

Proto-Dravidian Agriculture¹

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INTRODUCTION. Though historical linguists and archaeologists often study the same territory, communication between the two disciplines leaves much to be desired. One of the reasons for this is that the methodology of historical linguistics has not been easily accessible to those who have not studied the subject. In hope of improving communication from the linguistic side, I have made explicit certain assumptions and methods of the field of historical linguistics which are needed for the evaluation of my conclusions (see 1.1-1.3, 2.01).

The history of agriculture, like that of many human activities, can be seen to consist of a series of technical innovations which are integrated over time into the social life of a community. Changes in language can supply a sort of record of the integration and spread of such innovations. Thus linguistic reconstruction can provide a perspective which can complement, or supplement, the archaeological record, as shown in section 4.2 below. In the present case, because of the substantial amount of archaeological and archaeobotanical work which has been done in Peninsular India, the linguistic reconstruction can also be tested against the archaeological record as a measure of the effectiveness of the linguistic approach (see 4.2, 5.2 below).

In order to reconstruct the agricultural vocabulary of early Dravidian, we need (1) a general knowledge of the development of agriculture in the region, derived from historical and archaeological sources; (2) the known agricultural vocabulary in Dravidian languages, past and present;² and (3) guidelines about possible and probable directions of semantic change (see esp.

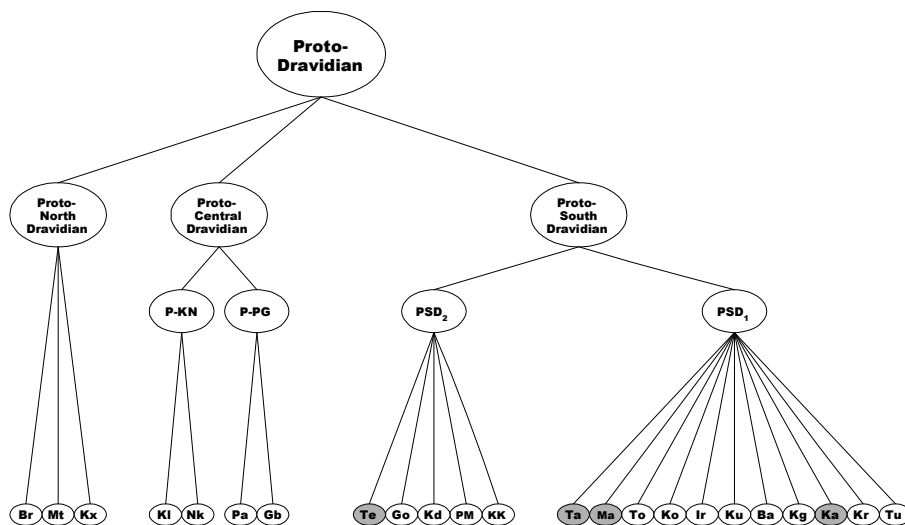
¹ In preparing this paper I have benefitted greatly from conversations with Dorian Fuller and Wim van Binsbergen. Note the following abbreviations: PD: Proto-Dravidian, PSD: Proto-South Dravidian, PCD: Proto-Central Dravidian, PND: Proto-North Dravidian, SD: South Dravidian, SD₁/S₁: South Dravidian-1, SD₂/S₂: South Dravidian-2, CD: Central Dravidian, ND: North Dravidian, Skt: Sanskrit, OIA: Old Indo-Aryan (Vedic/Classical/Epic/late Skt), MIA: Middle Indo-Aryan (Pali, Prakrits), NIA: New (modern) Indo-Aryan.

² This paper relies on the *Dravidian etymological dictionary* (Burrow & Emeneau 1984), plus occasional other sources,

1.3 and 2.01 below). The method of comparative linguistic reconstruction has some pitfalls, both general ones as well as some which are specific to the Dravidian situation, which will be discussed in 1.1-1.3.

1.0. Branches of Dravidian. The genetic structure of the Dravidian language family is shown in Figure 1. The family has three major subgroups, as determined by the sharing of exclusive linguistic innovations: North Dravidian (ND), Central Dravidian (CD), and South Dravidian (SD).³ Both SD and CD are further divided into two subgroups, and the subgroups of SD₁ and SD₂ exhibit further complex branching which is not shown here. According to the assumptions of historical linguistics, any cognate set found in two of these groups can be presumed to represent a word in Proto-Dravidian (PD). Before presenting the reconstructed vocabulary items, it is necessary to discuss some limitations on this assumption in the present case (v. 1.1-1.3 below).

Figure 1. Branches of Dravidian



1.1. THE PROBLEM OF UNATTESTED WORDS IN THE NON-LITERARY LANGUAGES. It is customary to divide the Dravidian languages into the categories of “literary” and “non-literary”, since only four of

for the vocabulary of Dravidian languages. More detailed (and more accurate) conclusions might be reachable with more information about local terminology, which unfortunately would require far more extensive research than is possible for this paper.

³ See Krishnamurti 2003:489-501 for a brief history of subgrouping in Dravidian, and see Southworth 2005:49-50, 233-6 for further discussion.

the languages (Tamil, Malayalam, Kannada, and Telugu, indicated by the shaded ovals in Figure 1) have a known literary history from before modern times. To the extent that they are written at all, most of the others were not reduced to writing before the 20th century. It can be seen that the literary languages all belong to South Dravidian, one of the three main branches. What this means for comparative Dravidian studies is that the available vocabulary for two of the main branches of the family (ND and CD) is much more limited than for SD. Furthermore, most of the ND and CD languages are in contact with languages of the Indo-Aryan and/or Iranian families, and have absorbed many vocabulary items from these languages, thus eroding their original Dravidian vocabularies. The number of cognates which match in even two of the main branches is therefore severely restricted.

Bh. Krishnamurti proposes to deal with this problem by accepting cognates from the literary languages as representative of PD, on the assumption that any words which are well attested in SD, and are not obvious loans from some other language, can be assumed to have been present in PD (Krishnamurti 2003:6-7).⁴ While this proposal runs counter to the usual requirements of comparative reconstruction, which insist on at least two *independent* attestations (form-and-meaning correspondences) to establish a proto-form, the assumption has some plausibility – at least as far as the *form* of the words is concerned. It is impossible to prove that items reconstructed solely on the basis of cognates in SD languages were *not* present in PD, and in fact it is likely that *some* such items do descend from the PD stage, though we have no way of knowing which ones.

The position is different, however, with regard to the *meanings* of the reconstructed words. In a number of cases, it can be shown that the meanings which can be reconstructed on the basis of SD cognates are not likely to be the oldest meanings. For example:

(1) PSD (Proto-South Dravidian) ***kōṭṭ-ay** ‘fort’ (DEDR2207a) can be reconstructed on the basis of cognates in 9 SD languages, including 5 of the non-literary languages. The only cognate

⁴ This entails the further assumption that borrowed words can be identified, either by their inherent characteristics (e.g. phonology or semantics) or by tracing them to some other known language, as seems to be the case for example with PD ***ñān-kvI** ‘plough’, thought to be from an Austroasiatic language. This assumption, however, denies the possibility that words might have been borrowed from as yet unknown pre-Dravidian languages, a possibility which is by no means to be rejected out of hand.

outside of SD is the Kolami (CD) word **gōḍā**, meaning ‘wall’, a meaning also found in some SD₁ and SD₂ languages, which may well be the original meaning.

(2) PSD ***kī-t-** can be reconstructed in the meaning ‘write, scratch’, though the meaning ‘write’ is only found in Tamil and Telugu, while only the meanings ‘scratch, scrape’ and ‘line, mark’ are found in the non-literary languages (DEDR1623). The original meaning is probably ‘scratch’ or ‘mark’.

(3) PSD ***ari** ‘tax, tribute’ is similarly based on meanings found only in the literary languages. The original meaning of this word is probably ‘grain’ or ‘contribution of grain’, going back to an earlier meaning ‘seed’: note ***ari** ‘rice, grain’ DEDR215. An alternate form ***vari**, with initial **v-**, is reconstructible for both meanings: ***vari** ‘paddy, rice, seed’ DED5265, ***vari** ‘tax, contribution, etc.’ DEDR5266 (including traditional exchanges of grain among tribal groups in the Nilgiris). Thus the original meaning is probably ‘seed’ or ‘grain’,⁵ later extended to refer to various cereal plants and grain exchanges, with a more modern transfer to include the meaning ‘tax’ – which may possibly be as old as the Sangam Period (early centuries BCE-CE).

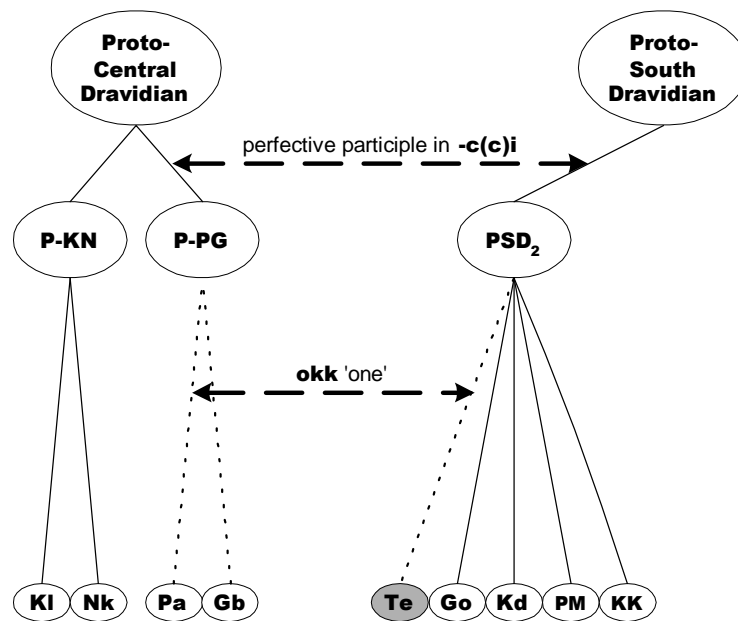
Thus it is clearly not acceptable to unreservedly attribute to PD word meanings which are found only in SD languages. Though as noted above, there is no way to be certain that the meanings of such words are *not* as old as PD, this paper includes only those cases which are reconstructible according to the usual assumptions of comparative-historical linguistics, i. e. where at least two of the three main branches bear independent testimony to form and meaning.

1.2. CENTRAL DRAVIDIAN (CD) AND SOUTH DRAVIDIAN (SD). A second related problem involves the relationship between the CD and SD branches. Briefly, though SD and CD must be considered separate branches, since there are no innovations exclusively shared by the languages of both groups, there is evidence that grammatical innovations have diffused between them in the past. These are shown by the horizontal dashed lines in Figure 2, and include: (A) development of a perfective participle in ***-c(c)i**, shared by the Parji-Ollari-Gadaba subgroup of Central Dravidian

⁵ Note the ambiguity of English ‘grain’ = ‘granule’ or ‘cereal plant’, an ambiguity found in many languages (see additional examples in 2.01 below).

with the entire SD₂ group; (B) ***okk**, an innovative form of the word for the numeral ‘one’, shared by Parji-Ollari-Gadaba (CD) with Telugu (SD₂). (See Krishnamurti 2003:499-500.) Thus, although there is no basis for assuming a common stage of development for the South and Central Dravidian languages, it is clear that at some stage in the past these two branches were in sufficiently close contact that some innovations could cross the boundaries of the two subgroups—while no such innovations are shared between ND and CD, or between ND and SD. In fact, Telugu is still in contact with some Central Dravidian languages, and Krishnamurti (2002) has noted that the CD languages Kolami and Naiki retain borrowings from Telugu from a very early period. This means that CD and SD cannot be considered to be 100% independent of each other.

Figure 2. Convergent change in CD and SD1



In addition, there are numerous examples of changes in meaning shared by CD and SD (either SD₁, SD₂, or both), where ND seems to retain an earlier meaning. For example:⁶

PD form	ND meaning	SD-CD meaning	DEDR#
* <i>ūr</i>	house	village, town, city	0752

<i>*kaḷ-am/-an</i>	field	threshing ground	1376
<i>*key-(a)m</i>	earth, mud	field	1958
<i>*nūl</i>	to twist (grass etc.).	thread	3726
<i>*ney</i>	animal fat	ghee	3746
<i>*palli</i>	family	village, hut; placename suffix	4018

Thus it seems necessary to distinguish those cases which include ND cognates from those which do not: any reconstruction based on a combination of ND plus SD1 and/or SD2 cognates, with or without a CD cognate, is more reliably Proto-Dravidian than one based on CD plus SD1 and/or SD2 *without* ND.⁷ In the present paper, reconstructions including one or more ND cognates, plus one or more SD and/or CD cognates, will be referred to as belonging to “Early Proto-Dravidian”, while those with only CD and SD cognates will be designated as “Late Proto-Dravidian”, with the understanding that the latter group of reconstructions (those without ND), generally speaking, have a *lower probability* of belonging to the earliest common stage of Dravidian than those including SD and ND cognates. While some of these reconstructions *may* possibly represent early Dravidian words, it is impossible without further information to know which ones do so.⁸ In addition, any reconstructions based entirely on languages of Central India (Kudux-Malto [ND], Kolami-Naiki-Parji-Gadaba [CD], Gondi-Konda-Pengo-Manda- Kui-Kuvi [SD₂]) are suspect because of the contiguity of these languages. These cases are marked distinctively in the Appendix.

1.3. THE PROBLEM OF SEMANTIC DIFFUSION. However, the distinction between Early and Late PD does not entirely solve the problem, because of a more general problem affecting language groups which have not completely separated from each other. Even after an original speech

⁶ See Southworth 2005:236 for additional examples.

⁷ In Chapter 8:Appendix A of Southworth 2005 (pp. 257-69), those reconstructions which are called “Early PD” here are glossed in **BOLD** type.

⁸ In effect, the distinction between Early and Late PD resurrects a proposed distinction between different levels of PD, as presented for example in Southworth 1995:267. In that scheme, what is called “Early PD” here was called “PD-1”, my “Late PD” was called “PD-2”, and “PSD” was called “PD-3”. Though that scheme was abandoned for reasons discussed above, it now seems necessary to partially revive it, though under a new name. The original proposal, though never published, was formulated by David McAlpin in connection with his work on Dravidian and Elamite (see McAlpin 1981).

community expands and becomes multilingual as a result of cumulative local changes, the resulting languages can undergo parallel changes, whether through actual contact or as a result of shared cultural or ecological conditions. An example from Dravidian is the PD verb ***var-** (DEDR5263), which means ‘write’ in most of the SD1 and SD2 languages (both literary and non-literary), and also in the non-literary CD languages Parji and Gadaba. Given that there is no other reconstructible term to support the presence of writing at the PD level—and considering that speakers of the non-literary languages have come to literacy only in recent historical times—it is improbable that this concept existed in PD times; it is more likely that these languages have independently derived the meaning ‘write’ from the older meanings of this word (‘draw, scratch, mark, etc.’), and/or have been influenced by the meanings of cognate words in the literary languages. Accordingly, ***var-** ‘to write’ is not an acceptable PD reconstruction.

Examples of this kind—and they can be multiplied—tell us that the possibility of diffusion must be taken seriously. We might even go so far as to say that only those etymologies which eliminate the possibility of diffusion *beyond a reasonable doubt* should be considered acceptable. Section 2.01 below provides some examples of this principle as applied to individual etymologies.

2. PROTO-DRAVIDIAN AGRICULTURAL VOCABULARY.

2.0. INTRODUCTION. The agricultural vocabularies of early and late Proto-Dravidian (see 1.2 above for the distinction) are discussed in 2.1 and 2.2 below, in terms of what they can tell us about the agricultural practices of the presumed Proto-Dravidian speech community. References are to the Appendix to this chapter.

The previous three sections (2.1-2.3) have all dealt in a sense with the same problem: the diffusion of meanings across language boundaries. For this reason it is necessary to articulate our assumptions about how meanings should be reconstructed, and especially how the problem of semantic diffusion can be dealt with. The following sections 2.01 and 2.02 undertake this task.

2.01. RECONSTRUCTING MEANING. Semantic change is one of the areas where the history of a language encounters the history of the real world: when (perceived) reality changes, or when people's (perceived) relationship to reality changes, that change is reflected in language. For example:

New elements in the culture of a community are often reflected by the presence of a new word in the language. Such new words may be *borrowings* from other languages: e.g. Old Indo-Aryan⁹ (OIA) **godhūma** 'wheat', **vṛīhi** 'rice', and **lāṅgala** 'plough' are assumed to be loanwords from unknown languages, as these words first appear in OIA in the South Asian subcontinent and are not traceable in other Indo-European languages. New words may also result from *internal innovation*: for example, the OIA word for 'sorghum', **yavākāra**, seems to be a compound meaning 'barley-shaped' (Turner 1966, entry no. 10437). Alternatively, a new element may be recognized merely by the creation of a new phrase, as in the expression 'Indian corn' used for 'maize' by the early European immigrants in North America.¹⁰ A similar example is seen in OIA **dhānya-kṣetra** 'grain-field', a compound of **dhānya** 'grain' and **kṣetra**, a word which originally meant 'territory, land' ('where one lives', from the root **kṣi-** 'dwell'; cf. Vedic Skt **Kuru-kṣetra** 'territory of the Kuru tribe'). The compound **dhānya-kṣetra** makes sense only in the context of settled agriculture, and is not found in early Sanskrit. Such cases, at least initially, involve the *widening* of a term to include new referents: 'Indian corn' was a new member of the class of things called 'corn', just as a **dhānya-kṣetra** 'grain-field' was a new kind of **kṣetra** 'field'. This type of change can also lead to *polysemy* or multiple meanings of the same word: thus in late OIA, **kṣetra** meant both 'land' and 'cultivated field'.¹¹

⁹ Old Indo-Aryan (Sanskrit/Vedic) examples are used here because they provide culturally appropriate illustrations from a language with a long recorded history.

¹⁰ English **corn**, which is cognate with Latin **granum** 'grain', at one time meant 'grain' or 'seed': cf. **acorn** (originally 'oak seed').

¹¹ The descendants of OIA **kṣetra** in MIA and NIA (e.g. Hindi **khet**) mostly mean '(agricultural) field', providing another example of the *narrowing* of meaning (see next paragraph).

When a cultural element becomes more salient than others of its kind, the term for the category as a whole may be *narrowed* or *restricted* in meaning to refer to that particular element: thus, when later generations of New World settlers started saying ‘corn’ instead of ‘Indian corn’--perhaps because this was the only kind of corn they knew, and therefore the qualifier ‘Indian’ seemed redundant to them--the meaning of ‘corn’ changed from ‘grain’ (which is still its meaning in Britain) to ‘maize’. A similar change seems to have happened in South Dravidian, where an old word for ‘food’ or ‘fodder’(***ar-ak-** DEDR490) came to refer to a particular grain: ***erāki** ‘ragi’, *Eleusine coracana* (DEDR812). A similar change has happened repeatedly--and presumably independently--in the history of agricultural terms: for example, in Panjabi the word for wheat is **kaṇak**, which in OIA and MIA meant ‘grain, cereal’ or ‘seed, granule’. Other similar cases are mentioned below. In these instances a class term referring to distinctly perceived types of objects becomes a term for a single perceived type: **A** grain becomes **THE** grain, i.e. the staple grain of a community. (Panjab has long been primarily a wheat-growing and wheat-eating region.)

Using an awareness of these processes--particularly the *widening* and *narrowing* of meanings--the historical linguist processes the data about the meanings of a group of related words and proposes the most likely *proto-meaning*, i.e. the meaning which is most probably the ancestor of all the attested meanings, from which the meanings found in the attested languages can be accounted for in terms of the types of changes exemplified above. To qualify as a proto-meaning, the meaning must be shared by languages of at least two subgroups. (In the Dravidian case, it is necessary to add the constraints on reliability noted for reconstructing proto-forms in 1.2 above.) For example, in the DEDR entry quoted below, the following meanings occur: ‘rat’, ‘bandicoot’, ‘mouse’, ‘small rat’. Of these, the meaning ‘rat’ is the only one shared by all three branches--SD: Tamil [Ta.]...Tulu [Tu.] plus Gondi [Go.] and Konda, CD: Kolami [Kol.]...Gadaba [Ga.], ND: Brahui [Br.]. The meaning ‘mouse’ is shared by SD₁ (Kannada [Ka.]) and SD₂ (Gondi[Go.]), and the meaning ‘bandicoot’ is found only in Tamil [Ta.] (SD₁).¹²

¹² The Telugu **ciṭṭ-eluka** and the Gadaba **sirel** are both compounds or phrases meaning ‘small rat’.

DEDR entry: **833 Ta. eli** rat, bandicoot. **Ma. eli** rat. **Ko. eyj** id. **To. isy** id. **Ka. eli, ili** rat, mouse. **Koḍ. eli** rat. **Tu. eli, ili** id. **Te. eluka**, (B. also) **elika** rat; **citt-eluka** mouse. **Kol. elka** rat. **Nk. elka** id. **Nk. (Ch.) elli (pl. -g)** id. **Pa. el (pl. elkul)** id. **Ga.** (Oll.) **sirel** mouse (i.e. small rat). **Go.** (A. Y. S.) **elli** rat; (Tr. Ph.) **allī (pl. alk)** id., (Tr. also) mouse; (W.) **allī** mouse (*Voc.* 367); (Koya Su.) **ellu** rat. **Konḍa elka** id. **Br. hal** id. Cf. 2630 Pa. **cīr el** and **2661 Ta. cuṇṭaṇ, cuṇṭ-eli**. DED(S) 710.

(Quoted from page 81 of *A Dravidian etymological dictionary* by T. Burrow & M. B. Emeneau, published by Clarendon Press, Oxford, 1984)

The semantic data in this entry can be summarized in the following abbreviated form, which provides the information needed for reconstruction, namely the meanings attested in each branch of Dravidian, and how they are shared among the different branches:

rat; mouse (S), bandicoot (S₁)

In this definition, as in all the definitions in the Appendix, the first word or phrase indicates the proposed proto-meaning, in this case ‘rat’. The fact that this meaning is shared by all the attested branches is indicated tacitly by the *absence* of any specification of branches (such as “S” for South Dravidian) following it. In addition to displaying the semantic data efficiently, such a definition allows the reader to evaluate the proposed proto-meaning, to see how it was arrived at, and to explore other possible proto-meanings. This definition implies that a word meaning ‘rat’ in PD was extended in meaning in Proto-South Dravidian to include the meaning ‘mouse’, and further extended in S₁ to include ‘bandicoot’--but in fact, we cannot be sure that the history went that way. Given that meanings are subject to both widening and narrowing, it is possible that the original meaning of PD ***el-i** was ‘large rodent’, including rats, bandicoots, and other similar creatures. Note that the other PD word in App. 1B for ‘rodent’, PD ***cuṇṭ-**, includes the meaning ‘shrew’, suggesting that the contrast between the two terms may have been simply between ‘larger rodents’ and ‘smaller rodents’. Such alternative possibilities are implied by this type of definition.

2.02. DEALING WITH THE PROBLEM OF DIFFUSION. Because of the problem of diffusion (1.3 above), in

some cases it may be inappropriate to reconstruct a meaning even though it is found in all subgroups. For example:

(1) The definition of PD **uʒ-V-* (DEDR0688) derivable under the above assumptions would be: “to plough (SCN), to till, to root up earth as pigs do (SN), (deriv.) tillage, agriculture, farmer, furrow (S), to harrow (C), (deriv.) a plough (N)”. Though the meaning ‘to plough’ appears in all three subgroups, it is not acceptable as a proto-meaning because (1) the meaning ‘to root up earth as pigs do’ is found in both SD and ND, and is likely to be older than the meaning ‘to plough’, and (2) this is the *only* meaning found in Malto, one of the two ND languages attested for this word. (Kudux, the other ND language, has the meaning ‘to plough’.) Thus it seems more reasonable to assume that the PD word referred first to an activity of pigs and was later widened in the individual languages (independently or through diffusion) to include various human digging activities, including ploughing.

(2) There are at least four words in which the meaning ‘rice’ is found in both SD and ND (see “?RICE” in Appendix 3A). However, none of these is a straightforward word for a cereal, comparable to the words **kot-V* ‘Italian millet’ or **conna-l* ‘sorghum’ (App. 3A). Among the ‘rice’ words, (1) **maŋɔ-* refers to various types of cooked cereal; (2) **kec-* emphasizes rice as a crop, and one language also has the general meaning ‘crop’; (3) **al-ak-* is similar, and includes ‘ear of grain’ among its meanings; (4) **(v)ar-iñci*, a reconstruction based on four different DEDR entries, includes among its meanings ‘seed’, ‘any grain’, and ‘rice or other grain’. Thus it is possible that these words referred originally to some other grain(s), and/or were general terms for ‘seed’, ‘grain’, ‘cooked cereal’, or the like. Thus the presence of rice is not established beyond a reasonable doubt, either at the Early or Late PD level.

2.1. EARLY PROTO-DRAVIDIAN AGRICULTURAL VOCABULARY.

BACKGROUND: The Early PD speech community had words for king/lord and chief, suggesting the beginnings of social ranking; this is reinforced by the presence of a word for obeisance. There is a concept of wealth or property, as well as payment of debts/fines; words for to sell, beggar/to beg, and steal/theft support this concept. Words for dwelling places (e.g. ‘hut’) seem not yet to be differentiated from words for habitation areas (such as ‘village’)—suggesting that PD villages may have originated as clusters of related households--though terms connected

with dwelling structures (beam, upper story) suggest something beyond simple huts. Words for clothing and adornment include footgear with straps, cloth, comb/to comb, and chignon. Words for tools include basic items like axe, knife, adze, bow, and digging tool. Household items include at least five distinct words for pots, probably designating vessels of different sizes, shapes, and functions, along with a word for ladle. (For details see Southworth 2005, Chapter 8, esp. pp. 238-42 and Appendix A.)

On the agricultural side, Early Proto-Dravidian shows words for the following domesticable animals: cattle (cow and bull), sheep/goat, ?buffalo,¹³ and dog. Wild animals include (wild)cat, bear, mouse, rat, primate (two words), some species of deer, ?squirrel (possibly limited to Central India), a general word for fish, and words for carp and (bull)frog. Reconstructible words for trees include the date (*Phoenix* spp.), toddy palm (*Borassus flabelliformis*), tamarind (*Tamarindus indica*), and palas (*Butea frondosa*).

The only names for specific food plants reconstructible to Early PD are onion/garlic, yam, and eggplant; no terms for cereals are present, though there is a word for food/fodder and some possible words for grain/seed. Words related to agricultural activities include: to drive (animals), graze, dig, grind (grain), winnow/churn, uproot/pluck, reap/cut, and terms for plough, husk/chaff, and digging tool. Several types of land were distinguished, including lowlying land, uncultivated land, and field.

2.2. LATE PROTO-DRAVIDIAN AGRICULTURAL VOCABULARY. The Late PD speech community differed from the Early PD community in a number of ways. Terms for Brahman/seer, lowcaste person, widow, and day wage point to changes in social structure, while terms for granary and market suggest commercial activity. New terms related to house construction (stair/ladder, door, post, screen/mat), along with a number of new words for tools (drum, iron/weapon, net/snare, shoulder-yoke, axle, boat, metal, chisel), four new words for pots, a word for ‘potmaking’, and a variety of new terms for household activities (basket, bell, rope, mortar, pestle, salt, flour,

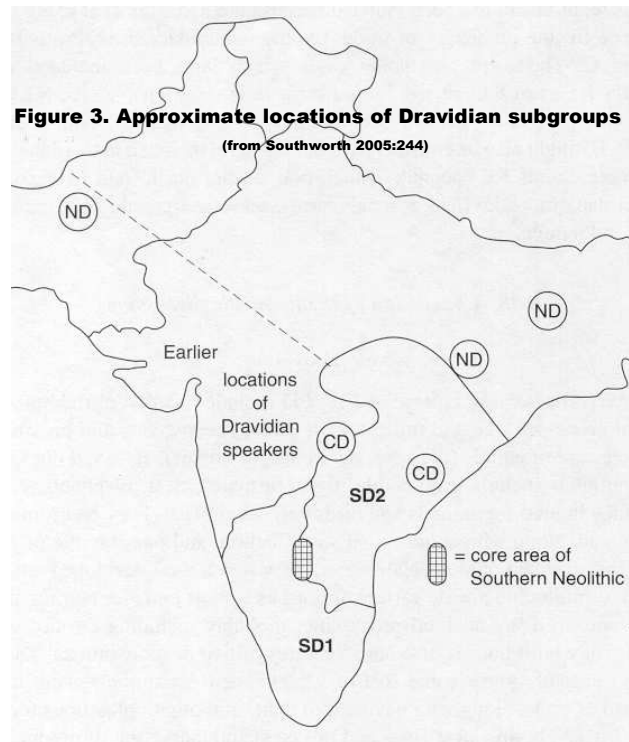
¹³ Or possibly referring to a larger category including cattle and caprids, and possibly some wild ungulates including deer.

fermented liquor, toddy, to weave, charcoal) seem to point to important technological innovations.

Innovations in agriculture are suggested by a number of new food plants, including sorghum (*S. vulgare*), another millet (? *Setaria italica*), horse gram (*Macrotyloma uniflorum*), black gram (*Vigna mungo*), pigeon pea (*Cajanus cajan*), green gram/mung (*Vigna radiata*), sesamum (*S. indicum*), Cuddapah almond (*Buchnanian lanzan* Sprengel), jujube (*Ziziphus mauritania*), and sugar cane (*Saccharum* sp.). There are still no reliable words for 'rice' at this stage (see 2.01 end). Other words connected with agriculture include new words for the plough (one possibly borrowed from a Munda or Austroasiatic language), grain storage container, animal stall/pen, herd/flock, sluice/drain, tank, well, fishhook, and cowbell.

Thus, while Early PD can perhaps be described as partly agricultural--practicing animal husbandry along with gathering and processing of food plants, but with very few identifiable crops--Late PD is clearly agricultural, as it shows a variety of crop plants, many of which are still grown in the area today, along with the necessary technological development for full-time agriculture.

3.1. LOCATION OF THE PROTO-DRAVIDIAN SPEECH COMMUNITY. Figure 3 shows the approximate

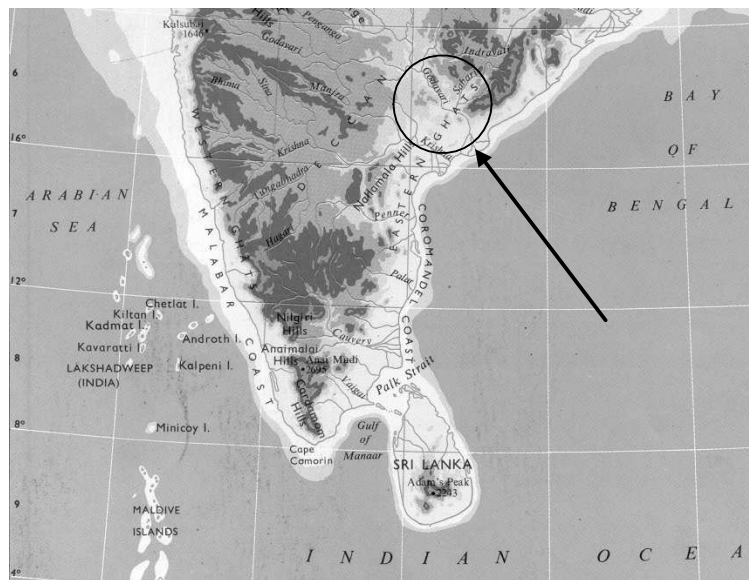


present-day locations of the three subgroups of Dravidian, along with earlier locations inferred from the evidence of place names in Maharashtra (Southworth 2005: chapter 9), grammatical features in Marathi, Gujarati, and Sindhi (Southworth 1974), and Dravidian-type kinship systems in the southern Indo–Aryan languages (see Trautman 1981). Since languages of all three subgroups are found in eastern central India, in the lower Godavari River basin, it would be most economical to assume that Proto-Dravidian was spoken somewhere in that region.¹⁴ This proposal is based exclusively on the current geographical distribution of the linguistic subgroups of Dravidian. Figure 4 shows the approximate location suggested for the last period of Proto-Dravidian unity. However, Proto-Dravidian may have been spoken in a wider area, extending perhaps into Central India or the western Deccan, which are now occupied mainly by Indo–Aryan languages. Furthermore, other forms of early Dravidian – pre-Proto-Dravidian, or other (at present unknown) branches of Dravidian – may also have existed in these same areas. Thus the suggested location for

¹⁴ Brahui is spoken far to the northwest, in Baluchistan. While this is often considered as evidence for an earlier presence of Dravidian in northern India-Pakistan, Elfenbein (1983) has given strong arguments for it being the result of a relatively recent movement.

Proto-Dravidian in the Godavari basin would not preclude the possibility that speakers of an earlier stage of Dravidian entered the subcontinent from western or central Asia, as has often been suggested.¹⁵

Figure 4. Suggested location for Proto-Dravidian

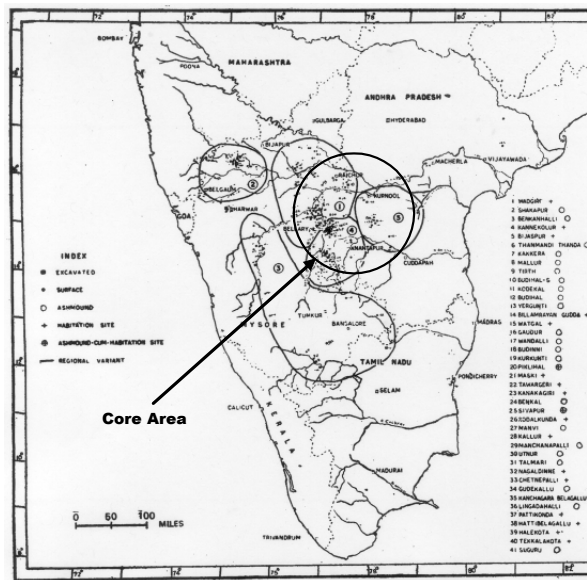


3.2. CHRONOLOGY OF PROTO-DRAVIDIAN. Linguistic evidence alone cannot tell us much about chronology. Working backward from certain phonological developments in SD languages, some of which can be dated by references in dateable texts, Krishnamurti suggests that the split of PSD1 into Proto-Kannada and Proto-Tamil might have been complete by around 600 BCE. The prior split of PSD into PSD1 and PSD2, for which there is also some textual evidence, may have been complete by about 1100 BCE (2003:501-2). Thus the three main branches might have been relatively independent from each other (very roughly) around the middle of the second millennium BCE, if not earlier.

¹⁵ While it is possible that the Dravidian loanwords in late Vedic Sanskrit may be explained as the result of northward expansion of Dravidian speakers from the peninsula (see 3.2 end), there is other evidence to suggest that some Dravidian language might have been spoken in the northwest of the subcontinent much earlier. A number of the Sanskrit words attributed (by some scholars) to Dravidian are also represented in the Kafir/Nuristani languages, spoken mainly in what is now northern Pakistan, and generally regarded as a separate third branch of the Indo-Iranian family (see Morgenstierne 1973, Degener 2002, Southworth 2005b). While this evidence could potentially push the period of Dravidian-Indo-Aryan contact back to a pre-Vedic period, nothing is certain without further investigation of these languages.

There is some evidence for contact between speakers of Old Indo-Aryan and some Dravidian language during the Vedic period; Witzel (1999) suggests that this could only have happened after about 1200 BCE, as no Dravidian words are found in the early Rigveda. While this evidence for Dravidian-OIA contact has often been interpreted to suggest that Dravidian speakers passed through the Panjab or neighboring regions while migrating from the northwest (Iran or Central Asia) into Peninsular India, the present evidence suggests another possibility. As noted above, there is evidence for the presence of a pre-Indo-Aryan/Dravidian substratum in the northern Deccan (Maharashtra and Gujarat), and probably also in Sindh (southern Pakistan). It is possible that this substratum was not a remnant of an earlier migration, but rather the result of a later (post-Late PD, or even post-PSD) northward expansion of Dravidian speakers. Since most of the presumed Dravidian loanwords in OIA are traceable to South Dravidian (see Southworth 2005: Ch. 8, App. C, pp. 282-3), this would mean that South Dravidian was already distinct from the other branches by the last quarter of the second millennium BCE.

The Southern Neolithic Archaeological Complex (after Padayya)



4. PROTO-DRAVIDIAN AND ARCHAEOLOGY.

4.1. THE SOUTHERN NEOLITHIC. The most promising archaeological complex which might be connected with the Dravidian languages is the Southern Neolithic complex, which made its first appearance in the mid-third millennium BCE in the core area shown in Figure 5: the present Gulbarga, Raichur, and Bellary districts of Karnataka, and Kurnool Dt. of Andhra Pradesh, and thereafter spread – to judge by similarities in pottery styles, house construction, plant remains, and other features – to “a very vast area from the Krishna-Tungabhadra in the north (or if we include the evidence from Daimabad, on the Godavari) to the Kaveri in the south, and from the Krishna-Godavari mouths in the east to Dharwar in the west” (Sankalia 1977:142). Note that the core area is located in the vicinity of the upper Krishna River, not far from the area assumed on linguistic grounds to be the home of Proto-Dravidian. The dwellings found in early Southern Neolithic sites were one-room houses with low mud walls surmounted by reed screens and thatched roofs, constructed on rock terraces linked by some sort of drainage systems. Tools included stone axes, adzes, choppers, wedges, scrapers, hammers, and lithic blades, and in some sites copper axes. Querns and grindstones were presumably used for processing grains. The range of pottery forms was “amazing” (Sankalia 1974:521). Some sites are associated with nearby ashmounds, presumably remnants of livestock pens (Allchin 1963). Animal remains include cattle (*Bos indicus*), buffalo, goat, and sheep at many sites; wild pigs, deer species (*Axis*, *Cervus*), antelope, elephant, chicken, and rat/rodent bones are also found, along with remains of fish and freshwater mussels and snails (Korisettar et al. 2001). Rock-paintings and etchings contained depictions of bulls, deer, gazelles, sheep, goats, horses, peacocks, and serpents. Ornaments included bead necklaces and ear pendants (?) of shell, semi-precious stones, terracotta, gold and copper (Sankalia 1974:513 ff.).

4.2. COMPARISON OF ARCHAEOLOGICAL AND LINGUISTIC FINDINGS. The above list of faunal remains and depictions compares favorably with those listed for Late PD in Appendix 1A-B, though canids, felids, bears, and primates (along with several smaller animals such as the mongoose, squirrel, porcupine) are unreported on the archaeological side, while chickens (found in 21.7% of sites, according to Korisettar et al. 2001) are missing from the linguistic inventory. Table 1 shows the correspondences between the crop plants identified archaeologically in Fuller et al. (2001)¹⁶

¹⁶ The lefthand side of Table 1 is reproduced from Fuller et al. 2001:175, with English meanings added.

and those reconstructed here for Early and Late Proto-Dravidian (see Section 3 of the Appendix for details).

Explanation of symbols and abbreviations in Table 1:

--Column 2, UBIQUITY, shows the percentage of sites where plant remains were found in Phase II (Total: 5 sites) and III (Total: 7 sites) in the Southern Neolithic chronology of Allchin & Allchin (1982), equivalent to 2300-1800 cal. BCE and 1800-1200 cal. BCE respectively.

--Figures in bold represent “presence of inferred crop, possibly derived from domestication in Southern India”; figures followed by the letter “i” represent items which are “present as crop, introduced from another region”; plain type without “i” indicates items “present in limited quantity, possibly gathered from wild”. Bold type followed by “?” indicates uncertainty as to whether the item is cultivated or wild.

--The reconstructed forms for Early PD and Late PD in the right-hand column are found in the Appendix to this chapter; those labeled “PSD” OR “PSD1” are from Southworth 2005: Ch. 8, Appendices B and C. Reconstructions in **bold italics** are originally from Krishnamurti 2003:523-32.

Nineteen of the twenty-six archaeologically identified plants (73%) are matched by PD reconstructions, mostly with identical or very similar meanings—though there are some noticeable differences, particularly among the millets. The two millets which have been identified archaeobotanically as staples of the S. Neolithic, *Brachiaria ramosa* and *Setaria verticillata*, correspond to the linguistically reconstructed *Sorghum vulgare* and *Setaria italica* respectively. Given that the latter two millets were introduced later from elsewhere and have largely replaced the former two, it is not surprising that the older terms were extended to include the new varieties.¹⁷

TABLE 1

CROP PLANTS IN THE SOUTHERN NEOLITHIC AND IN PROTO-DRAVIDIAN

¹⁷ According to Dorian Fuller: “It is certainly plausible for a millet word to get transferred to Sorghum...Setaria is also bristley making it like pearl millet...Loose-eared varieties of sorghum might also be linked to Brachiaria” (personal communication, 12 July 2005).

CROP PLANTS		UBIQUITY		PD LEVEL
PULSES		Ph. II	Ph. III	
horsegram	<i>Macrotyloma uniflorum</i>	.80	.86	Late PD *kol horsegram
mung	<i>Vigna radiata</i>	.80	.86	Late PD *pac-Vt/Vl mung
urad	<i>Vigna cf. mungo</i>	.20	.43	Late PD *uz-untu, *min(t) urad
	<i>Vigna trilobata</i>	.20	.29	-----
hyacinth bean	<i>Lablab purpureus</i>	.20i	.29i	Proto-Tamil *ava-rai <i>Dolichos lablab</i>
pigeonpea	<i>Cajanus cajan</i>	---	.29i	Late PD *tu-var- pigeonpea
MILLETS & related grasses				
browntop millet	<i>Brachiaria ramosa</i>	1.00	.71-1.00	Late PD *conna-l sorghum
bristley foxtail	<i>Setaria verticillata</i>	1.00	1.00	Late PD *kot-V <i>S. italica</i>
sawa millet	<i>Echinochloa cf. colona</i>	---	.43	-----
yellow foxtail	<i>Setaria pumila</i>	.20	.14	-----
little millet	<i>Panicum sumatrense</i>	.20	.29	-----
kodo millet	<i>Paspalum scrobiculatum</i>	---	.14	PSD *(v)ār/ar-Vk-
pearl millet	<i>Pennisetum glaucum</i>	.20i	---	PSD *kam-pu bulrush millet
finger millet	<i>Eleusine coracana</i>	---	.14i	PSD *ira(k) ragi
LARGE CEREALS				
barley	<i>Hordeum vulgare</i>	.60i	.29i	-----
wheat	<i>Triticum</i>	.40i	.29i	?Late PD *kūli wheat/rice
rice	<i>Oryza sp.</i>	.20(i?)	.14(i?)	?Late PD *(v)ar-iñci rice
MISC. FOOD/CROP PLANTS				
jujube	<i>Zizyphus sp.</i>	.60	.29	Late PD *irak- jujube
fig	<i>Ficus sp.</i>	---	.43	Late PD *cuv- fig
java plum	<i>cf. Syzigium cumini</i>	.20	.14	Late PD *ñēr-al jambu
globe cucumber	<i>Cucumis cf. prophetarum</i>		.20 .29	-----
luffa	<i>cf. Luffa cylindrica</i>	---	.14i	Late PD *pīr-
flax	<i>Linum usitatissimum</i>	---	.14i	PSD1 *ak-V-ce
cotton	<i>Gossypium sp.</i>	---	.14(i?)	PSD *par-utti
okra	<i>Abelmoschus sp.</i>	.20	.57	-----
parenchyma fragments		1.00?	1.00?	Early PD *kic-ampu
Not identified archaeologically in S. Neolithic:				
onion/garlic	<i>Allium sp.</i>	-----		Early PD *uḷi
eggplant	<i>Solanum sp.</i>	-----		Early PD *vaz-Vt-
sesame	<i>S. indicum</i>	-----		Late PD *nū(v)-
sugarcane	<i>Saccharum sp.</i>	-----		Early PD *cet-Vkk
hemp	<i>Cannabis sp.</i>	-----		?Late PD *boy-Vl

Of eighteen plant names occurring in Phase II, five are unrepresented in the reconstructions; of the remaining thirteen, one corresponds to an Early PD reconstruction and one corresponds to a Proto-Tamil (post-PSD1) reconstruction, while ten correspond to Late PD reconstructions, suggesting a reasonable match between Phase II of the Southern Neolithic and Late Proto-Dravidian. Of eight plants occurring only in Phase III, two are unrepresented in the reconstructions; of the remaining six, two correspond to Late PD reconstructions while four correspond to PSD reconstructions. Though these numbers are small, the chronological trends are clearly in the same direction. Perhaps the most noticeable discrepancy is the absence of the final five items from the archaeological record; however, the presence of these words in Early and/or Late PD is not inconsistent with what is known about them, even though no signs of them have yet been found in Southern Neolithic sites.¹⁸

The two assemblages (Late PD and Phase II of the Southern Neolithic) are reasonably well-matched in their general level of agricultural technology: we see a well-developed agriculture accompanied by pastoralism and hunting. The most glaring discrepancy here is the presence of words for the plough and ploughing, some of which are reconstructible to Early PD. Although the Early PD verb **uz-V-* (App. 4A, see discussion in 2.02 end) has been glossed as “TO DIG” rather than as “TO PLOUGH”, there is at least one secure Early PD word for the plough (**ar-V-*, App. 4B). Though there is no archaeological evidence for ploughs or ploughing in these sites, the linguistic evidence is strong enough to suggest that there was some activity that was in some way ancestral to ploughing, whatever it might have been, and that the meanings of these terms evolved over time along with the agricultural technology.

In any such enterprise it must be acknowledged that, while a good number of items have been reasonably well identified, the linguistic inventory includes a number of items which probably belong in reality to later periods, or which were only present in limited contexts at the earliest period. This result is in a sense predictable in terms of what was said earlier (1.3) about the problem of diffusion. As for the items which are present in the linguistic inventory and absent

¹⁸ Dorian Fuller considers the histories of onion/garlic, eggplant, sesame, and sugarcane to be “problematic” for various reasons, “...although none are beyond possibility in some form. I do see their best fit between the ‘classic’ Southern Neolithic and your late PD” (personal communication, October 2005).

on the ground (such as cats and eggplants), we can only hope that they may be unearthed at some point, or that reasons can be found why the linguistic and archaeological records disagree.

5. CONCLUSIONS.

5.1. IMPLICATIONS FOR PREHISTORY.

In spite of a few discrepancies, the agricultural vocabulary reconstructed for Proto-Dravidian matches the archaeological record fairly closely. Not only is there a general match between Late PD and the Southern Neolithic in terms of the general level of material culture and technological development; there is a particularly close (though not perfect) correspondence in the order of introduction of new crop plants (4.2)—a subject to which particular attention has been given here. This correspondence was made possible, in part, by a sharpening of the criteria for reconstructing meanings (1.3, 2.01).

Among other things, correspondences of this kind are important in opening further the dialogue between archaeologists and historical linguists. If what linguists say makes sense to archaeologists—and I hope this is the case with at least some parts of this paper—then the door is open for conversations about the ways in which the two disciplines can serve to support, supplement, and question each other's conclusions. If linguists can produce rigorous reconstructions which provide close matches to archaeological findings, then prehistorians will have more reason to trust linguistic reconstructions of more intangible things, such as social structure and ideology. Such a dialogue may well lead to further refinements in methods of reconstruction which will produce even better matches with the archaeological record. On the linguistic side, the first step in that direction must be to present a clear picture of what can and cannot be done: while linguists may be confident in our ability to reconstruct the *forms* of ancient words, we must convey clearly the inherent problems involved in reconstructing the *meanings* of those forms (see 1.1-1.3, 2.01 for examples).

5.2. IMPLICATIONS FOR HISTORICAL LINGUISTICS. Though the close match between Proto-Dravidian and the Southern Neolithic may be gratifying to the researcher, in a sense there was no need to prove that this archaeological complex is connected to Dravidian, since there are really no other likely candidates. From the viewpoint of historical linguistics, what is more important is that it has been shown possible to find *linguistic* criteria which lead to a closer match between what is reconstructed and what is recorded by the archaeologist. With some initial hesitation, I have in this paper rejected the accepted view of the genetic structure of Dravidian, treating South and Central Dravidian in effect as a single branch, even though there are no fully shared innovations between the two branches which would justify such a classification (see **1.2**). This was done because of indications of some grammatical diffusion (**1.2**), along with evidence of early and continued borrowing of words between the two branches, suggesting that they were perhaps never truly independent of one another. In addition, the paper sketches an approach to the reconstruction of meaning which, so to say, “bends over backward” in an effort to deal with the problem of diffusion (**1.3, 2.01**). I believe that this approach has proven effective in terms of the close match between Proto-Dravidian agricultural vocabulary and the archaeological record, particularly in the area of crop plants (**4.2**, Table 1). Of course, the problem of diffusion has not been eliminated, as shown e.g. by the discussion of the plough and ploughing in **4.2**; and equally certainly, a single application of the method does not prove that it will work everywhere. Further work is certainly necessary.

APPENDIX: PROTO-DRAVIDIAN RECONSTRUCTIONS

NOTATIONS AND ABBREVIATIONS:

Column 1: Glosses preceded by “?” are questionable: while the word may have existed at the level of PD specified in Column 3, the meaning may not be reconstructible to that level. (See **2.01** above for discussion.)

Column 2: --Reconstructions in **bold italic type** are from Krishnamurti 2003, pp. 523-32; other reconstructions are by the author except where otherwise noted.
--V = unspecified vowel

Column 3: --E, L = Early PD, Late PD (see discussion in **1.2**).
--E?, L? = reconstructibility to the specified level is questionable.

Column 4: --Meanings listed without a following branch specification, such as “(S)” or “(CN)”, are found in all the attested branches.
--SD, SD₁, SD₂, CD, ND are abbreviated as S, S₁, S₂, C, N respectively; S = S₁ & S₂.
--Botanical names are from DEDR, updated in some cases from Fuller et al. 2001.
--See **2.01** above for the structure of definitions.

Column 5: --DEDR# is the number of the entry in the *Dravidian Etymological Dictionary* (Burrow & Emeneau 1984).

Column 6: --Attestation of the etymology in the branches of Dravidian (see Col. 4 description for abbreviations).

--{...} = “Central India only”: the etymology may be questioned because of the contiguity of the attested languages (see **1.2**).

--Within each category or sub-category, the earlier/more reliable reconstructions precede the later/less reliable ones whenever possible. (See discussion in **1.2** above.)

--Questionable items are explained in endnotes when deemed necessary.

1. FAUNA:

1A. DOMESTICABLE ANIMALS

GLOSS	PD WORD	E/L	DEFINITIONS	DEDR#	ATT.
COW	*ā(m/n)	E	female bovine, esp. <i>Bos</i> sp.; fem. <i>Bos</i> /buffalo/sambur (S)	0334	SN
BULL ¹⁹	*er-utu	E	male of <i>Bos</i> : bull/bullock/ox/steer; male buffalo (S)	0815	SCN
?BUFFALO	*kaṭ-V	E	young (male) buffalo; bull; ram; young (male) <i>Bos</i> /sheep/goat (S); bullock (N) --cf. *kaṭ- ‘deer’ in App.1B below	1123	SN
SHEEP/GOAT	*y Āṭu	E	sheep/goat; she-goat (N)	5152	SN

¹⁹ DEDR0816, for which Krishnamurti reconstructs *er-umV- buffalo, is attested only in South Dravidian (S).

DOG	(1) *cū	E	call to dog	2718	S ₁ CN
	(2) *ñāl-	E	dog	2916	SN
	(3) *naH-ay/att/-kuzi	L	dog ; wild dog--note Nahali nāy dog	3650	SC
CAT	(1) *ver-uku	E	cat ; tomcat, wild cat, toddy cat= <i>Paradoxurus niger</i> , civet cat, jungle cat, marten, mongoose (S)--note Nahali berko , berkū cat	5490	SCN
	(2) *pill-	L? ²⁰	cat (cf. IA *billa- cat)	4180	SC
HORSE	(1) *ivuḷi	E? ²¹	horse (Burrow 1972)	0500	S ₁ N
	(2) *kHutt-	L	horse (<IA? cf. Skt ghoṭaka horse)	1711b	S ₂ C
ASS (<i>Asinus</i> sp.)	*kaṣ-ut-ay	L	ass ; term of abuse (S ₁)	1364	SC
PIG	*pan-ti	L	pig (domestic?)	4039	SC
1B. WILD ANIMALS					
BEAR	*eḷ-V-ñic-	E	bear	0857	SCN
RODENTS	(1) *coṇṭṭ-	E	mouse ; musk-rat, small rat (SC), shrew (S ₂)-- note Santali (Munda) cūnd , Pinnow 1959:95	2661	SCN
	(2) *el-i	E	rat ; mouse (S), bandicoot (S ₁)	0833	SCN
PRIMATES	(1) *muy-cc-	E	blackfaced monkey (SC), langur (S), baboon (N)	4910	SCN

²⁰ Questionable item: the Kolami (C) form is identical to that of Ta Ka & Te, while the Parji (C) form is identical to that of Konda & Kuvi (S₂).

²¹ Krishnamurti (2003:12) considers all the Dravidian 'horse' etymologies doubtful, and does not mention Burrow's *ivuḷi, perhaps considering the matching of Old Tamil **ivuḷi** and Brahui **hulli** to be phonologically too far-fetched.

	(2) <i>*kor-V-nkk-/-ntt-</i>	L	monkey ; macao, black monkey, ape (S), redfaced monkey (C)	1769	SC
DEER	(1) <i>*kaṭ-</i>	L	sambur (SC); bison, elk, fallow deer, Indian stag, musk deer, species of antelope, bison, sambur, nilgao (S), male of the bādō-deer (N)	1114	SC(N)
	(2) <i>*uṣ-u-pp-</i>	E	deer sp.: deer, porcine deer, axis, spotted deer, stag	0694	SC
	(3) <i>*mā-y-</i>	E	animal, beast (esp. horse, elephant), deer, bull (mythology), horse, sambar, elk (S); antelope, red deer (N) --note Nahali māv horse	4780	SCN
	(4) <i>*koṭ-</i>	L	bison, nilgai ; kind of deer, blue bull (S ₂)	1664	{S ₂ C}
WILD CANIDS	(1) <i>*tōṣ-(nt-)</i>	E	wolf (S); jackal (N)	3548	SN
	(2) <i>*nari-(kkV)</i>	L	jackal/fox; tiger (S ₁)	3606	SC
SQUIRREL	<i>*ci t(r)/cir(k)-</i>	E?	squirrel (cf. OIA cikroḍa , Kharia (Munda) ciḍra etc.: Pinnow 1959:157)	2518(a)	{S ₂ CN}
PORCUPINE	<i>*cey-t-</i>	L(E?) ²²	porcupine (OIA sedhā)	2776	SC(N?)
ELEPHANT	<i>*y Ānay</i>	L	elephant	5161	SC
TIGER	<i>*pul-i</i>	L	tiger ; leopard, cheetah (S ₂) (cf. Pkt pulli)	4307	SC
(WILD) CAT	<i>*pā(vu)k(k)-</i>	L	(wild) cat ; male cat (S)	4106	SC
MONGOOSE	<i>*mūrik-ūc-</i>	L	mongoose (cf. OIA madguśa mongoose)	4900	SC
1C. AQUATIC CREATURES					
FISH (gen. term)	<i>*mīn</i>	E	fish	4885	SCN
CARP	<i>*kiṇṭ-</i>	E	a fish, carp ; a freshwater fish, <i>Barbus</i> (S ₁); <i>Cyprinus</i> (S ₁)	1947	SN
FROG	<i>*par-Vṇtu</i>	E ²³	bull-frog (S ₁ N), frog (SC), toad (S), muscle/biceps (S ₂ C)	3955	SCN

²² The Malto (ND) form **citru** is questioned in DEDR2776, perhaps because of its phonology. Note the similar form ***cōy** porcupine in DEDR2852 (SD only).

²³ Though it occurs only in Central India and Tulu, this is probably an Early PD word which has been replaced by other words in the literary languages.

PRAWN	*et-	L	prawn/shrimp , bivalve shellfish, mussel (S ₁)	0517	SC
CRAB	*ñaŋt-	L	crab ; lobster, scorpion (S ₁)	2901	SC
1D. FOWL					
CROW	*kāk-/*kāww-	E	crow , <i>Corvus splendens</i>	1425	SCN
CRANE	*korV-nk(k)-	E	crane sp.; heron (SC), stork, paddy bird, gallinaceous fowl, anril bird (DEDR331), duck (S); demoiselle crane (N)	2125	SCN
DOVE/PIGEON	*put-Vc-	E	dove/pigeon ; sort of pigeon, small speckled ground-dove, blue rock-dove (S)	4334	SCN
(IMPERIAL) PIGEON	*pok-	E	green pigeon ; imperial pigeon, <i>Carpophaga sylvatica</i> (SC); green dove (S ₂)	4454	SCN
PEACOCK	(1) *pī-lV/cV/kV	E	peacock tail ; p's tail, eye in p's tail, p's tail feather, tail (S), rudder (S ₂), feather (C)	4226	SCN
	(2) *pur-/pūr-i-l	L	peacock tail	4367	SC
	(3) *ñam-V-l	L	peacock , ²⁴ peafowl (S ₂)	2902	SC
	(4) *mañ(ñ)-il	L	peacock	4642	SC
PARROT	*kił-	L	parrot	1584	SC
1E. REPTILES					
LIZARD	*kav-ułi	E	lizard ; house lizard, big lizard, poisonous lizard smaller than the monitor, iguana (S)	1338	SN
CROCODILE	*mōc-/*moc-V-ł-	E	crocodile	4952	SN
BLOODSUCKER LIZARD	*ōn-tti	E	bloodsucker lizard ; chameleon, large jungle lizard, salamander (S)	1053	SN

²⁴ Items (3) and (4) here are presumably derived from a single original word *ñam- ~ *mañ- 'peafowl'. See Southworth 2005:92 for further discussion of this word.

SNAKE	<i>*carac-</i>	L	snake ; cobra, snail (S ₂); krait (C)	2359	SC
	<i>*pāmpu</i>	L	snake	4085	SC
	<i>*cer-</i>	L	snake	2816	SC
PYTHON	<i>*māc-un-</i>	L	python ; rock python (S ₂)	4793	SC
IGUANA	<i>*uṭ-ump-</i>	L	iguana ; a lizard, a big lizard, ?scaly pangolin, anteater (S)	0592	SC

2. TREES

DATE	<i>*cānt(t)-</i>	E	date tree/date palm ; wild date palm (SC); <i>Phoenix dactylifera</i> [an introduced species], <i>P. farinifera</i> , <i>Elate sylvestris</i> , sago-palm, <i>Caryota urens</i> , <i>P.</i> or <i>Elate paludosa</i> (marshy date tree) (S); <i>P. acaulis</i> (C) --note similar words in Munda, e.g. Mundari kindad ; also Proto-Bantu *mu-kindu (see Southworth 2005:197)	2617	SCN
TODDY PALM	<i>*tāz</i>	E	palmyra or toddy palm , <i>Borassus flabelliformis</i> ; palm tree (N)	3180	SCN
TAMARIND	<i>*cin-tta</i>	E	tamarind , <i>Tamarindus indica</i> (tree/fruit) (SC), tamarind seed, sour (N)	2529	SCN
PALAS	<i>*mur-ukk-</i>	E	palas , <i>Butea frondosa</i> ; <i>Erythrina indica</i> (S ₂)-- note Santali (Munda) murud , etc. (Pinnow 1959:93)	4981	SCN

The above list includes only those tree names reconstructible for Early PD. Others include: the Indian horseradish tree (*Moringa pterygosperma* = drumstick tree), areca palm, teak, mango, jack, pipals, figs, bamboos, myrobalans, jujube (see Southworth 2005: Chapter 8, Appendix A, Section B for a fuller list).

3. FOOD PLANTS:

3A. CEREALS

FOOD/FODDER	<i>*ār/ar-ak</i>	E	food/fodder	0490	SN
?GRAIN/SEED	(1) <i>*kūli</i>	E? ²⁵	paddy; grain, seed (S), wheat (N)	1906	S(?N)

²⁵ The ND cognate here (Brahui **xōlum**) is suspect, as it may be a later borrowing from Skt **godhūma**.

	(2) *mañci-k	E?	a grain of rice (S), seed in gen. (N); husked rice, raw rice (S ₂), rice, unhusked rice, broken pieces of rice after pounding (C)	4639	{S ₂ CN}
?RICE ²⁶	(1) *mañt-	E	(cooked) ? rice ; dough of rice flour, porridge (S ₁), cooked rice, porridge, meal, ricewater (N)	4679, 4683	S ₁ N
	(2) *kec-	E	? paddy ; ²⁷ (paddy) crop (S ₁)	1936	S ₁ N
	(3) *al-ak-	E	? rice/paddy ; ear of grain (S ₁)	0255	S ₁ N
	(4) *(v)ar-iñci	L	(a) ? rice ; any grain, corn, seed	0215	S ₁
			(b) ? rice ; seed (S ₂), wild rice (S ₁), (rice) straw (C)	5265	SC
			(c) ? rice, paddy ; food (S ₁), boiled & strained rice (S ₁), husked rice (S ₁), unhusked rice (S ₂ C)	5287	SC
ITALIAN MILLET	*kot-V	L	Italian millet , <i>Setaria italica</i> , <i>Panicum italicum</i> , <i>Panicum miliare</i> ; <i>Eleusine coracana</i> (S ₂)	2163	SC
SORGHUM	*conna-l ²⁸	L	sorghum , great millet, <i>Sorghum vulgare</i> ; maize (S), small maize, jowar (C), millet (S ₂)	2896	SC
3B. LEGUMES					
HORSEGRAM	*koḷ	L	horsegram (<i>Macrotiloma uniflorum</i>); <i>Dolichos uniflorus</i> (SC),	2153	SC

²⁶ Although several of the words here have ‘rice’ among their meanings in both SD and ND languages, none of these etymologies fulfills the criteria set out in 1.3 above; see 2.01 for details.

²⁷ Tamil and some other Drav. languages distinguish between rice in the field (paddy, Ta. **nellu**) and the same cereal after harvesting and processing (Ta. **arici**). Tamil also distinguishes between the latter and cooked rice, which is often referred to by different terms in different caste contexts: e.g. Brahmin Ta. **cātam**, non-Br. Ta. **cōru**, in keeping with the traditional caste separation of matters relating to food (see Ramanujan 1968).

²⁸ ***connal** is possibly formed from ***cōḷ-nel**, the second element being a word found otherwise only in SD: DEDR3753 ***nel** rice/paddy; also grain (in the field or unhusked). The first element is found only in SD: Ta Ma **cōḷam**, To **swiḷm**, Ka Tu **jōḷa**, **Koḷ. joḷa**, and may be a loanword from an unknown source.

Glycine tomentosa (S)

BLACK GRAM ²⁹	(1) *uz-untu (2) *min(t)-	L L	urad , black gram (<i>Vigna mungo</i>); kidney bean (S) black gram (<i>Vigna mungo</i>); <i>Phaseolus radiatus</i> (S ₂), <i>P. mungo</i> (C)	0690 4862	SC SC
PIGEON PEA	*tu-var-	L	toor , <i>Cajanus cajan</i> (prev. <i>Cajanus indicus</i>); dhal, jungle dhal, <i>Atylosia Candollei</i> (S ₁)	3353	SC
MUNG	*pac-Vt/Vl	L	green gram (<i>Vigna radiata</i> , prev. <i>Phaseolus mungo</i>); leguminous plants (S) ³⁰	3941	SC
3C. OTHER FOOD/CROP PLANTS					
ONION/GARLIC	*u i	E	onion ; garlic (SC)	0705	SCN
YAM	*kic-ampu	E	(kind of) yam ; Indian kales, <i>Colocasia antiquorum</i> , a garden plant, <i>C. indica</i> , <i>Caladium esculentum</i> , taro, <i>Arum colocasia</i> (S), <i>Arum colocasia</i> , <i>Colocasia antiquorum</i> (C)	2004	SCN
EGGPLANT	*vaz-Vt-	E	eggplant/brinjal , <i>Solanum melongena</i> BhK; <i>S. Indicum</i> , Indian nightshade (S)	5301	SCN
SESAME ³¹	*nū(v)-	L	sesamum (<i>S. indicum</i>)	3720	SC
SUGARCANE	*cet-Vkk	L	sugarcane	2795	SC
CUDDAPAH ALMOND	*cir/cīr-	L	chironji (nut/tree) (<i>Buchnanania lanzan</i>); <i>Buchanania angustifolia</i> , <i>B. latifolia</i> , sp. of forest tree (S ₂)	2628	SC

²⁹ These two words refer to the same plant, but have different distribution: *uzuntu occurs in S₁, Telugu, and one branch of C (Kol-Nk), while *min(t)- occurs in Telugu and the other branch of C (Pa-Ga). The DEDR entries provide no clue as to possible differentiation of meaning within Telugu, which has both words; possibly they belong to different Telugu dialects. In any case, both terms are reconstructible to Late PD.

³⁰ This word seems to contain the Late PD *pac(c)- green, yellow; fresh, unripe DEDR3821 (SC) (BhK2003:529), though the second element has not been identified. If so, this internally generated name may indicate that this was not a native species.

³¹ Another word for sesame, *e||u (DEDR0726), is found only in SD but has been linked to Akkadian **ellu** sesame, suggesting the possibility that speakers of Dravidian were involved in the trading of sesame and other products between the Indus Valley and Mesopotamia in Harappan times (Southworth 2005:203-4, Bedigian & Harlan 1986).

JUJUBE	*irak-	L ³²	jujube , <i>Zizyphus mauritania</i> Lam.; wild plum (N)	0475	SC(N)
FIG ³³	*cuv-	L	fig pipal , <i>Ficus religiosa</i> ; white fig, stone fig, wavy-leaved fig tree, <i>Ficus</i> sp. (S)	2697	SC
JAMBU	*ñēr-al	L	<i>Eugenia jambolana</i> Lam., <i>Syzygium jambolanum</i>	2917	SC
HEMP	*boy-Vl	L?	hemp/flax ; sunn hemp (S ₂)	4535	{S ₂ N}
LUFFA	*pīr-	L	sponge gourd , <i>Luffa acutangula</i> ; snake gourd, bitter cucumber (S)	4224	SC

4. OPERATIONS, TOOLS, ETC.

4A. OPERATIONS

DRIVE (animals)	*mīt-	E	drive (animals); drive (buffaloes) on migration (S), drive away, drive (an area) for game (N)	5593	SN
GRAZE	*mēy-	E	to graze & derivatives (grazing ground, grass etc. for grazing)	5093	SCN
TO DIG ³⁴	*uḻ-V-	E	to root up earth as pigs do (SN=Mt), to plough (SCN/Kx), to till, (deriv.) tillage, agriculture, farmer, furrow (S), to harrow (C), (deriv.) a plough (N=Kx)	0688	SCN
GRIND (grain)	*nūt-	E	to crush, grind (SN); to thresh (SC), broken rice (SC), powder, grit (S)	3728	SCN
SIFT/WINNOW (1) *te -		E	to sift ; to winnow (grain (S), flour (N)); to sprinkle, scatter, waft (S)	3435	SN
	(2) *nē(m)p-	E	to winnow ; to thresh, trample, tread, beat (N)	3769	SN

³² The Malto **ilkru** ‘wild plum’, with **-l-**, may or may not be related; in any case, its meaning indicates that the meaning ‘jujube’ cannot be reconstructed beyond Late PD.

³³ This is one of numerous PD words for the fig tree and/or its fruit; like this one, most refer to more than one variety. See Southworth 2005:209 for a fuller list.

³⁴ Though the meaning ‘to plough’ is shared by all three branches, it cannot be reconstructed reliably for Early PD: see discussion in **2.01** above.

TO CHURN	*kaʈ-	E	to churn ; turn in lathe, stir/mash (with ladle), knead, grind in pestle, polish, rub together (pieces of wood to excite fire) (S)	1141	SN
TO UPROOT/PLUCK	*kaɭ-	E	pluck (S), uproot, gather (vegetables, grass for fodder) (N); weed, pluck, scoop out, pull off, remove, destroy, (deriv.) weed, weeds and grass standing in corn (S)	1373	SN
REAP/CUT	(1) *koy-	E	to reap, to cut ; to mow, cut grass etc. (SN), to cut hair (SC), to pluck (S), to harvest (SC) (deriv.) sickle, knife, grain stubble, to gather (S)	2119	SCN
	(2) *ar-	L	to cut, reap, harvest ; to gnaw, prune, sever (S), to saw (C)	0212	SC
	(3) *aru-	L	sever (SCN); crop, harvest (S), to harvest (C)	0315	SC(N)
TO HUSK	*ik-	L?	to husk /half-husk; to pound (grain) (C), to grind (N)	0535	{CN}
HUSK/CHAFF	(1) *uɪk	E	husk, chaff flour, bran, husk or chaff of paddy, husk of rice or corn, paddy husks (S)	0637	SN
	(2) *poŋtɕ-	L	husk, chaff, skin /peel of fruit; dust, pod, legume, bark, blighted ear, empty husk/pod (S)	4491	SC
4B. TOOLS ETC.					
?PLOUGH	(1) *ar-V-	E	plough ; a plough with bullocks, etc. complete (S)	0198	SN
	(2) *ñān-kil	L	plough ; ploughshaft (S ₁), ploughshare (S ₂) --from Austroasiatic? (see Southworth 2005:80)	2907	SC
DIGGING TOOL	*kunt-āɭ-	E	spade ; pickaxe, hoe, hoe with spade-like blade, a kind of pickaxe (S)	1722	SC
?PLOUGHSHARE	*puy-il	L	ploughshare ; (deriv.) thunderbolt (C)	4282	{SC}
GRAIN CONTAINER	*komm-	L?	large bamboo receptacle for storing grain (C), corn-bin/basket (S); clothes-basket, purse, storage basket (S)	2117	SC
STALL/PEN	*toz-V	L	cattle-stall , (cattle-)shed; manger, pound, stocks, married life, cage, cattle pound, stable, sheepfold, pen for goats, buffalo pen, corral (S)	3256	SC

HERD/FLOCK ³⁵	*mant-ay	L?	flock, herd ; common pasture, village common, open place in jungle for herd, pen, fold, drove, pack (S); company, association (C)	4700(a)	SC
SLUICE/DRAIN	*tūmpu	L	sluice, drain , outlet; tube (SN); vent, channel, bamboo tube, bamboo flute, grain measure, bucket, gate, passage, floodgate, hole, nave of wheel, watercourse, eye of spade, gutter (S); hollow trunk of tree for draining fields (C)	389	SC(N)
TANK	*ket-ay/-uvu	L	tank ; field, garden, dam, prison, captivity, pen, obstruction (and related meanings) ³⁶ (S)	1980	SC
WELL	*nūy	L	well	3706	SC
FISH-HOOK	*kāl 1495	L	fish-hook ; hook for catching alligators, an angle, hook for fishing objects from wells (C)	1495	SC
COWBELL	*cir-nk-	L?	cattle-bell ; bell, clock, waist-bell for dancing (S ₂)	2515	{S ₂ C}

5. LAND TERMS

LOW-LYING LAND	*kut-Vr-	E	low ground , hollow (S ₁), low ricefields (N); stream(bed) (S ₁), sand (S ₂)	1700	SN
UNCULTIVATED LAND (1)	*kam(p)a-	E?	forest/jungle (S ₂), uncultivated ground (N)	1228	{S ₂ N}
	(2) *kar-V-	E	waste land (S ₁), forest/jungle (N); barren soil, crop failure, dry land, long grass in rice-fields (S ₁)	1285	S ₁ N

³⁵ This word is suspect because the Pa meaning ‘herd’ may be a borrowing from Te; note that this word may be related to 4700(b), which means ‘person(s), crowd, etc.’

³⁶ This word is a derivative of a verb ***ket-**, with a range of meaning including ‘shut, control, obstruct, seal, restrain, suppress, fasten...be close, be connected/associated with’ in various languages; the nominal derivatives have a similar range of meaning.

TO CLEAR LAND	*eru-kk-	E?	cut jungle/bushes to clear land (CN); cut, hew, strike (as bush), kill, destroy, make clearing, slash (S); clear away weeds (N)	0824 (S){CN}	
FIELD	(1) *ñāl-	E	field ; earth, land, ground, flat land, room, place, hill-field (S ₂); low fields, terraced fields (N)	2913	SCN
	(2) *pol-am	L	field ; arable land, rice field, cornfield, plough-field, place, region, direction, place of cultivated land (S); village (C)	4303	SC
	(3) *vāy/vay-	L	field for cultivation ; paddyfield, agric. tract, open space, plain, wet lands, fertile lowland ricefield, meadow (S); field for shifting cultivation, highland field (C) ³⁷	5258	SC
THRESHING FLOOR	*kaḷ-am/an	L	threshing-floor (SC); field for tillage, hill-field (N); open space, battlefield, level place for drying grain, square, flowerbed, place where pariahs assemble, sacred enclosure (S), workshed in field (C)	1376	SC(N)

³⁷ Note also DEDR5255 Ta **vayakku** (**vayakki-**) to tame, break in; improve (as land), Ma **vayakkuka** to bring into use, clear jungle; also DEDR1438: Ta (S₁) **vayar-kāṭu** paddyfield, Kol (C) **vēgar** burnt field for shifting cultivation. Both of these words are compounds with the literal meaning “field-forest”, suggesting that the original meaning was a forest field for shifting cultivation. (Words in DEDR1438 generally mean ‘forest, wilderness, jungle’.)

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