form would tentatively reconstruct to something like *Vnr+j', VnreXj' in PSM, and this seems to be cognate with a tentatively reconstructed PMK *nrəy? (Shorto, personal communication). The Proto-Munda form for the 'husking hole, or mortar', usually a hole in the stone of the verandah of a Munda house[11] reconstructs to *saX?l.

Similarly, a word for an alcoholic beverage *əli can be reconstructed to Proto-Munda (as can *buXl 'to get drunk', which has widespread Austroasiatic cognates). It is not clear, however, whether *əli was distilled from grain, as are the beverages now called əli/ali/li etc., or merely fermented. (see Table 5)

ANIMALS: In this paper we extend the range of comparative data to include domesticable animals. Domestication usually means that the animal is cared for in exchange for some sort of service or advantage. In a paper on animal husbandry based on evidence from ethnology Cranstone (1969) says that most people who practice some form of agriculture keep domestic animals which provide food, raw materials, or power: i.e., they are not merely pets or aids in hunting but are valued for their meat, milk, blood, hides, wool, or services.

Among people who practice shifting cultivation,

d lack the plough, the number of animals kept and eir economic importance tend to be relatively small, r the level of agricultural technique is not sufciently high to produce a surplus of food to suprt them. Some animals forage for themselves--e.g. e mithan of Assam or the Melanesian pig--but they ually return at night, or at intervals, in order to fed.

Among plough cultivators the situation is rather fferent: the use of the plough implies the use of aught animals; grain crops are usually the food aple, which means that there is stubble or straw r fodder for the cattle. Improved techniques may ovide grain surplus to human requirements which can en be used for the animals.

Clearly, we cannot know merely from linguistic idence whether the animals we discuss (apart from e dog, which has been found in association with alst all archaeological settlements) were in fact tually bred, nurtured or otherwise associated with settlements. Rather, on the basis of what we know present-day Munda cultures, we have collected inrmation on those animals which seem likely to have en more or less domesticated early--the dog, the icken, the goat, the pig, the buffalo, the cat, and ttle. Presumably the peacock was not domesticated, though we include comparative data on it because of *s possible inclusion as a domesticated or otherwise* mbolically important animal. The ethnographic urces on the Munda give no evidence of its domestition.[12]

DOG: The morpheme for 'dog' is to be reconructed for PM as something like *soXd' (alternating th *seXd'). There are problems of reconstruction,

but we think all the Munda forms go back to *soXd', *seXd' plus various affixes. There are MK forms which seem to be related e.g. *Riaŋ-Laŋ so?, possibly* PMK *cɔ?.

CAT: One common motivation for domestication of the cat is as a mouser, to keep down rats and other rodent-damage in surplus stored grain. Conceivably the PM's may have had and stored surplus grain, but we have no direct evidence for or against storage, or for actual domestication of the cat. We get two forms: *pusi, (alt. pusu) which seems to be frequent universally for 'cat', presumably derived from the "pss" sounds used to call or attract cats. The other form reconstructs to *rɛm in GRG, and has presumably related forms in SG.

GOAT: For SM one reconstructs *-mɛd', and the Kherwarian forms *merom, etc., are presumably (at least the first morpheme of them) cognate. There seems to be a PMK *be? which looks relatable as well. The Dravidian forms which are somewhat similar[13] do not seem to provide a Dravidian source for the Munda form. Amond the present-day Munda, goats are left to forage for themselves, and consequently are not used as milk animals (nor are cows or buffalo). In general, one remarks that the Munda do not seem to be milk-drinking people after childhood, in spite of the keeping of cattle and goats.

PIG: One cannot reconstruct PNM forms for 'pig' but the SM forms presumably go back to a PSM form (GRG *buXd', SG *bun; cf. KJ forms: bunui/butae), which is probably *buXd' for the CF, whatever the FF may have been, if there was one. We note the existence of the Proto-Indonesian babui but doubt any connection with the Kharia form bunui· (Presumably

e could reconstruct a root *buḷ or something of the
rt with various affixes, although this seems unlike-
in view of the related Juang and other SM forms.)

However, the pig is interesting for other rea-
ns, especially from the point of view of its im-
rtance to certain SM groups, notably the Sora and
rum. Both groups have elaborate, built-in enclo-
res or 'pig-houses' with sliding doors beneath the
ner's own house. Both groups disclaim consumption
pork, but the short form in Sora, for example, is
entical with the short form for 'meat' (jɛḷ, from
lu) and both groups contend they raise the pigs for
le to other groups as food. Pigs are not used for
crifices or pujas at home, as are cows, buffalo,
ickens, and, to a lesser degree, goats.

As regards the question of domestication of pigs
ong the Munda, by Gorum standards of animal hus-
ndry, the pig is given a great deal of care as com-
red with the goat, or even cattle. For the Gorum,
e would definitely have to say the pig is domesti-
ted. Although it forages, rather than being fed,
is kept within the confines of the fenced-in vil-
ge, and is not allowed to interbreed with wild or
ral pigs (unlike the situation among the Naga, for
ample, where interbreeding is encouraged). What
e situation may have been among the Proto-Mundas,
wever, is not at all clear.

CHICKEN: One reconstructs PM *sḭ(X)m, clearly
th the meaning 'chicken' (versus *-ṭḭd' or
(-)dḭd' meaning 'bird'). The specialization of
cabulary with reference to chickens presumably in-
cates long familiarity with them as domesticates.
have, however, no way of ascertaining relative or-
r of domestication of these various animals. Chick-

ens are commonly used among the present-day Munda both in sacrifice and for consumption, but these practices are of course not restricted to the Munda groups. (see Table 6)

THE BOVINES: The words for 'buffalo', presumably Bos Bubalus, again look as if they are cognate, but there are a number of problems in reconstructing a PM form or forms. Presumably, the NM forms are metathesized and show vocalic assimilation. The buffalo is perhaps the most important animal among both the North and South Munda today, for ritual and sacrificial purposes such as marriages, pujas, and funerals.[14] The considerable expense entailed in the sacrifice of a buffalo reduces the frequency of sacrifices, and among the Gorum, for example, for minor pujas or temporary, interim ones, chickens or even a symbolic cucumber mixture (with a variety of terms for the latter) are used as substitutes for the buffalo. (see Table 7)

CATTLE: The general word for 'cattle', which seems to develop into specialized words meaning specifically 'cow', is the CF -taŋ, which has a FF taŋlɨy in SG. This form is not found in North Munda, nor is there a reconstructible form for 'bull'. For the latter we find forms borrowed from the Indo-Aryan languages.

The one form of interest which is reconstructible for Proto-Munda, *ɔreXj', seems to indicate a draught animal, sometimes 'cow'. These seem to relate to forms in MK for 'cow', and possibly to NMK *kraak 'buffalo' (Shorto, personal communication).

That the SM word *lj-taŋ 'cattle-dung', derived from the PM word for 'faeces' *lj', is from the *taŋ

ENGLISH	DOG	CAT	GOAT	PIG	CHICKEN	PEACOCK
Sora	kinsod	rameŋ	kɨmmɛd	kəmbon	kənsim/-im	mara/-mar
Gorum	kusod	rumaŋ; pusi	kinmed	kanmun/ki-bun	aŋoy/ki-koy	maraH
Gta?	gsu?	griŋ	gmi?	gbug	gsiŋ	ŋko/-ko
Remo	gusu?	girɛm/-rɛm	gime?/-me?	gubu?/-bu?	gisiŋ	kukuŋ/kuk/-kuŋ/-si
Gutob	guso?	girem	gime?	gibig/-big	gisiŋ	
Kharia	solog	pusi; ramad 'claw'	merom	bunui	siŋkɔe (P.) kunru-siŋ; siŋkoy 'fowl'	marag
Juang	selog		merɔm	butae	seŋkoe	marag
Mundari	sɛta	pusi; runda 'wildcat'	mɛrɔm		sim	mara?
Santali	seta	pusi; runda 'wildcat'	mɛrɔm		sim	mara?
Ho	seta	pusi; runda 'wildcat'	merom		sim	mara?
Korku	sita	minu 'cat' puci 'rat'		badu 'hog' (P.)	sim	mhara?
Asuri	sɛta	pundi				
Turi						

ENGLISH	DOG	CAT	GOAT	CHICKEN	PEACOCK
Korwa		pusu	merom	sim	
Birhor	seta	pusi			
Bhumij	seta	pusi; runda 'wildcat'	mɛrɔm	MK: cim etc. 'bird'	MK: mra?/amrak brah/cim-mərak etc. 'peacock'
PMK:	*cɔ?		e?	Cf. OM kiñcem	
MK:	gsu? etc.	OMon	a.e?	? <*koncem	
Riaŋg-Lang	-so?;				
Mid Mon	cluiw ?<*c[ur]				

Table 6

ENGLISH	MUSHROOM	CUCUMBER	SAL TREE (*Shorea robusta*)
Sora	bəti/-p+d	ɛŋra/ɛŋiud/en(d)ra kosalli 'cucumber-like vegetable'	sə/argija
Gorum	boti/u=jupud/-pud	sarla(y); =sa/sa=in sa=di/dindi=sa/por=sa 'cucumber mixture symbolic of the buffalo in sacrifice'	sorgi(ja)
Gta?	ntwig		
Remo	ntwi; ntni	sarlay	sɔrge
Gutob	itig		
Kharia	uḍ	kɛŋra	serga
Juang	ũḍ/unr	kheŋra	sariga
Mundari	u(u)d/puṭuku?i	taher/taear	sarjom/salga
Santali	ot'/putka	taher	sarjɔm/salga
Ho	ud	taer	sarjom
Korku	od	takher	salai
Asuri	ud	taher	salga

ENGLISH	MUSHROOM	CUCUMBER
Turi	ud	taher
Birhor		taher
MK:	ptɨr/ptøs <*ptɨr	
Pal.	tɨr Riaŋg-Lang tis	
Khasi	tik	

Table 7

rds and not from *ɔreXj' suggests a greater generity for the *taŋ morpheme in spite of its present re limited distribution. There is a GRG form V(-)laj' 'bullock, ox', which is perhaps related to e Gorum goj' in degoj-kituŋ, but note also the range combining form of Gta? hrwe?/-gwe? perhaps ing back to *gV^{back}j', and suggesting some sort of terference. (see Table 8)

SUMMARY

The data presented in this paper provides good idence that the Proto-Mundas, presumably at least 00 years B.P. (or earlier) at a conservative estite, had a subsistence agriculture which produced at least knew grain--in particular rice, two or ree millets, and at least three legumes. Further, e agricultural technology included implements ich presuppose the knowledge and use of such grains d legumes as food, since the specific and consisnt meanings for 'husking pestle' and 'mortar' go ck, at least in one item, to Proto-Austroasiatic.

Because no solid evidence is obtainable from nguistic information alone, we cannot claim that ese food plants or animals were actually domesticad. However, we can reconstruct names of animals *ich are usually associated with some level of de*lopment of settled agriculture, or at least with a nting and gathering economy which did not exclude me degree of concomitant sedentary life.

Domestication is a term which covers a great riety of cultural patterns, and the full domestiation of certain plants and animals must have taken long time to accomplish. The strongest proof for a rticular hearth of domestication is generally taken to that provided by (botanical) cytogenetic evidence.

ENGLISH	BUFFALO	COW	BULL	DRAUGHT ANIMAL	CALF	BULLOCK	CATTLE
Sora	bɔŋtel	taŋlɨy					
Gorum	boŋtel/-boŋ	taŋli/-taŋ			arij-	degoj'-kituŋ 'god'*	dunom
Gta?	buŋṭi/-bo	-tia		hrwe?/-gwe? 'cow'		glæ?	
Remo	buŋte/-buŋ	-taŋ				gilaj/-goj	
Gutob	boŋtel/-boŋ	ki?taŋ/-taŋ				gula'j	
Kharia	boŋtɛl (m.)	-thaŋ (P.)§		orej 'bullock'		orej	dim-taŋ ('cattle shed'
Juang		oḷej	uṇḍia	oḷej 'cow'	kontaŋ	orai (P.)	
Mundari				uri?			
Santali	bitkil			ɔrɔk'			
Ho	bitkil			uri?			
Korku	betkhel/ betkhìl etc.						
Asuri				uri?			
Turi				uri?			

ENGLISH	DRAUGHT ANIMAL	
Korwa	uri?	
Birhor	uri?	
Bhumij	var. MK: orok/hrok/hrok/korok /krok 'cow'	
	NMK: *kraak 'buffalo'	

§Pinnow, H.-J. (1959) *must sacrifice cow to this god every three years

Table 8

However, incontrovertible conclusions coming out of cytogenetic analyses presuppose these analyses to be based on a sufficient exploration of the relevant areas of the world for possibly ancestral plants and adequate sampling and analyses of all these plants. Such investigations--and such incontrovertible conclusions--are not available for *Setaria*, *Panicum*, or for the legumes discussed above. Even when a thorough cytogenetic study is made, there is no guarantee that its results, insofar as they bear on hearths of domestication, will be clear-cut and unequivocal. The archaeologist correlates his own findings with those of the paleobotanists, and, where known and available, with the findings of linguists and of historians (e.g. those of Ping-ti Ho on early rice cultivation in China). We must reiterate that as linguists we do not claim that we can identify a food plant as a domesticate, but we do claim that sets of semantically related terms, and an elaborated nomenclature for a particular food plant and its products, imply rather strongly that these food plants were known and used by the people speaking this reconstructed protolanguage. Further, the existence of certain terms for agricultural operations (e.g. 'winnowing', 'transplanting') strongly suggests that some degree of domestication of these plants was likely, and this in turn presupposes some degree of sedentary agriculture. Our conclusions are consistent with those of Berlin (1972) on the development of plant taxonomy nomenclature.[15]

Rice, in particular, is strongly attested for Austroasiatic (c. 6000-5500 B. P.), and the use of rice by Austroasiatics, presumably somewhere in Southeast Asia, fits in better with the recent discoveries

sites with plant remains made by Solheim, Gorman al. in Northern Thailand than do such claims as se of Ho on behalf of China. This does not mean t the early inhabitants of the northern Thailand es were necessarily Austroasiatic speakers. How- r, it is likely that some Austroasiatics knew rice y early, and perhaps were responsible for its nsmission to the west (i.e. to India). The evi- ce from some early sites in eastern India exhibit- rice (Chirand; see Vishnu-Mittre 1970b) would be sistent with such a hypothesis.

Apart from rice, *Setaria* (*italica*) and *Panicum liare* and/or *miliaceum*) must have been known to Proto-Mundas by at least 3500 B.P. However, so as we know, no cognates for the PM forms have n found in MK as yet. This may well be because no has ever elicited such material with any degree completeness or accuracy, and not because such nates do not exist. If *Setaria italica* was domes- ated in China--a view which some scholars like Ho or[16]--one could expect lexical evidence from areas ween a (non-South?) Chinese location and the loca- n of the Proto-Mundas.

Two plant names that are almost universally at- ted in the contemporary Munda groups, and that arently have no cognates in the other Austro- atic languages are the words for 'mango' and 'tur- ic'. Both of these plants have varied and deep tural involvements for the Munda groups. Perhaps nd this does not contradict the botanical evidence, what little there is of archaeological evidence-- se plants were first extensively used by the oto-Mundas, and were important in special ways to em. This specialization perhaps largely postdated

the separation of PM from the rest of Austroasiatic, at least from Proto-Mon-Khmer.[17]

Another plant that presents complex (and differ ent) linguistic problems is the chili pepper (*Capsicum*). There is botanical and archaeological evidenc for a domestication in and dissemination from Southeast Asia. The word for 'pepper' in Sanskrit is cer tainly borrowed, as well as the older Dravidian forms, according to Burrow, and a Southeast Asian source in Austroasiatic (MK specifically) is possible. However, the Munda data provide no possible etymologies, since all the known Munda words are borrowings from Indo-Aryan. (This does not rule out the possibility of a PM word now lost without a trac being itself a borrowing into Old Indo-Aryan, i.e. Sanskrit. If such was the case, one would like some explanation of why and how all the Munda languages lost the reflexes of the PM word; however, similar losses are attested elsewhere.[18])

The linguistic evidence on possibly domesticat animals tells us very little. Apparently one large bovine at least was known to the PM's, but not much more can now be said about it.

In our earlier paper (Zide and Zide 1972), we claimed that there were no old Munda words for 'metal' or for particular metals. However, we now think that Sora-Gorum *luaŋ + Kharia luaŋ 'iron' is possibly old, i.e. not borrowed. Earlier, the appa ent similarity of luaŋ with Indo-Aryan words meanin 'iron' (Sanskrit loha, 'copper/iron', basically 're [dish]', etc.) led us to believe (prematurely) that *luaŋ, though admittedly problematic, must have bee borrowed. In Mon-Khmer we have possible cognates i

Mon sl̄ūy 'copper' and Khmer l̀ùy 'money, small
ıge' (these from Shorto, personal communication),
Paul Benedict (personal communication) recon-
ıcts for his Austro-Tai *lu(y)aŋ 'copper'.

The antiquity of rice for the Proto-Austroasia-
s, ca. 6000 B.P., and some millets and some le-
es (so far) for the Proto-Mundas, ca. 3500 B.P.,
implications which should be correlated with and
ted by all the paleobotanical, archeological, and
torical findings there are, and by directed future
dy of these problems, so as to maximize what we
know about early agriculture and agricultural
gins in Southeast Asia and in neighboring regions.

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[1]The bibliography of our earlier paper should be
sulted for fuller information on the sources of
e of the linguistic data in our charts. We are
y grateful to Harry Shorto for providing most of
Mon-Khmer forms quoted in this paper.

Much of the work on this paper has been sup-
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ia.

[2]This sort of reversion is not uncommon in South-
t Asia and elsewhere. A recent example is the so-
led Stoneage Tasaday of Mindanao, who according to
popular press are relics of the Neolithic, where-
the linguistic and ethnographic evidence (F. Eg-
, personal communication) apparently suggests that
y split off from a neighboring group no more than
years ago and withdrew to comparatively inaccess-
e jungle and a simpler subsistence economy.

[3]One of the few attempts to get at possible cul-
al continuities is that of A. K. Ghosh (1969), who
mined present-day Ho megaliths in the light of
historic megalithic cultures that might be related.

[4]X is used here to indicate a vowel feature
ch must be reconstructed for Proto-Munda.

[5]The verb *sɨy which we reconstruct for PM,
ch has in the past been glossed as 'to plough',
bably need not be defined specifically as 'to

plough', or 'plough-cultivate' but could originally have meant 'to use a pre-plough instrument (*snɨy) for purposes of cultivation'. When the tool in use was replaced by an improved cultivating tool, i.e. the plough, the verb could have been extended to mean 'to cultivate' rather than its original, presumably narrower, meaning. We have no evidence linguistically to support either assumption.

[6]The existence of doublets for North and South Munda for many forms suggests several interesting theories, among them that PNM and PSM may not simply go back to a single proto-language, PM. The fact that many culturally important cognates, such as the forms for 'rice', show connections between SM and PMK, and are lacking or replaced in NM perhaps could be attributed to shift of ecological habitat for the NM's, but could equally well be considered to reflect a partly independent history for North and South Munda.

[7]Cf. H.-J. Pinnow (1959). H. L. Shorto (personal communication) reconstructs something like *rkəw? for MK.

[8]The earliest archaeological evidence for rice in India is at Lothal and Rangpur (ca. 2300 B.C. according to S. S. Ghosh). There is also a date from Ahar in Rajasthan of ca. 1800 B.C. However, what seem more appropriate in terms of areal considerations are the dates from Navdatoli-Maheshwar, M. P. from ca. 1600 B.C. (cf. also Vishnu-Mittre 1968, 1970a, and 1970b).

[9]However, although the earliest dates for *Setaria* in China seem to occur at ca. 4000 B.C., *Isaac (1970) claims there is no botanical evidence* regarding the hearth of domestication of *Setaria* and its prominence in Asia.

[10]The earliest evidence so far for *Dolichos biflorus* in India is found in Tekkalakota, dated 1650 B.C. or earlier.

[11]And, by extension, occasionally referring to the kind of stone from which the mortar, verandah, etc., is made.

[12]The horse presents an interesting problem, since a word for 'horse' *kuXrta(g) can be reconstructed for at least Koraput Munda and probably for *South Munda, which is surprising in view of the presumed absence of horses in the area at that time.* The chronological problems of whether the horse was known in Eastern India (since presumably the SM peo

never got far into Central India) are not insolu-
but in what context the SM's knew and used the
se remains a mystery. The usual view is that the
se was brought in by the Indo-Aryans, but there
) seems to be some evidence of equine remains at
lur in Mysore, dated by C-14 to ca. 1600 B.C. (cf.
. R. Allchin 1969:319-320, and R. Thapar, 1969).
speculations of Przyluski (1929) about North
da sadam/sadom 'horse' as the source of various
skrit dynastic names seems dubious.

[13]Cf. Burrow and Emeneau (1961:DED 4174) for
-goat, and/or the onomatopoetic bleating of goats.

[14]Since the ethnography of the South Munda
ups has not been studied systematically--or, in
e cases, at all--such information as whether or
buffaloes are used as draught animals by various
da groups is at best available only in fragmen-
y and unreliable form.

[15]Berlin (1972:72) states 'one should not expect
find varietal ethnobotanical nomenclature except
the languages of societies which practice rather
ined methods of cultivation; all the information
ilable to me at the moment shows that legitimate
ietal names occur almost exclusively in the
ssification of important cultivars.'

[16]Note that Isaac (1970) does not accept as
ticularly likely a Chinese hearth of domestica-
n for the millets (including *Setaria*).

[17]Note, however, the widespread uses of tur-
ic elsewhere in Asia and Oceania discussed by
her (1964) and Sterly (1967). The history and
ead of such uses would repay close study.

[18]Perhaps the Proto-Munda word for 'twenty' was
t in much the same way. The PM's had a vigesimal
tem of counting, and must have had an old word (or
ds) for 'twenty'.

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