

TONE IS NOT PREDOMINANT: TONE IS NOT PRIMORDIAL

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ABSTRACT

Human language was originally tonal according to some theories, especially those suggesting a common origin of language and music. Support is sought in assertions that most modern spoken languages are tonal, and that loss of tone is more frequent than its acquisition. A detailed effort to compile data from all language families containing 20 or more “living” languages in *Ethnologue*, plus a sample of isolated and unclassified languages, was carried out to determine how many are tonal. Results compiled from (near-) exhaustive surveys, individual language reports and sample-based estimates show tonal languages are not in the majority today. Moreover, diachronic studies show that evidence for innovation of tone is far more frequent than for original tone, and loss of tone is quite rare, casting doubt on a ‘primordial tone’ hypothesis. Pitch was undoubtedly important in human proto-language, but seems more likely to have had phrasal and/or discourse functions.

Keywords: Tone, language origins, language and music, tonogenesis, tonoxodus.

1. INTRODUCTION

The idea that human language at its origin was tonal, specifically having lexical contrasts involving tone, has been frequently proposed, particularly by those who envisage language and music as having a shared origin. It was espoused (in pre-evolutionary terms) by French Enlightenment philosophers Condillac and Rousseau. Jespersen [1] proposed that “primitive language [was] sung rather than spoken.” More recently, Brown [1, 2, 3], Mithen [4], Scherer [5] and others have renewed the suggestion of an original ‘musilanguage’ from which language(s) with tone contrasts emerge(s). Brown finds support in the claim that (1) “the majority of spoken languages in the world today are lexical-tonal” and asserts that (2) “lexical tone is the ancestral state of spoken language, and the loss of tone is a derived feature of non-tonal languages, rather than the reverse progression.” Both these statements are contestable. (1) appears to be based on the suggestion by Yip [6] that “as many as 60-70 per cent of the world’s languages may be tonal.”. Yip called this “a very rough estimate” but it has been widely repeated in popular and scientific literature without this

qualification. A more precise estimate of how many modern languages are tonal is provided in the present paper. In addition, an analysis of loss or acquisition of tone across all major language families is reported to see if (2) is plausible. If (1) and (2) are false, it doesn’t mean music and language couldn’t have a common origin but shows that these particular arguments cannot be used to support the idea.

2. NUMBER OF TONAL LANGUAGES

The *Ethnologue* [7] estimates there are 7151 known currently spoken languages, though the total of languages listed in real named families is 7281; this number includes well-documented recently spoken languages, but excludes non-families such as creoles, pidgins and ‘mixed languages’ as well as ancient languages. This latter number provides a pragmatic basis from which to start an estimate of what proportion of languages are tonal, despite the familiar problems with how to define a language. Surveys were carried out of all language families with 20 or more members listed in *Ethnologue*, a total of 6520 languages, 89.5% of the listed individual languages.

Table 1. Select survey volumes consulted (not listed in References but applicable to relevant families).

Region/ <i>Family</i>	Publisher	Editor(s)/ Author(s)	Year
Africa	DeGruyter	Güldemann	2018
Amazonia	Cambridge	Dixon, Aikhenwald	1999
Andes	Cambridge	Adelaar, Muysken	2004
Australia	Cambridge	Dixon	1970
<i>Austro-Asiatic</i>	Brill	Jenny, Sidwell	2015
<i>Dravidian</i>	Cambridge	Krishnamurti	2003
<i>Indo-European</i>	Routledge	Ramat, Ramat	1998
Papuan	DeGruyter	Palmer	2018
<i>Sino-Tibetan</i>	Routledge	Thurgood, LaPolla	2003
South America	DeGruyter	Campbell, Grondona	2012
<i>Turkic</i>	Routledge	Johanson, Csato	1998
<i>Uralic</i>	Routledge	Abondalo	1998

Information was aggregated from survey volumes, on-line databases, book chapters, journal articles, and in a few cases personal communications. Space limits preclude an exhaustive bibliography, but some of the major survey volumes consulted are listed in Table 1.

For some language families, explicit discussion of the distribution of tones is available, as for Eyak-Athabaskan. Krauss [8] listed and mapped the Athabaskan languages known at that time to be tonal. Additional languages recognized in the *Ethnologue* and the non-Athabaskan languages of the extended family can then be added based on language-specific studies; Eyak is non-tonal and Tlingit (standard) is tonal. Out of 44 languages of this family, it appears that 28 should be considered tonal.

Table 2. Number of tonal languages by family

Family	#lgs	# tonal	basis
Niger-Congo	1551	1458	E
Austronesian	1257	126	E
Trans-New Guinea	481	167	E
Sino-Tibetan	457	367	E
Indo-European	446	51	E
Afro-Asiatic	384	252	E
Australian	380	0	S
Nilo-Saharan	207	180	E
Oto-Manguean	178	178	S
Austro-Asiatic	167	39	E
Kra-Dai	91	91	S
Dravidian	86	0	S
Tupian	76	5	S
Uto-Aztecan	61	2	S
Toricelli	57	4	S
Arawakan	55	9	E
Sepik	54	0	S
Quechuan	44	0	S
Eyak-Athabaskan	44	28	S
Algic	41	5	S
Turkic	41	0	S
Hmong-Mien	39	39	S
Uralic	38	2	S
Ramu-Lower Sepik	32	2	E
Cariban	31	0	S
Mayan	31	2	S
Nakh-Dagestanian	31	2	S
Panoan	26	3	S
Salish	26	0	S
Tor-Kwerba	23	0	E
West Papuan	23	4	E
S-Central Papuan (Yam)	22	0	E
Chibchan	20	8	S
Lakes Plains	20	20	S

For other families, an estimate of the percentage of tonal languages is made based on a sample, which is then applied to the number of languages in *Ethnologue*. For example, SAPHon [9] lists 45 Arawakan languages, 7 of which are reported as tonal, that is, 15.56%. This percentage, applied to the 55 languages of the corresponding family (called ‘Maipurean’) in *Ethnologue*, gives an estimate of 8.5 tonal languages, rounded up to 9. Throughout, an overestimation bias in the number of tonal languages is maintained. For example, the tonal status of 18 of the 20 Chibchan languages is known, with 7 being tonal (Teribe only vestigially). So the percent of tone languages is calculated as $7/18 = 3.89\%$. For a family with 20 languages this predicts 7.78 (rounded to 8) tone languages, though the two undocumented varieties of Tunebo are almost certainly non-tonal. Indo-European languages such as Livonian and Slovenian are classified as tonal even though alternative accentual analyses are possible; any language identified as having a "melodic accent" is classified as tonal.

The results of this exercise are shown in Table 2, which reports the number of languages by family, and the estimated number that are tonal. The final column indicates whether the number of tonal languages is estimated from a sample (‘E’) or is based on an explicit statement or comprehensive survey (‘S’). For the larger families a sampling strategy usually had to be used as many languages lack good descriptions, and the same was true for most of the Papuan groups.

Of the 6520 languages in the families listed in Table 2, the indications are that 3044, or 46.7 %, are tonal. This is well below the estimate of 60-70% often cited and suggests that tone languages form a minority of modern languages. Moreover, given the way that the sampling was conducted this figure is more likely to be an over-estimate than an under-estimate of the number of tone languages. Although they make up a substantial proportion of current and recently spoken languages, tone languages are not so predominant that tonality should be taken as the default condition of any original human language, however that is envisaged.

3. LOSS OR GAIN OF TONE

Brown proposes that “*the loss of tone is a derived feature of non-tonal languages*”. We don't know if early human languages were tonal, but we can perhaps better understand the likelihood of Brown's claim being correct by examining what we know about the evolution of tone in the reconstructible past. For most of the language families on which serious comparative work has been carried out, there is no reason to reconstruct tone as an original feature of the

phonology of the proto-language. For 18 of the 34 language families listed in Table 2, there is no indication that (in descending order of size) Austronesian, Australian, Dravidian, Tupian, Uto-Aztec, Arawakan, Algic, Turkic, Quechuan, Uralic, Cariban, Mayan, Nakh-Dagestani, Panoan, Salish, Tor-Kwerba, West Papuan or South-Central Papuan require consideration of the possibility of reconstructing tonal contrasts, since all or the vast majority of the languages they contain have no tone and they often have obvious phenomena of accentuation as the main dimension of lexical prosody. Substantial historical-comparative work has been carried out in all these groups except for the last three, where basic documentation is still the priority.

In Austronesian, the largest predominantly non-tonal language family, there is debate as to whether the accent position in Proto-Austronesian was predictable or had a limited contrastive role, but absolute agreement on the absence of original tonality. This does not mean that no Austronesian language is tonal. A spectacular exception is Utsat (also known as Hainanese Cham) which has five tonal distinctions [10], stemming from earlier properties of consonantal onsets and codas. Simpler tone systems are found in several other Austronesian languages, but these are clearly local and independent developments.

None of the modern Australian or Dravidian languages are tonal and there is no reason to suggest that ancestral forms ever had tones. The vast majority of Uto-Aztec languages are non-tonal [11], although some Hopi dialects have tones recently developed from voicing contrast in final consonants [12], and Northern Tepehuan has reinterpreted a stress accent as a high tone. The Algic family includes some languages with a melodic accent, e.g. Blackfoot, but no tone is reconstructed for earlier stages [13, 14]. In South America, the Arawak, Tupi [15] and Carib families each have only a handful of tonal languages and Quechuan has none [16, 17]. The Turkic and Uralic families of Eurasia also include few or no tonal languages. For these last six language families, no reconstruction has proposed original tonal contrasts in the proto-language.

Indo-European presents a more complex case. Modern languages are mostly non-tonal and have either a contrastive accent, as in Russian, or no role for the lexical accent, as in French. However, from contemporary sources and later commentaries, there are indications of contrasting pitch height patterns in Ancient Greek [18] and Sanskrit [19]. A distinction between high and descending "accents" as well as a low tone on unstressed syllables is shared. Modern Baltic and South Slavic languages also have contrasts in pitch that some Indo-Europeanists consider to be

related to these ancient patterns, leading to the assumption that the proto-language possessed contrasting 'melodic accents'. However, others [20] argue that quasi-tonal contrasts in the Baltic languages are of more recent origin, not inherited. Others remain undecided about the tone of Proto-Indo-European [21], or suggest that the accentual system was simpler (perhaps with a high tone as a normal realization of stress). That stress in Proto-Indo-European had a very important role is evident from the patterns of ablaut in which certain vowels are suppressed in unstressed syllables. This is not incompatible with tonality, as demonstrated by Thai and other 'sesquisyllabic' languages in Asia and Mesoamerica, but it suggests that Indo-European was not originally a canonical tonal language.

Certain other families in Table 2 have a substantial proportion of tonal languages, including (in descending order of size) Sino-Tibetan, Afro-Asiatic, Nilo-Saharan, Oto-Manguean, Austro-Asiatic, Kra-Dai, Eyak-Athabaskan, and Hmong-Mien. In the majority of these families, it is clear that tone is not a characteristic of the reconstructible proto-language.

The Sino-Tibetan family is of particular interest. All Sinitic languages are tonal and Mandarin Chinese is often considered the prototype of a tonal language, for example by Rousseau and Brown [3]. However, it is in fact atypical both in the number and complexity of its tonal contrasts and in the fact that the tones of adjacent syllables are largely independent of each other. But tone is not original in this branch [22, 23]. As Baxter & Sagart [24] write, "There were no tones in Old Chinese." The four categories of traditional Middle Chinese tones: *shǎngshēng* (rising tone), *qùshēng* (starting tone), *rùshēng* (input tone) and *píngshēng* (even tone) derive respectively from forms with a final *-*ʔ*, a final *-*s*, a final voiceless oral stop, or a final sonorous consonant or vowel. In the much larger Tibeto-Burman branch, tones appear in some languages, but their origins are clearly independent of each other.

The second largest family, Afro-Asiatic, has a majority of languages with contrasting tones. Ehret [25] suggests that this family was originally tonal but has lost this characteristic in some branches. His argument seems to be based primarily on a principle of "majority rule." He writes: "*Phonemic tone is a widespread feature of Afroasiatic, appearing regularly in the languages of the Omotic, Chadic, and Southern and Eastern Cushitic divisions of the family. Only the Boreafasian subgroup (Semitic, Berber, and Egyptian ...) has entirely deleted tone.*" This family, much like Indo-European, has several relatively well-defined branches, of which 3 of the 6, as Ehret notes, show no signs of tone. In the Chadic branch, there is strong evidence that consonant types

influence tonal development [26], as is also the case for some Omotic languages [27]. There are no believable attempts to make reconstructions at the proto-Afro-Asiatic level. Ehret's reconstruction is not convincing because it relies on only a few languages and the proto-tone seems to be assumed rather than demonstrated. The independent development of tones from consonantal environments in different branches of Afro-Asiatic cannot be ruled out.

Even less is known about early forms of proto-Nilo-Saharan. Ehret [28] suggests that the proto-language had 3 tones, but again the presentation of the data is not convincing, partly because it seems to project the patterns of a single individual language, Uduk, onto the proto-language without reconstruction of intermediate groups.

In the Oto-Manguean family, Rensch [29] finds that the tone must be reconstructed as original; All daughter languages are tonal. As for Austro-Asiatic, Kra-Dai (= Tai-Kadai), Eyak-Athabaskan (= Na-Dené) and Hmong-Mien, it is clear that tonal contrasts, where they exist, developed from the properties of the consonantal environment. There are striking similarities with the evolution of tone in Chinese in the way tones originate from Kra-Dai, Hmong-Mien and some Austro-Asiatic languages [30, 31, 32]. In Eyak-Athabaskan, tonal contrasts arise from consonantal laryngeal constriction, and take two distinct forms in different languages [8].

Of the seven families from the Papuan region shown in Table 2, the Toricelli and Sepik languages are not reported as tonal. A considerable proportion of the languages of the trans-New Guinean family are tonal [34] but geography plays a striking role in their distribution. Donohoe [35] notes that languages on or adjacent to the Central Cordillera of the island of New Guinea are much more likely to be tonal than those more distant. There is a clear regional pattern here, and linguistic contact is probably a factor, but if it is a process of spreading tone in the highlands or a loss of tone in the lowlands, this cannot be established at the moment and may never be. Only the Lakes Plains family, which is 100% tonal, argues for tone as original, but the possibility of eventual wider comparison may change this impression.

This leaves the Niger-Congo family, by most accounts, the language family with the largest number of members. There is currently no serious attempt to reconstruct Proto-Niger-Congo, and there are many challenges to the proposition that it is in fact a coherent language family. Several subgroups have been the subject of comparative work, in particular the Bantu subgroup, as well as smaller divisions such as Edoid [36] and Jukunoid [37]. The presence of a binary tone contrast in proto-Bantu is well established [38], and other reconstructions of subgroups also

suggest that the tone is original within each subgroup. However, correlations between different groups are not established. Nevertheless, Niger-Congo has a high probability of being tonal originally. Non-tonal languages in this family, such as Swahili, Wolof, Ndut, Bisa and Koromfe, would therefore exemplify cases of loss of tone, some clearly due to contact.

The only language family in which tone is reconstructed as original but which now contains a majority of non-tonal languages is Chibchan [39]. Brown's claim that loss of tone is the common pattern is not supported by what we know of the loss or acquisition of tone. We know of far more cases in which languages acquire tone than cases where tone is lost.

4. SUMMARY

We find that less than half of modern languages are tonal and that of the 34 families examined, only four have a high probability of having original tone (Niger-Congo, Oto-Manguean, Chibchan and Lakes Plains), although Afro-Asiatic and Nilo-Saharan might have also been tonal at their origin. Proto-language, or rather pre-language, is generally thought of as consisting of holistic statements, rather than analyzable structures. Rousseau and Brown agree with this view. The question is what traits would have been retained from this stage when a segmentable lexicon and syntactic organization began to emerge. Human language in its earliest form would undoubtedly have used the variation in pitch of the voice. However, it seems more likely that this would have taken a form closer to the patterns described as intonation in modern languages, such as the frequent use of a global or final rise to signal a question, a descending sequence to signal an affirmation, or the stepped tones that are common in the call of a name. In modern languages, such patterns coexist with lexical tone, even in strongly tonal languages such as Mandarin Chinese and Yoruba where they overlap with tonal melody [40]. Intonation is a truly universal feature of modern spoken languages. It is much more likely that the legacy of a hypothetical "musilanguage" stage of proto-communication is intonation, not lexical tone. Tone probably arrived late in the diversity of human languages.

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