egg).[7]

10) 9-9½ replacements: 'finger/toe nail', 'louse', 'new moon, crescent of the moon', 'tear.'
11) 10-10½ replacements: 'water', 'dead', 'hand.'
12) 11-11½ replacements: 'night', 'blood.'
13) 12-12½ replacements: 'horn', 'full', 'sun', 'ear', 'salt'.

To avoid double counting of the same root, (that is, to observe constraints on the mutual inter-dependency of linguistic events [necessary for the proper calculation of the probability of fortuitous coincidences]), those semantic values that are often represented by derivatives from roots which express or represent other semantic values also present in this list must be eliminated from the above inventory. We therefore eliminate the semantic value '20' since it is often a derivative of '2'; also 'we' since it is often derived from the root present in 'I'; and 'you' plural since it is often derived from the root for 'thou.' Note that one and the same morpheme is often both a negator of indicatives and a prohibitive particle (cf. Russ. *ne*). The word for 'nit' often contains the root(s) present in the word for 'louse' and is therefore eliminated. Therefore, '20', 'nit', 1st pers. pl., 2nd pers. pl. have been eliminated from the list. 'Who' and 'what' are considered as one. The distinction between prohibitive NEG and verbal NEG has also been eliminated for the same reasons.

Having taken the aboriginal languages of Australia into consideration, the following adjustments have been made: 1) the semantic values for 'winter' and 'new moon' have been eliminated, as they are lacking in many languages of the world; 2) the numerals '3' through '10', as well as '100', have been removed from the list, since they do not have specific roots in many Australian languages, the languages of the Americas, and so on; 3) '1' has also been removed since its stability is rather weak in many Australian languages.

Now, extrapolating from this "adjusted" list, the first fifteen values for the final inventory for the study of the relationship between languages and language families appear as follows:

1) first person marker
2) '2'
3) second person marker

4) 'who', 'what'
5) 'tongue'
6) 'name'
7) 'eye'
8) 'heart'
9) 'tooth'
10) verbal NEG (both negative proper and prohibitive)
11) 'finger/toe nail'
12) 'louse'
13) 'tear' (noun)
14) 'water'
15) 'dead'

STEP TWO. On the basis of phonotactic statistics for changes in the world's languages, we can list the most usual (and probable) phonetic correspondences in diachronic change. For example, initial *m-* remains unchanged 90 percent of the time. The change $b > m$ or $w > m$ is highly unlikely, and other possible sources of *m* are even less likely. A refined statistical analysis of these sorts of properties has not yet been accomplished. Here, speech sounds have been divided into several types and thereby distinguished in such a way that phonetic correspondences inside a "type" are more regular than those between different "types." Therefore, if we say that *t, d, dh, t,* θ belong to one type, this implies that the shifts $t < d, d < t,$ θ $< t$, and the like occur more often than shifts such as $t < b, d < k$, and so forth. The following preliminary grouping of consonants into type categories has been proposed: 1) Type *P*: labial obstruents (*p, b, f*); 2) Type *T*: dental obstruents (except *s, š, z, ž*); 3) Type *S*: *s, z, š, ž*: 4) Type *K*: velar and post-velar obstruents (*k, g,* χ) and affricates such as *c,* ʒ *c,* ʒ;[8] 5) Type *M*: *m*; 6) Type *N*: *n, ñ,* and non-initial ŋ; 7) Type *R*: *r, l*; 8) Type *W*: *w* and initial *u-*; 9) Type *J*: *j*; 10) Type ∅: laryngeals, ∅- consonants, and initial ŋ; Vowels are not considered as they are regarded as too unstable; they display widely divergent change patterns. Such a division into types based on intuitions about probabilities of phonetic change (well known to all comparatists) can, of course, be imprecise; and this problem will be taken up after a statistical investigation.

STEP THREE. We now proceed to investigate languages whose relationship we intend to establish. For this purpose,

we will utilize all fifteen semantic values from our final list. From among the morphemes expressing a given semantic value, only the earliest attested are considered in every language family (if it is impossible to determine which is *the* oldest, then several of what are presumed to be the oldest morphemes are taken). For determination of the oldest morphemes, standardized procedures are used. The degree of "morphemic spread" (i.e., extension of grammatical categories: N, N and V, V and Adj) is considered, internal reconstruction applied, and so forth-all, in fact, of the normal comparative procedures. In examining data in this fashion, we also stipulate phonological similarities and calculate the probability of fortuitous coincidence, which is in no case less than the statistical mean. We consider those sounds to be similar that belong to any one of the above types (Types 1-10), see STEP TWO.

Now, let us compare Indo-European, Semito-Hamitic, Uralic, Altaic, Chukchee-Kamchatkan, Kartvelian, and Semitic in light of the fifteen categories presented in the above list.

The result of this comparison is schematicized in Table A in which morphemes are transcribed by means of the phonetic types (1-10). To make this comparison clearer, sounds which coincide in different languages are transcribed by capital letters. Failure to enter a morpheme in a given box signifies that morphemes with the given meaning differ in different languages (in other words, there is nothing to compare). Morphemes in parentheses are not calculated. The final right-hand column contains the probability P^i of a fortuitous coincidence that is not less than the coincidence observed for the given semantic value i. The probability coefficient P^i is rounded off to the next highest standard deviation.

Table A gives the phonetic similarities (as outlined by phonetic type) for the following morphemes:

1) FIRST PERSON: verbal desinences of the first person singular **-mi/-m*, first person singular pronoun (in all oblique cases) **(e)m*, etc. The nominative **eg(h)ōm* has, it appears, resulted from the addition of deictic elements to the radical **m*, which happened to be placed at the end of a highly frequent word; this root has been phonetically eliminated in several languages. Possibly

an older subject pronoun type **mi* preceded **e(g)hōm*, a type **mi* preserved in the verbal endings **-mi/-m*. // Uralic: **mynə̈* ~ **minə̈* 'I'.[9] : Finn. *minä*, Mord. *mon*, etc. / Samoyed 'I' : Nenets *man*, Nganasan *mannang*, Selkup *man, mat*, Kamasin *man*, etc. / Yukaghir *met* 'I', Chuvantzy *mota* 'I' // Altaic **min* 'I' (so Ramstedt 1957:79) is preserved in Turkic *mə̈n~bän*, Literary Mongolian *bi* (gen. of *min*), Gold *mi (bi)*, obl. case *min-*, Evenki, Lamut, Ude, Manchu *bi* (obl. case *min-*) // Chukchee-Kamchatkan: Itelmen *ki-ma, ki-m, k(i)me*, 'I', *ma* 'me' (dat.), *muza* 'we', Chukchee *gə-m*, 'I', *muri* 'we', Koryak *g -mmo* 'I' *muju* 'we' // Kartvelian: Georgian *me*, Chan *ma(n)*, Svan *mi* 'I'[10] // Sumerian *ma-e, ma* 'I.'[11]

We are unable to reconstruct the proto-morpheme for the Semito-Hamitic languages.

2) "TWO"

T: Indo-European Gk. *duō*, Lat. *duo*, Skt. *dva-*, etc. // Sem.-Ham.: Sem.: Ar. *θn* , Ara. *tr*, Hebr. *šn*, etc. / Berb. *sin* / Egyp. *sn*. The proto-radical could be TN (*θn, tn*) or SN // Altaic: Gold *dȕer*, Korean *tuur, tuir*, etc.[12]

KT: Sem-Ham.: Cushitic: Kaffa and Mocho *gutta* / Chadic: Kuseri and Muzgum *hudyu* // Uralic: Finno-Ugric: Fin. *kaksi* < *kakt* + *i* , Erzja *kavto*, Ostyak *kə̈t*, Hung. *két*, etc. / Samoyedic: Motor *kydy*, Taigi *kidde*, Nenets *sidə̈*, Nganasan *siti*, Selkup, *sede, šite*, etc. Enets *sire, side*, Kamasin *šidə* (ST < KT) / probably also North Yukaghir *ki(d)*, Omok *kit*, Chuvantzy *kuen*.

It is not altogether impossible that Sem-Ham. radicals of the type ST (Cushitic: Arbore *sada*; Chadic: Bharein *siidi*, Margi *sidai*, Molgoy *šǐda*) also originated from Sem.-Ham. KT as a result of palatalization of the initial consonant. Since the Sem.-Ham. radical ST is highly restricted in its distribution across languages, it has not been calculated.

K. . . : Altaic: Mong. *qoyar* '2', *qorin* '20 // Chukchee-Kamchatkan: South Kamchadal *qaz*, West Kamchadal *qasx* '2' < **qad-* or **qaz-*, Chukchee *kuvrə̈t* 'pair' is of the same origin. Chukchee *ŋirə̈k* 'two' possibly changed its initial consonant as a result of adding an initial prefix on the analogy of Chukchee *ŋəṛok* '3' and *ŋəṛak* '4'. Koryak *ŋəccə̈x* 'two' is of the same origin (Chukchee *-p-* and Koryak *-č-* < **d* or **z*).[13]

Kartvelian and Sumerian numerals, as well as the