Using methods of historical linguistics in Indo-European and Tibetan

Roland Bielmeier

1. Introduction

Based on the empirical fact that languages constantly change, historical linguistics describes historical language change. Its main objectives are reconstructing earlier stages of languages and common proto-languages as well as determining the relationship between languages defining genetically related language families. Starting from the traditional historical-comparative or simply comparative method of the late 18th century applied to Indo-European (IE) languages including reconstructed Proto-Indo-European (PIE) and characterized by the notions sound laws and analogy, new methods have emerged since then and have been applied to IE as well as to non-IE languages. However, the comparative method is still the most important tool in historical language reconstruction followed by internal reconstruction, and not to forget – semantic reconstruction. In this paper, the power and achievements of the comparative method will be illustrated by well-known examples from IE languages and PIE and then applied to the historical development of Tibetan, i.e. from Old and Classical Tibetan, usually addressed together as Written Tibetan (WT), to its numerous and widespread modern dialects. This is to examine whether these methods of historical linguistics can also be successfully applied to the non-IE language and dialect varieties of Tibetan within the Tibeto-Burman language family.

2. Syllable and word structure in Indo-European and Tibetan

2.1. Syllable structure in Indo-European

In applying the different methods of historical linguistics, especially the comparative method to IE and Tibetan, we will see that syllable structure in both language families seems to play an eminent role for the understanding of the respective sound changes. In both language families the verbal roots are monosyllabic showing a very similar internal structure at a first glance.
For PIE, Szemerényi (1989: 102) lists all combinations with a short vowel \( V \) and at least one final consonant \( C \), \( VC \) being the simplest and \( CCCVCC \) the most complex.\(^5\) His list has to be revised slightly, as \( VC *ed- \); ‘to eat’ is from \( *h₁ed- \), but already in Old IE languages, where the laryngeals have been dropped, the type \( VC \) is quite common. For \( CCCVCC \) Tichy (2000: 34) gives PIE \( *streyg- \) ‘streichen, to stroke’ and for \( CCVCCC \) \( *stembH \) ‘sich stemmen, to lean upon’. With PIE nouns, the consonant clusters are simpler in general, \( C \) and \( CC \) initially are common, but due to ablaut, derivation, compounding and inflection, more complicated clusters can occur, like Latin \( pecten \) ‘comb’ < \( *pek-ten- \) having \( CCC \) in the oblique case \( *psten- \) ‘female breast’, cf. Young Avestan \( fštāna- \) ‘id.’, \( CCy \) in \( *gʰdies, \) Old Indian \( hyāḥ \), ‘yesterday’ (cf. Mayrhofer 1986: 117, 155). In this listing of possible PIE syllable structures, \( C \) stands for any consonant including resonants (liquids \( l, r \), nasals \( m, n \), and glides \( y, w \), traditionally written as non-syllabic \( i, u \)) and laryngeals (\( h₁, h₂, h₃ \) or \( H \)). But resonants and laryngeals can occur in syllabic position like a vowel. Therefore, the resonants are better designated by the cover symbol \( R \) and the laryngeals by the cover symbol \( H \), which is also used in reconstructions when we know that we have to assume a laryngeal in a certain position, but cannot further determine whether it was \( h₁, h₂ \) or \( h₃ \). Describing the PIE root on the basis of the full grade form with the vowel \( e \),

the structure of the most PIE roots can be boiled down to a single template, \( *CeC- \) … This template could be modified in certain ways, especially by adding consonants either at the beginning or the end to form consonant clusters. Most commonly, a resonant could occur on either side of the vowel, resulting in roots of the shape \( *CReC-, *CeRC-, \) and \( *CReRC \) (Fortson 2010: 76),

e.g., \( *ped- \) ‘foot’, \( *dʰwer- \) ‘door’, \( *derk- \) ‘see’, \( *grendʰ- \) ‘grind’. “Roots could also have any of the basic structures above preceded by \( s \). Some examples include \( *spek- \) ‘see’, \( *steg- \) ‘cover’, \( *sneigʷh- \) ‘snow’, and \( *strenk- \) ‘tight’. A curious fact about such roots is that they sometimes appear without the initial \( s- \), for reasons still not understood; these are called \( s \)-mobile roots.” (Fortson 2010: 76).\(^4\)

The bulk of roots with laryngeals fall into the three types just introduced – \( *CeH-, *HeC-, \) and \( *HReC \). The mirror image of the last type, \( *CeRH \), is also common, as in \( *wemh₁- \) ‘vomit’, \( *terh₂- \) ‘cross over, overcome’, and \( *kelh₂- \) ‘cry out’. Less commonly, the laryngeal neighbored a stop, as in
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In addition to this structure of PIE roots there are certain constraints of the root.

Certain classes of consonants rarely or never co-occur within a given PIE root. There are not many securely reconstructible roots containing two plain (unaspirated) stops (type *bed-) or a voiceless stop and a voiced aspirate (type *bʰet- or *tebʰ-, although the second of these is commonly found if preceded by an s, so *stebʰ-). The source of these constraints is unknown. (Fortson 2010: 78)

A further element attributing to the root and its syllable structure are root extensions. “The root *(s)teu- ‘push, hit, thrust, for example, appears extended or enlarged as *(s)teu-k-, *(s)teu-g-, and *(s)teu-d- (reflected respectively e.g. in Gk. tikos ‘hammer’, Eng. stroke, and Ved. tudáti ‘beats’). The source and function of these extensions are not known.” (Fortson 2010: 78–79). To sum up: “The maximum number of consonants in a word-initial cluster appears to have been three … The most common word-initial clusters are those where the second consonant is a resonant.” (Fortson 2010: 64, with examples). This is certainly correct and as mentioned earlier there are some words with initial clusters consisting of three consonants. These are usually verbal roots containing a resonant or s or both.

2.2. Syllable structure in Tibetan

With respect to the number of consonants in clusters the syllable structure of WT seems to be slightly more complicated than in PIE. In WT, the type VC can be disputed.³ The range goes from CV, a very common type with nouns and rare with verbs but occurring, cf. WT īu ‘to cry, weep’, till the type CCCCCVCC with verbs, cf. WT bsgrigs ‘to put in order (pfv.)’ with several more or less productive morpheme boundaries in between: b-s-grig-s with the CCVC verbal root grig ‘to fit, suit’. The rest are grammatical morphemes. Outside the verbs, morpheme boundaries are in general rarely apparent. Thus, also in the case of four initial consonants occurring only with the two numerals WT brgya ‘hundred’ and WT brgyad ‘eight’, but CCCCVCC is not uncommon, cf. WT rgyags ‘provisions’. All initial clusters
are subject to rigid restrictions, e.g. the six initial cluster types with $CCCC$ are either $bCC\gamma$ or $bCC\tau$, and $CC = rk, sk, rg$ or $sg$. A broader variation can be found with $CCC$-clusters, but also with them, only certain combinations of consonants are allowed. For example, the voiceless aspirated $\text{kh}, \text{ch}$ and $\text{th}$ in middle position can only be preceded by $m$ or 'a-\text{chu}"$ and $\text{ph}$ only by 'a-\text{chu}". In third position very often occur $y$ or $r$, and sometimes $l$. If the third consonant is $k, g, \text{\textdagger}, \text{t}, d, \text{ts}$ or $dz$, it can only be preceded by $br-$ or $bs-$. A minor exception are $t$ and $d$. With them also the clusters $blt$- and $bld$- may occur, etc.

However, the structure of the initial consonant clusters of WT with their restrictions and as well the whole syllable structure can better be understood on the basis of a concept developed by the indigenous Tibetan grammarians, which also allows a better understanding of the sound change phenomena to be discussed here. A Tibetan syllable, often representing a lexical item, is usually divided into two parts. The first part consists of the consonant or the consonant cluster up to four consonants preceding a single vowel, the syllabic nucleus, and the second part consists of the vowel itself followed by zero, a simple consonant or a consonant cluster, consisting of two consonants at the most. The second part is usually called rhyme, a notion from traditional Chinese linguistics but also widely used in present-day phonetics. The possible rhymes of WT are: $-V, -V\gamma(s), -V\text{\textdagger}(s), -V\text{\textdagger}d, -V\text{\textdagger}n, -V\beta(s), -V\text{\textbar}\text{\textbar}(s), -Vr, -VL, -Vs$. For Old Tibetan the rhymes $-V\text{\textdagger}n, -V\text{\textdagger}d$, and $-V\text{\textbar}\text{\textbar}d$, simplified to $-V\text{\textdagger}n, -Vr$ and $-VL$ in WT have to be added. The WT rhymes have more or less changed in all Tibetan dialects with the exception of Western Archaic Tibetan (WAT). And of course, in polysyllabic words some of the changes are different.

The internal linguistic structure of the first part of the syllable is represented to a large extent in the graphic structure of the orthographic writing. The root initial consonant is graphically represented by a single consonant sign around which certain single consonant signs can be prescribed, superscribed or subscribed. The pre- and superscribed consonant signs represent prefixed consonants and the subscribed a postfixed consonant. Thus we get four consonants maximum in the first part of the syllable. Several linguistic phenomena clearly distinguish the initial position from the prefixed or postfixed positions in addition to the rules of writing. One important fact is that in this initial position, all consonants of the inventory can occur, in prefixed and postfixed position, however, only certain consonants are allowed. In prefixed position we find $g, d, b, m$, 'a-\text{chu}" as prescripts with the restriction that $m$ cannot precede the labial stops, and $r, l, s$ as superscripts. In postfixed position we find mainly $r$ and $y$, less often
and only marginally \( w \). The linguistic reason for the different writing of prefixed consonants as super- and prescripts is not fully clear. At any rate it works as an order rule. If the initial has a super- and a prescript at the same time, it is the sound represented by the superscript that immediately precedes the initial. And according to the rule that in one syllable only one super- and one prescript may be written, the different writing allows two prefixes. A further restriction is that certain initials allow only certain prefixes and postfixes. Gemination is not possible. Thus, for example, clusters like \( dk-, dg-, dp- \) or \( db- \) are possible but not *\( dd- \) or *\( dt- \). Instead we find \( gt- \) and \( gd- \), and it has been speculated whether the prescribed prefixes \( d- \) and \( g- \) are in complementary distribution. The problem is that we cannot ascribe clear functions or even a common function to the prefixes \( d- \) and \( g- \).

A strong argument in favor of the special position of the initial consonant in contrast to the prefixed consonants is the fact that there is a voicing assimilation in all known modern varieties with initial consonant clusters. The voicing of the first consonant assimilated to that of the second, which can be proven by comparison with the etymological correspondence of WT, cf. the WAT dialect of Leh storma ‘offering’ (< WT gtor ma) and rdoŋ ‘face’ (< WT gdon).

2.3.  Word structure and word formation in Indo-European

After the analysis of the PIE and Tibetan monosyllabic lexical root of verbs and nouns we will also briefly look at the number of the syllables of words and at word formation. In PIE, besides the monosyllabic root, we can also reconstruct disyllabic word stems to some extent like *\( seh^2uel- \) ‘sun’ or *\( dh\text{\textipa{\textael}}h\text{\textipa{\textael}}\text{\textipa{\textael}}m\text{\textipa{\textael}} \) ‘earth’. But in PIE, also monosyllabic roots became often di- or polysyllabic by taking certain prefixed and suffixed syllabic elements.

With verbal roots, we mainly find preverbs, tense or mood suffixes and personal endings. And such complete verb forms are the basis which language change phenomena apply on. In WT, besides the grammatical morphemes mentioned above, there is no further affixation and the verb is impersonal. But in the course of time the modern varieties developed predicates where the main verb is followed by different morphemes, auxiliaries or second verbs to express tense, aspect, mood (TAM) and evidentiality categories. In these collocations, certain phenomena of vowel harmony may be observed (cf. Haller, forthcoming).

Monosyllabic root nouns, usually with ablaut, like *\( kerd- \) ‘heart’ or *\( ped- \) ‘foot’ were common in PIE, but many became disyllabic by derivation, by compounding and, of course, by adding inflectional endings. A
productive derivation was the formation of a thematic stem by adding the thematic vowel *e/o to athematic nouns, cf. Old Indian athematic pad-‘foot’ > nom.sg pāt > acc.sg. pād-am with reanalysis > pāda-m > thematic pāda- ‘foot’. The suffixes, often with ablaut, are semantically more or less transparent. Semantically clear, e.g., is the suffix *-ih2/ieh2- which designates female persons or animals, cf. *deiw- > *deiw-o-, Old Indian deva-‘god’ and *deiw-ih2, Old Indian devī ‘goddess’, or the suffix *-ter indicating kinship, cf. *ph2-ter- ‘father’ and *mā-ter- ‘mother’, but the suffix in *ṛ egbh-ōm ‘earth’ is functionally or semantically less transparent. An old disyllabic numeral seems to be *kn̥tom ‘hundred’, cf. Old Indian śatam and Latin centum. But it goes back to the derivation *ḏk̥kt̥o- ‘the tenth (ten)’ < monosyllabic *dek̥m ‘ten’. And finally, inflexion endings also contribute substantially to the polysyllabic character, even with monosyllabic pronouns, e.g., nom.sg. *kʷi-s ‘who’ and gen.sg. *kʷo-sto, Old Indian kasya ‘whose’. In general, derivation by suffixes is complicated in PIE as there is a considerable number of suffixes often accompanied by ablaut phenomena of the root and of the suffix itself. Concerning compounding in PIE and Old IE languages, we find the well-known formations like dvandvas, tatpurusas, bahuvrīhis, etc. With tatpurusas, the first member of the compound is often based on the stem form, cf. OI viś-pati- ‘lord of the house, leader of a clan’ < viś- ‘house’ and pati- ‘chief’, but also case forms occur in first position, e.g. the genitive in OI divas-pati ‘lord of the heaven’.

2.4. Word structure and word formation in Tibetan

In Tibetan varieties, nominal compounding and derivation seem to be more transparent than in PIE. With the exception of the verbal roots there are no ablaut phenomena. In compounding we also find formations like dvandvas and tatpuruṣas, etc. If the words are monosyllabic, they are simply joined together, cf. WT dmag dpon ‘army commander’ < dmag ‘army’ and dpon ‘chief’. But if they are disyllabic, the second syllable of both members is often dropped, e.g. WT mun pa ‘darkness’ and nag po ‘black’ > mun nag ‘black darkness’. There are also derivational suffixes, but they are also simply joined without any further change, cf. WT ňes pa ‘crime’ > ňes pa can ‘(a) criminal’. The same is more or less valid for case marking in WT. In some cases like genitive different allomorphs are added depending on the kind of auslaut of the noun. In modern dialects, case marking often shows more variation especially with nouns ending in a vowel. And in gen-
eral we often find phenomena of vowel harmony and tone sandhi in modern varieties.

The syllabic segmentation coincides with the morphematic segmentation in both language families not in all cases, cf. Old Indian *agnim-indha-* ‘lighting a fire’ where the syllabic segmentation is *ag-ni-min-dha*. This also occurs with simplicia, e.g. Old Indian thematic *garbha-* ‘womb’ < *gʷolbh-o- and the syllabic segmentation *gar-bha-. In WT as well as in the more conservative modern varieties, this phenomenon can be observed e.g. in compounds with an open syllable as first member and with an initial consonant cluster of the second member, cf. WT *sa bdag* ‘landlord’ < *sa* ‘earth, land’ and *bdag po* ‘proprietor, master’ with a syllable structure *sa-bdag*, still present in the Amdo dialect of Labrang *sʰab-dag* but dropped in the Kham dialect of Lithang *sʰa-da?* (H-H)¹² ‘id.’ or WT *rdo rje* ‘vajra, diamond’ < *rdo* ‘stone’ and *rje* ‘lord, master’ with a syllable structure *rdor-je*, still present in the Western Innovative Tibetan (WIT) dialect of Tabo *dor-due* (L-H) ‘id.’, but dropped in the Central Tibetan (CT) dialect of Shigatse *to-tee* (L-H).

3. **Comparative method in Indo-European and Tibetan**

The comparative method is used in historical (or comparative or historical-comparative) linguistics for comparative or external reconstruction

by comparing particular phenomena in several related (or presumably related) languages. Comparative reconstruction became particularly significant and its methods underwent refinement in the nineteenth century with the elucidation of the Indo-European obstruent (= stops and fricatives) system, which was reconstructed by comparing the consonantal systems of the individual Indo-European languages (Grimm’s Law, Verner’s Law). Comparative reconstruction forms the foundation of comparative linguistics and was used primarily by the Neogrammarians in connection with their thesis of the regularity of sound laws. (Bussmann 1996: 398)

Applying comparative method to both language families, we will give examples for unconditioned and conditioned vowel and consonant changes and show that in Tibetan, vowel and consonant changes can often not be separated from one another. The hypothesis is that in Tibetan, in contrast to PIE and IE languages, most sound changes are conditioned changes, a fact which is due to the peculiar syllable structure including the mentioned rigid
restrictions of occurrence and co-occurrence in the syllable to which the vowels and the consonants are subjected.

3.1. Vowel change in Indo-European and Tibetan

It is well-known that without introducing the question of laryngeals, PIE possessed five short vowels *a *i *u *e *o which remained unchanged in general in Latin and early Old Greek. In Indo-Iranian *a *e *o merged into *a and in Germanic *a and *o merged into *a, opposite to o in Old Church Slavonic. This example for an unconditioned vowel change can be illustrated by PIE *ghostis ‘alien’, cf. Latin hostis ‘enemy’, for which we find gasts in Gothic, gast in Old Saxon and Old High German, but gosta ‘guest’ in Old Church Slavonic. In Old Norse and Old English Germanic *a underwent a further change and became fronted in most positions, cf. Old Norse gestr and Old English giest ‘guest’. We speak of an unconditioned sound change as it takes place independently of the position of the vowel within the word. There are three main positions, initial, internal and final. Taking the change of *o > *a in Germanic as an example we find it initially with *oktō(u) (< *h₂ek-t-) ‘eight’ > Old High German ahto, and for the internal position cf. *pork-o- ‘pig’ and Old High German farh ‘porcellus’. The assumed change of PIE *o > Germanic *a in final syllable can be documented by *g³htom (< *g³h₃t-) > Germanic *gulpa(n) > Finnish borrowed kulta, Gothic gulþ ‘gold’ and for final *-o-s see below. There are not many prominent conditioned vowel changes in IE. One could mention Brugmann’s Law saying that an original short *o in open syllable was lengthened and appeared as long ā in Sanskrit. In closed syllables, including laryngeal as closing element, it remained short and became a in Sanskrit. More prominent are of course the effects of laryngeals on neighbouring *e in PIE. The well-known basic facts are the change of the vowel quality with originally preceding laryngeals and the change of the vowel quantity with originally following laryngeals in tautosyllabic position: *h₁e > *e, *h₂e > *a, *h₃ > *o, *eh₁ > *ē, *eh₂ > *ā, eh₃ > *ō.

In WT, we have the same system of five vowels a i u e o. The difference lies in the fact that there was no distinction between short and long vowels like in PIE. And we have only two positions in which the vowel may occur, finally and internally. Under the condition of absolute final position we find only little vowel change in the most modern varieties, in contrast to remarkable changes in syllable internal position, where mainly the following consonant is essential for the kind of change of the preceding vowel. In all available Tibetan varieties spread over the whole Tibetan speaking area in monosyllabic words, semantically belonging to a certain
core vocabulary, final -a and -o have remained unchanged, as in WT ña ‘I’, sa ‘earth’, bya ‘bird’, brgya ‘hundred’ or lo ‘year’, so ‘tooth’, rdo ‘stone’ and sgo ‘door’. The vowel e occurs much less in final position, but there are basic lexical items showing that e seems to have a similar stability, cf. WT me ‘fire’, ske ‘neck’, lce ‘tongue’. Final -i and -u are very common in this position and, roughly speaking, they are retained in Western and Central Tibetan dialects but they merge into -ə in a part of the Kham dialects and fully in the Amdo dialects. In all the recorded Amdo material there is no exception to this sound law, i.e. WT final -i and -u merge into -ə. But in some Kham varieties beside -ə < -i we also find -e and beside -ə < -u we also find -o or a retaining of -u. This can be shown by the development of basic lexical items like WT mi ‘human being, man’, bĨi ‘four’, khyi ‘dog’, gri ‘knife’ or chu ‘water’, bcu ‘ten’, su ‘who’ and glu ‘song’.15

In a large part of the modern Tibetan varieties, conditioned vowel change is one of the most obvious sound change phenomena and concerns the rhyme of a syllable. That means, as already mentioned, the vowel change induced by originally following consonants includes also a change of the final consonant in most cases. Thus, the change of the internal vowel cannot be seen separately from the change of the following final consonant. This kind of change is not completely unknown to IE languages. But it played a clearly less prominent role. To illustrate, we pick examples from the Germanic Auslautgesetze. In Germanic, with the exception of monosyllabic words, final -a was generally dropped but retained if it was originally followed by a consonant, cf. *so ‘this’ > Gothic sa, *woida ‘knows’ > Gothic wait, *kronom ‘horn’ > Old Norse horna (acc.sg.). If the final was a dental occlusive it was generally dropped without influencing the vowel, cf. *bher-oi-t, Old Indian bhar-e-t, > Gothic bairai ‘he may carry’ (cf. also Greek féroi < *féroit). In case of a final -s following a (< *o), in Gothic the vowel was dropped but the final -s was retained, cf. *aŋr-os (< *h₂eg-ro-s) ‘pasturage’ > Old Norse akr, Old High German ackar, Gothic akrs, *wlpo-s (< *wlkʷ-o-s) ‘wulf’ > Old Norse ulfr, Old High German wolf, Gothic wulfis, *gʰətis ‘alien’ > Old Norse gestr, Old High German gast, Gothic gasts ‘guest’, but *sunu-s (< *suH-nu-s) ‘son’ > Old Norse sunr, Old High German sunu, Gothic sunus and *sed’sus (< *swedʰeh₁-?) ‘custom’ > Old Norse sidr, Old High German situ, and Gothic sidus. From these developments, we see that in Old Norse short a (< *o), i and u before final -s are dropped and -s changed into -r. The vowel quality before final -s does not seem to play any role. In Old High German and in Gothic the vowel quality seems to play a role, as in Old High German final -s is always dropped and preceding a and i are also dropped. But preceding
In Gothic, the vowels have undergone the same development as in Old High German, but final -s is retained. Using the concept *rhyme* of the Tibetan tradition we could say: PIE *-os* (> *-as*), *-is* > Gothic -s, Old Norse -r, Old High German > zero vs. *-us* > Gothic -us, Old Norse -r, Old High German > -u. This is an example for a conditioned Germanic sound change of the rhyme -Vs with interaction between final -s and its preceding vowel.

This kind of conditioned sound change is most widespread not only in Tibetan but also in many other Tibeto-Burman languages. An exhaustive presentation of all changes in the many different Tibetan varieties is not possible here. As an example and to enable a typological comparison with Germanic, the historical development of -Vd and -Vs in monosyllabic words will be presented with a few records. WT skad ‘sound, voice, speech, language’ has remained nearly unchanged in WAT, in the far west of the Tibetan language area, cf. e.g. Balti and Leh dialect skat ‘id.’

In conservative Amdo dialects in the far east, the initial s- has slightly changed and became retroflex, and the final dental stop became -l, cf. Themchen skal ‘id.’ However, the final dental stop was replaced by a glottal stop or dropped fully in the Central Tibetan dialects, sometimes accompanied by a phonological falling tone and the vowel a changed into e of different qualities depending on the respective variety, cf. Gergye ke? (H), Tshochen ke? (H), Dingri ke? (HF), Kyirong ke? (HF), etc. The rhyme of -as has changed in a different way, especially in Amdo, cf. WT ras ‘(cotton) cloth’ which is again retained in WAT, cf. Balti and Leh dialect ras ‘id.’ In CT final -s was dropped and the vowel a also changed into e of different qualities depending on the respective variety, and often leading to vowel length, cf. Gergye re: (L), Tshochen re: (L), Dingri and Kyirong re: (LF). In Kham Tibetan the changes are very similar, but in Amdo Tibetan WT -as usually changed to -i and in a few varieties to -e, cf. the Amdo dialects of Themchen, Mkharmar, Rkangtsha, Chabcha, Rngaba, Rnastod, Mdzorganrabar ri ‘id.’, but the Amdo dialect of Labrang (Xiahe) re ‘id.’

3.2. Consonant change in Indo-European and Tibetan

From this small sample it becomes already comprehensible that vowel changes in Tibetan follow strict sound laws and can be described by the comparative method. But they are always conditioned vowel changes. The same can be shown for the consonant changes, at least equally important and characteristic for the development of the PIE daughter languages as well as for the development of the different Tibetan varieties. An essential
difference in handling consonant change lies in the fact that IE linguistics is accustomed to primarily examine the changes of single consonants in different positions within the word. It has been observed that in clusters they sometimes influence each other to a certain extent, e.g. by voicing assimilation. But in the description this is only a second step. One of the reasons for this procedure is that there is a considerable amount of unconditioned change, i.e. the consonants change irrespectively of their neighbourhood. In my opinion, this domination of unconditioned change is also due to the syllable structure of PIE. As we have seen, the basic syllable structure in PIE is *CeC with the modifications *CReC-, *CeRC-, and *CReRC. More complicated consonant clusters occur but are not frequent. Therefore, the consonants usually occur in the neighbourhood of vowels or resonants. This neighbourhood favours the independent or unconditioned change of single consonants. Thus, the unconditioned sound change is the normal case. In the Tibetan syllable, where words with initial clusters of two consonants are the most frequent, and initial clusters with three or sometimes even four consonants occur, mutual influence of them is much more probable. Therefore, the conditioned sound change is the normal case.

According to the opinio communis the PIE stop inventory had fifteen stops classified into three series according to the manner of articulation: voiceless, voiced and voiced aspirated. Each series contained five stops with different places of articulation: labial, dental, palatal, velar and labio-velar. In WT there are also three series: voiceless, voiced and voiceless aspirated. But each series contains only three stops according to the manner of articulation: labial, dental and velar, extended by two kinds of affricates, alveolar and post-alveolar affricates. In certain reconstructed PIE daughter language groups like Germanic and in certain Old IE single languages PIE palatal velars and PIE plain velars have merged into plain velars reducing the five stops in each series of PIE to four and grouping among others Germanic in the so-called “centum” branch. In Tibetan, we find the opposite development in WIT, CT and in some areas of Amdo. In these dialects a new series of palatal stops apart from the plain velar stops emerged from the clusters of plain velars followed by the glide y, cf. WT rgyab ‘back’ > WIT Tabo jep (L), CT Shigatse cap (L), Jirel jap (L), EAT Chabcha r jap.

Within the centum branch usually eleven innovations are considered decisive to set the Germanic languages apart from the other branches and one innovation concerns certain changes of the stop system from PIE to Germanic and are known as Grimm’s Law. It describes three kinds of changes, the PIE voiced stops changed into voiceless stops, e.g. *dekm, Gothic taihun ‘ten’, the voiceless stops changed into voiceless fricatives, e.g.
*treies*, Gothic *preis* ‘three’, and the voiced aspirated stops changed into voiced fricatives and finally into plain voiced stops, e.g. *bher-,* Gothic *bair- ‘to carry, bear*. These changes are considered generally valid and therefore basically unconditioned. For example, the development of *d- >* Germanic *t- does not work only initially as just shown but also internally, cf. full grade *sed- ‘to sit’ > Gothic *sit-an or zero-grade *ni-sd-o- ‘where the bird sits down’ = ‘nest’ > Old High German *nest*. The same is with *t >* Germanic *p, for internal change cf. *bhr̠t̠ar (< bhreh₂t̠ar) ‘brother’ > Gothic *broþar*. There are certain exceptions, which are well defined however. As shown above, final *-t is dropped according to the Germanic *Auslautgesetze* and *t preceded by *s did not change, cf. *h₂ster- ‘star’ >* Gothic *stair-nō*. A third case is the famous Verner’s Law, explaining a previous exception to Grimm’s Law, saying that the Germanic voiceless fricatives resulting from voiceless stops became voiced in medial or final position if the PIE free word accent did not immediately precede, e.g. *ph₂t̠ar ‘father’ (> *fah̠er > *fah̠er) > Gothic *fadar [fadár] vs. *bhr̠h₂t̠ar (> *bhr̠t̠ar > *br̠op̠er) > Gothic broþar [br̠op̠ar].

If we treat the WT stop system including the affricates in this manner, the outcome will be a bit meagre. Considering the simple stops and affricates in *CV*-position, we will find that the plain voiceless stops and affricates did not change. But an important point in this context is that there are very few examples for this position. The voiceless aspirated stops and affricates did not change either in this position. Only the plain voiced stops and affricates show devoicing in most dialects, in tonal dialects connected with low tone, and in certain CT dialects, e.g. in the dialects of Lhasa and Shigatse, the devoiced stops and affricates have become aspirated. And again there are only few examples with originally plain voiced affricates in this position. Looking through the records in more detail, we find a complete regular devoicing in all dialects with the exception of certain WAT dialects, and in Amdo Tibetan WT initial *b- has become w-*. In the WAT dialects the process of devoicing is apparently still in progress. Going from west to east we still encounter voiced stops in Baltistan and Lower Ladakh. The main variation between voiced and devoiced stops is found in Central Ladakh with the capital Leh. In the WT dialects farther east in Upper Ladakh and Indian Changthang and to the south in Tabo as well as in the Central Tibetan dialects beyond the Indian border in neighbouring Ngari the devoicing process is completed and the sound change has become completely regular. To give a few examples: Initial *b- in WT bu mo ‘girl, daughter’ is still voiced in the western dialects of WAT, cf. Balti *b̠ono* and Purik of Kargil *bomo*, further east in Leh, however, we have *pomo* like in many other dialects, cf. *pomo* (L-H) in the WIT dialects of Zanskar,
Trangtse and Tabo as well as in the CT dialect of Kyirong, but $p^b$umo (L-H) in Shigatse. Southern Tibetan (ST) Dzongkha, the official language of Bhutan, has $pum$ (L) and the Kham dialect of Bathang (TBL) $p\ddot{a}:mo$ (L-H). Only Amdo Tibetan differs with initial $w$-, cf. Themchen $w\ddot{a}m\ddot{u}$ and Arik (TBL) $wom\ddot{o}$. Lexical exceptions like WT $bul$ (tog) ‘baking soda’, for which we find $pul$ all over WAT, can easily be explained by the fact that this soda was imported from Ladakh, and with the object also the name has been imported. For WT initial $g$- cf. WT $gos$ ‘clothes, dress’ > Balti $gos$ ‘woollen cloth’, but Leh $kos$ ‘gown’, Tabo $k\ddot{o}$: (L) ‘id.’, Dingri $k^b\ddot{o}$: (LF) ‘clothing’, Dzongkha $ko$: (L) ‘id.’, Bathang (TBL) $ko$: (L) ‘id.’, Themchen $ki$ and Arik (TBL) $ku$ ‘satin fabric’. For WT initial $d$- cf. WT $dar\ ba$ ‘buttermilk’ > Balti $dar\ ba$, but Leh $tara$, Tabo and Kyirong $tara$ (L-H), Shigatse $t^b\ddot{a}ra$ (L-H), Dzongkha $ta\:u$ (L), Derge $tara$ (L-H), Themchen $tara$. However, if WT $d$- is followed by $u$, the devoicing has reached all WAT dialects, cf. WT $dug$ ‘poison’ in all WAT dialects $tuk$, WT $dus$ ‘time’ in all WAT dialects $tus$, and WT $dud\ pa$ ‘smoke’ in all WAT dialects $tut\ pa$.

The picture of consonantal sound changes is getting considerably richer when we switch from the plain initial stops to the initial clusters. Repeating the fact that the usual syllable in Tibetan is not characterized by *Ce- or *CRe- like in PIE but by $CC(R)V$-, where the consonants of the cluster interact with each other considerably when changing, it is necessary to drop the idea of describing the change of single consonants and to describe the change of the consonant clusters as a whole. This leads to the consequence that conditioned consonant change is the clearly dominating form of change in Tibetan. It is of course impossible to present the whole picture here, and I will restrict myself to illustrate the diverse and partly far-reaching changes by the presentation of selected changes of $CC$-clusters with an initial stop preceded by a simple (pre- or superscribed) prefix. At the first glance, it seems difficult to describe the changes of the many possible and occurring cluster formations systematically. To make this easier we have to take into account the empirical observation that the prefixes can be grouped into two classes, oral and nasal prefixes, firstly because they occur in complementary distribution with the voiceless and voiceless aspirated stops, and secondly because the results of the changes of the clusters with oral and nasal prefixes are more similar and better comparable among each other. In doing this, we can establish a stop system with seven main series for WT as a basis to describe the consonant changes in Tibetan from WT to the modern spoken varieties. As mentioned earlier, we find $g, d, b, m, \ 'a\-chu\ddot{u}$ (graphically represented by an apostrophe) as prescripts and $r, l, s$ as superscripts in prefixed position with the restriction that $m$ cannot precede...
the labial stops. Of these \( m \) and \( 'a-chu' \) count as nasal prefixes (abbr. as N), the rest as oral prefixes (abbr. as O).

As noted previously, the PIE stop system consists of five members each (labial, dental, palatal, velar, labiovelar) of the three series (voiceless, voiced, voiced aspirated) and the Germanic stop system is reduced by one according to Grimm’s Law, cf.

\[
\begin{array}{llll}
\text{Table 1. PIE stop system} & \text{Table 2. Germanic stop system} \\
p & b & b^{h} & f & p & b \\
t & d & d^{h} & \text{p} & t & d \\
k & g & g^{h} & \text{x} & k & g \\
k^{w} & g^{w} & g^{wh} & x^{w} & k^{w} & g^{w} \\
\end{array}
\]

The WT stop system consists of three members each (labial, dental, velar) of three series (voiceless, voiceless aspirated, voiced), if we only count the plain stops, cf.

\[
\begin{array}{llll}
\text{Table 3. WT system with plain stops} \\
p & \text{p} & \text{ph} & \text{b} \\
t & \text{t} & \text{th} & \text{d} \\
k & \text{k} & \text{kh} & \text{g} \\
\end{array}
\]

It consists of seven series (voiceless, voiceless with oral prefixes, voiceless aspirated, voiceless aspirated with nasal prefixes, voiced, voiced with oral prefixes, voiced with nasal prefixes), if we count the \( CC \)-clusters, cf.

\[
\begin{array}{llllllll}
\text{Table 4. WT system with CC-cluster stops} \\
p & \text{Op} & \text{ph} & '\text{ph} & \text{b} & \text{Ob} & '\text{b} \\
t & \text{Ot} & \text{th} & '\text{Nth} & \text{d} & \text{Od} & \text{Nd} \\
k & \text{Ok} & \text{kh} & '\text{Nkh} & \text{g} & \text{Og} & \text{Ng} \\
\end{array}
\]

We must keep in mind, however, that the \( CC \)-cluster system is still a simplification as it does not take into account all subtle changes in the modern \textit{cluster dialects}, i.e. in WAT and in Amdo Tibetan where initial consonant clusters are still preserved, due to different developments within the series with oral prefixes and even within the series with nasal prefixes. This prefixation with nasal prefixes occurring with voiceless aspirated and voiced stops is also called \textit{prenasalization}.

In Amdo Tibetan, all seven series of the WT system are maintained. The main change in contrast to the WT system is that the plain voiced series became voiceless. Minor changes are WT \( p- \) and \( b- \to w- \), and WT \( ph- \to h- \).
In some Amdo dialects prenasalization with the voiceless aspirates is not stable, cf.:

Table 5. WT and Amdo stop systems

<table>
<thead>
<tr>
<th></th>
<th>WT</th>
<th>Op</th>
<th>ph</th>
<th>'ph</th>
<th>b</th>
<th>Ob</th>
<th>'b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amdo</td>
<td>w</td>
<td>Op</td>
<td>h</td>
<td>(m)p</td>
<td></td>
<td>Ob</td>
<td>mb</td>
</tr>
<tr>
<td>WT</td>
<td>t</td>
<td>Ot</td>
<td>th</td>
<td>Nth</td>
<td>d</td>
<td>Od</td>
<td>Nd</td>
</tr>
<tr>
<td>Amdo</td>
<td>t</td>
<td>Ot</td>
<td>t'h</td>
<td>(N)t'h</td>
<td>t</td>
<td>Od</td>
<td>nd</td>
</tr>
<tr>
<td>WT</td>
<td>k</td>
<td>Ok</td>
<td>kh</td>
<td>Nkh</td>
<td>g</td>
<td>Og</td>
<td>Ng</td>
</tr>
<tr>
<td>Amdo</td>
<td>k</td>
<td>Ok</td>
<td>k'h</td>
<td>(N)k'h</td>
<td>k</td>
<td>Og</td>
<td>Ng</td>
</tr>
</tbody>
</table>

The examples showing the changes are from the Amdo dialects of Ndzorge, Rkangtsa and Themchen: WT pa'nh > Ndzo wa'γ ‘lap’; WT phabs > Rka hap ‘yeast’; WT bu mo > The wəmu ‘girl’, WT dug > The təç ‘poison’, WT gos > The ki ‘satin fabric’.

In WAT, phonemic prenasalization is generally dropped and the plain voiceless aspirated series and the nasal-prefixed voiceless aspirated series have merged in the plain voiceless aspirated series. Thus, only six of the seven WT series are maintained. As already seen above, the plain voiced series became in part voiceless, and the nasal-prefixed voiced series became plain voiced, cf.:

Table 6. WT and WAT stop systems

<table>
<thead>
<tr>
<th></th>
<th>WT</th>
<th>Op</th>
<th>ph, 'ph</th>
<th>b</th>
<th>Ob</th>
<th>'b</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAT</td>
<td>p</td>
<td>Op</td>
<td>p'h</td>
<td>b/p</td>
<td>Ob</td>
<td>b</td>
</tr>
<tr>
<td>WT</td>
<td>t</td>
<td>Ot</td>
<td>th, Nth</td>
<td>d</td>
<td>Od</td>
<td>Nd</td>
</tr>
<tr>
<td>WAT</td>
<td>t</td>
<td>Ot</td>
<td>t'h</td>
<td>d/t</td>
<td>Od</td>
<td>d</td>
</tr>
<tr>
<td>WT</td>
<td>k</td>
<td>Ok</td>
<td>kh, Nkh</td>
<td>g</td>
<td>Og</td>
<td>Ng</td>
</tr>
<tr>
<td>WAT</td>
<td>k</td>
<td>Ok</td>
<td>k'h</td>
<td>g/k</td>
<td>Og</td>
<td>g</td>
</tr>
</tbody>
</table>

The examples are from the WAT dialects of Khalatse and Nurla: WT 'pha'nh > Khal p'hənγ ‘spindle’, WT mthil > Khal t'gil ‘bottom’, WT 'thad po > Khal t'hatpo ‘happy’, WT mkhas pa > Khal k'haspa ‘learned person’, WT 'khur thag > Khal k'hurla'ak ‘rope for tying load’; WT bu mo > Kar bomo, Leh pomo ‘girl, daughter’, WT dar ba > Kar darba, Leh tara ‘buttermilk’, WT gos > Kar gos ‘clothes’, Leh kos ‘gown’; WT 'bu > Khal bu-tsik ‘insect’, WT mda’ > Khal da ‘arrow’, WT 'di > Khal di ‘this’, WT mgar ba > Khal garba ‘blacksmith’, WT 'gan > Nur gan ‘responsibility’.

The cluster dialects of Amdo Tibetan and of WAT are characterized by the lack of phonemic tone. All other dialects lack initial clusters but have, with one exception, a two-fold tone system, high vs. low register, or a four-fold tone system, high vs. low and level vs. non-level (mainly falling) reg-
ister. Some of them maintain voicedness as a phonemic feature. The dialects of WIT and Kham Tibetan belong to these, where the plain voiceless and the oral-prefixed voiceless series have merged in plain voiceless series accompanied by high tone (H), and the plain voiceless aspirated and the nasal-prefixed voiceless aspirated series have merged in the plain voiceless aspirated series also accompanied by high tone (H). Thus, the seven WT series are further reduced to five. The WT plain voiced series has become devoiced, the oral-prefixed voiced series has become plain voiced and the nasal-prefixed voiced series remained voiced with prenasalization. These three originally voiced series are accompanied by a low tone (L), cf.

Table 7. WT, WIT and Kham stop systems

<table>
<thead>
<tr>
<th></th>
<th>WT</th>
<th>WIT, Kham</th>
<th>WT</th>
<th>WIT, Kham</th>
<th>WT</th>
</tr>
</thead>
<tbody>
<tr>
<td>p, Op</td>
<td>ph, 'ph</td>
<td>b, Ob, 'b</td>
<td>t, Ot</td>
<td>th, Nth</td>
<td>k, Ok</td>
</tr>
<tr>
<td>p (H)</td>
<td>p (H)</td>
<td>p (L)</td>
<td>t (H)</td>
<td>t (H)</td>
<td>k (H)</td>
</tr>
<tr>
<td>th, Nth</td>
<td>d</td>
<td>Od</td>
<td>d (H)</td>
<td>d (L)</td>
<td>g</td>
</tr>
<tr>
<td>b (L)</td>
<td>mb (L)</td>
<td>Nd</td>
<td>nd (L)</td>
<td>Ng</td>
<td></td>
</tr>
<tr>
<td>mb (L)</td>
<td>g (L)</td>
<td>ηg (L)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


The CT dialect of Kyirong also belongs here. It has kept five series like in WIT and Kham Tibetan by keeping apart the three series with originally voiced stops, but the realization of these series is different. Kyirong has a three register tone system: high (H), middle (M) and low (L) tone. “The middle tone is spoken with modal voice and a slightly rising contour. Low tone syllables also have a slightly rising contour, but are produced with breathy or at least lax voice (depending on the speaker).” (Huber 2005: 20). The WT plain voiced stops are devoiced and the syllable is pronounced with middle tone. The WT oral-prefixed voiced stops are also devoiced with low tone. And the WT nasal-prefixed voiced stops remain voiced with middle tone, e.g. WT do > Kyir to (M) ‘two’, WT rdo > Kyir to (L) ‘stone’, WT mdo > Kyir do (M) ‘lower valley’.
As far as I can see, all other CT dialects and ST Dzongkha have reduced the seven WT series to four, mostly by merging the WT oral-prefixed and the WT nasal-prefixed voiced series into one by dropping all prefixes. This happened in ST Dzongkha and CT Jirel, which have maintained phonemic voicelessness. In these dialects the merger resulted in a plain voiced series with low tone. The plain voiceless and the oral-prefixed voiceless series as well as the plain voiceless aspirated and the nasal-prefixed voiceless aspirated series behave like in WIT and Kham Tibetan. The situation in Southern Mustang is less clear. Jirel shows a peculiarity, as the devoiced series from the WT plain voiced series has developed an additional aspiration accompanied by low tone, cf.:

Table 8. WT, Dzongkha and Jirel stop systems

<table>
<thead>
<tr>
<th>WT</th>
<th>p, Op</th>
<th>ph, 'ph</th>
<th>b</th>
<th>Ob, 'b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dzo, Jir</td>
<td>p (H)</td>
<td>pʰ (H)</td>
<td>p, pʰ (L)</td>
<td>b (L)</td>
</tr>
<tr>
<td>WT</td>
<td>t, Ot</td>
<td>th, Nth</td>
<td>d</td>
<td>Od, Nd</td>
</tr>
<tr>
<td>Dzo, Jir</td>
<td>t (H)</td>
<td>tʰ (H)</td>
<td>t, tʰ (L)</td>
<td>d (L)</td>
</tr>
<tr>
<td>WT</td>
<td>k, Ok</td>
<td>kh, Nkh</td>
<td>g</td>
<td>Og, Ng</td>
</tr>
<tr>
<td>Dzo, Jir</td>
<td>k (H)</td>
<td>kʰ (H)</td>
<td>k, kʰ (L)</td>
<td>g (L)</td>
</tr>
</tbody>
</table>


The same process, merging the WT oral-prefixed and the WT nasal-prefixed voiced series into one by dropping all prefixes, occurred in other CT dialects like in the dialects of Lhasa, Shigatse, Dingri and the Western Drokpas, but with the difference, that the devoicing has been completed. Thus, there is no voicelessness distinction any more in these dialects. The plain voiceless and the oral-prefixed voiceless series as well as the plain voiceless aspirated and the nasal-prefixed voiceless aspirated series again behave like in WIT and Kham Tibetan. And they also show the peculiarity we have seen in Jirel, the WT plain voiced series has not only become devoiced with low tone but also has developed aspiration, cf.:
Table 9. WT and Shigatse stop systems

<table>
<thead>
<tr>
<th></th>
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<th>Shi, etc.</th>
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<th>Shi, etc.</th>
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<th>Shi, etc.</th>
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<td>b</td>
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<td>b</td>
<td>b</td>
<td>b</td>
<td>b</td>
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<tr>
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<td>Ob, 'b</td>
<td>Ob, 'b</td>
<td>Ob, 'b</td>
<td>Ob, 'b</td>
<td>Ob, 'b</td>
<td>Ob, 'b</td>
</tr>
<tr>
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<td>p (L)</td>
<td>p (L)</td>
<td>p (L)</td>
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<td>d</td>
<td>d</td>
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<td>Od, Nd</td>
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</tr>
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<td>g</td>
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<td>g</td>
<td>g</td>
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<tr>
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<td>Og, Ng</td>
<td>Og, Ng</td>
<td>Og, Ng</td>
<td>Og, Ng</td>
<td>Og, Ng</td>
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<td>k (L)</td>
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<td>Ng</td>
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<td>Ng</td>
</tr>
</tbody>
</table>


Finally, in a group of CT dialects spoken in Ngari (Ruthok, Gar, Ger-gye, Purang, Tshochen), the development of the seven WT stop series is very similar to the preceding CT group. They are also reduced to four and voicedness no longer exists phonemically. The plain voiceless and the oral-prefixed voiceless series as well as the plain voiceless aspirated and the nasal-prefixed voiceless aspirated series again behave as in WIT and Kham Tibetan. The difference lies in the merger of the originally voiced series. Instead of merging the WT oral-prefixed and the WT nasal-prefixed voiced series into one, the WT oral-prefixed voiced series has merged with the WT plain voiced series into a plain unvoiced series with low tone and the WT nasal-prefixed voiced series became devoiced but kept the prenasalization. A further difference is that the WT plain voiced series has become devoiced with low tone but did not develop aspiration, cf.:

Table 10. WT and Ngari stop systems

<table>
<thead>
<tr>
<th></th>
<th>WT</th>
<th>Ngari</th>
<th>WT</th>
<th>Ngari</th>
</tr>
</thead>
<tbody>
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<td>p (H)</td>
<td>p (H)</td>
<td>p (H)</td>
</tr>
<tr>
<td>ph, 'ph</td>
<td>ph (H)</td>
<td>ph (H)</td>
<td>ph (H)</td>
<td>ph (H)</td>
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<tr>
<td>b</td>
<td>b</td>
<td>b</td>
<td>b</td>
<td>b</td>
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In general, we can say that the number of stop series are reduced from seven in WT to four in CT and ST. The least functional load in this respect is on the distinction between plain and prenasalized voiceless aspirated stops. The distinction is only kept in most Amdo dialects and in some Kham dialects. The main changes concerned the three series of voiced stops in WT (plain, oral-prefixed, nasal-prefixed). They are preserved in Amdo and Kham Tibetan in the east and in WAT and WIT in the west. In ST and CT they are usually reduced to two by merging oral-prefixed and nasal-prefixed voiced stops, rarely by merging the plain and oral-prefixed voiced stops. A further important change is the gradual desonorisation, first of the plain voiced stops then of the oral-prefixed voiced stops and finally of the nasal-prefixed voiced stops leading to the loss of phonemic voicedness. These changes are balanced by the development of phonemic tone and by aspiration connected with low tone.

4. Conclusion

In applying the comparative method to sound change phenomena in IE and Tibetan, it became evident that syllable structure in both language families plays an eminent role. In contrast to word structure and word formation, the syllable structure of WT appears to be more complicated than in PIE, especially due to the syllable-initial consonant clusters consisting usually of two and not rarely even three consonants, which influence each other with respect to sound change. This is the most important factor characterizing sound change from Old and Classical Tibetan down to the modern spoken dialects of today. The other important factor with respect to sound change is that the simple vowel of a syllable usually changes under the influence of a following final consonant implying also change or loss of this consonant, so that vowel and consonant changes cannot be separated from each other. Both factors show that in contrast to PIE and IE languages, where unconditioned sound change is prevailing, in Tibetan most sound changes are conditioned changes. Given the additional fact that especially simple voiceless initials stops are rare in Tibetan, it all leads to the insight that a description of the Tibetan stop system in analogy to the PIE or, e.g., Germanic stop system, describing the single, usually initial stops, does not reveal much on the sound history of Tibetan. In Tibetan, only the
description of the initial CC-clusters as the basic unit in the stop system allows one to recognize the eminent changes which the systems of the modern dialects have undergone. If we start from the WT system with plain stops, we get three series (voiceless, voiceless aspirated, voiced), similar to the PIE stop system also with three series (voiceless, voiced, voiced aspirated). But if we start with the initial CC-clusters as the basic unit we obtain seven series in the WT stop system, which are kept in Amdo Tibetan, reduced to six in WAT, further reduced to five in WIT and Kham Tibetan, and again reduced to four in Central and Southern Tibetan. And it may be interesting to note that among the three members unvoiced, unvoiced aspirated and voiced, the voiced members have undergone the greatest changes.

Appendix: Tibetan dialects – abbreviated preliminary classification

This classification uses linguistic and geographic criteria as well as native classification conceptions. It represents, to a certain extent, the genetic affiliations between the varieties. The linguistic criteria are mainly based on sound change phenomena. Included are only varieties mentioned in the text. So far unpublished data are from fieldwork mainly by Felix Haller (Shigatse, Amdo and Kham Tibetan), Veronika Hein (Tabo) and myself (WAT, Trangtse) as well as from published sources (quoted in brackets). All data will be published in the Comparative dictionary of Tibetan dialects (CDTD).

**WAT Western Archaic Tibetan** (Baltistan, Ladakh)
Balti dialects in Baltistan: Skardo, Khaplu
Purik dialects in Lower Ladakh: Kargil, Tshangra, Chiktan
Ladakhi dialects of Sham and Zhung: Khalatse, Nurla, Leh

**WIT Western Innovative Tibetan** (Ladakh, NW India, Tibet Ngari area)
Ladakhi dialects of Zanskar, Stot (or Ken) and Indian Changthang: Trangtse
Indian Border Area dialects, dialects of Spiti: Tabo (Hein)
Ngari dialect of Tholing (Tuolin) or Tsanda (Zhada) (Qu and Tan 1983)

**CT Central Tibetan** (Tibet Ngari and Shigatse areas, Lhasa municipality, Nepal)
Ngari dialects of Ruthog (Ritu) and Tshochen (Cuoqin): Ruthok, Gar, Gergye, Purang, Tshochen (all Qu and Tan 1983)
Tsang and Ü dialects: Western Drokpa (Kretschmar 1986), Kyirong-Lende (Huber 2005), Dingri (Dingri) (Herrmann 1989), Shigatse town (Xigazê) (Haller 2000), Lhasa (Lasa) (Qu and Tan 1983)
Dialects of Nepal: Southern Mustang (Kretschmar 1995), Yolmo or Helambu Sherpa (Hari and Chhegu Lama 2004), Jirel (Strahm and Maibaum 2005)
**ST Southern Tibetan** (Sikkim, Bhutan): Dzongkha (Bhutan) (van Driem 1998)

**EKT Eastern Kham Tibetan** (Chamdo, Sichuan, Yunnan): Derge (Dege), Bathang (Batang) (TBL 1992), Lithang (Litang), Dartsedo (Kangding)

**EAT Eastern Amdo Tibetan** (Qinghai, Gansu, Sichuan): Themchen (Tianjun) (Haller 2004), Mkharmar (Qilian), Rkangtsha (Gangcha), Arik (Alike) (TBL 1992), Chabcha (Gonghe), Rgangya near Labrang (Ganjia near Xiahe), Rngaba (Aba), Ndzorge (Ru’ergai) (Sun 1986), Rmastod (Maduo), Mdzorganrabar (Huashixia)

**Notes**

1. With this little contribution I want to express my sincere gratitude to my long-standing and close colleague Iwar Werlen at the Institute of Linguistics at Bern University. Within the IE languages, I tried to put emphasis on the Germanic languages as they also belong to his diverse fields of research. And I am also grateful to him that he not only put up with my Tibetan studies, but supported them whenever possible, though they do not belong to his research interests.

2. Because even the modern written language still uses the orthography of Classical Tibetan, I use the neutral term Written Tibetan (WT) in this paper. Only in cases where Old Tibetan written forms differ significantly with respect to the discussed items, the term Old Tibetan will be used.

3. \( V \) = vowel, \( C \) = consonant; \( CV \) occurs marginally with particles like enclitic \(*k^\wedge e\) ‘and’ and some pronominal forms like \(*m^\wedge e\), enclitic \(*me\) ‘me’.

4. The roots are often written with the \( s \) in parentheses: \(*s)pe\), \(*s)teg\).

5. There are two letters in Tibetan writing, called a-chen and ‘a-chuui’, whose phonetic backgrounds in Old and Classical Tibetan are not fully clear. They occur syllable-initially and do not enter into cluster formation. Probably, a-chen represented a syllable initial glottal stop and ‘a-chuui’ was perhaps only a graphic sign to indicate that the syllable had no initial consonant but started with the vowel. In certain modern CT varieties, however, initial ‘a-chuui’ left a trace, as the syllable is realized with a voiced onset and low register tone. In Kyirong Tibetan, for example, this voiced onset has phonemic status as well as of course the low register tone. In contrast, hard voice onset, corresponding to a-chen, has no phonemic status, but is always connected with phonemic high register tone (cf. Huber 2005: 32).

6. Cf. note 5.

7. Diminutive formations in WT like bye-‘u ‘little bird’ < bya ‘bird’ with the suffix ‘u < bu ‘boy, son, child’ or < ’bu ‘insect’ are considered disyllabic.

8. For a list of the Tibetan dialects and their subgrouping cf. the appendix.
9. This admirable insight into the linguistic structure is not only shown by its representation in the graphic structure of the syllable but to some extent it is also present in the two earliest and pre-classical grammatical treatises, attributed by the indigenous tradition to the legendary Thon-mi Samboṭa, minister under the king Srong btsan sgam po (618-649?) and creator of the Tibetan script. Especially important with respect to the initial consonant clusters is the second treatise entitled rtags kyi ’jug pa ‘(the instruction of) adding the (characteristic) signs’, cf. Verhagen (1994: 189, 209–210).

10. The Tibetan grammarians were wrong only in the case of clusters with subscribed l, where l is the initial and the consonant written as initial is the immediately preceding prefix. A special case is the cluster lh- with h as initial and l as superscript. In many modern varieties we find voiceless initial l corresponding to WT lh- and we may assume that l- already existed at the time of the establishment of the Tibetan writing system and hl- was the attempt to put this into writing.


12. With the exception of Western Archaic Tibetan (WAT) and Eastern Amdo Tibetan (EAT) or simply Amdo Tibetan, the Tibetan dialects have developed a phonemic tone system for the initial syllable of a word. There are mainly two types. One distinguishes between high and low register syllables, they are marked here by a following (H) or (L) respectively. The other type in addition to the distinction between (H) and (L) distinguishes also between a level or non-falling and a non-level or falling contour tone. Only the falling tone is marked here as (F). For the first type cf. e.g. the Central Tibetan (CT) dialect of Southern Mustang so (H) ‘tooth’ and so (L) ‘eat!’ and for the second type the CT dialect of Shigatse ta (H) ‘horse’, ta (L) ‘arrow’, ta (HF) ‘tiger’ and ta (LF) ‘I (elegant speech)’.

13. There is only one source in the Comparative dictionary of Tibetan dialects (CDTD) within the 67 recorded varieties which regularly gives the change of o > u in this position, i.e. Kham Tibetan of Bathang (TBL) with lu (L) ‘year’, su (H) ‘tooth’, rdu (H) ‘stone’, gu (H) ‘door’.

14. In the Dzongkha dialect alongside with me (L) for ‘fire’ we also find mi (L). In certain CT and EKT varieties the word for ‘tongue’ has added an unclear second syllable. Therefore, original final -e became internal, cf. e.g. CT of Shigatse and EKT of Bathang twi-le (H-H).

15. For Amdo Tibetan cf. Themchen: mŋa ‘man’, bzunga ‘four’, tɕʰa ‘dog’, ʨa ‘knife’ or tɕʰa ‘water’, pki ‘ten’, sʰa ‘who’, yla ‘song’. And for the different developments in Kham I quote the recordings from Derge and Bathang including Bathang (TBL): De je (H), Ba me (H), Ba (TBL) mŋa (H) ‘human being, man’, De yŋa (H), Ba je (H), Ba (TBL) yŋa (H) ‘four’, De tɕʰa (H), Ba tɕʰa (H), Ba (TBL) tɕʰa (H) ‘dog’, De tɕʰa (L), Ba tɕe (L), Ba (TBL) tɕa (L) ‘knife’ or De tɕʰu (H), Ba tɕʰo (H), Ba (TBL) tɕʰu (H) ‘water’, De tɕa (H), Ba tɕo (H), Ba (TBL) tɕu (H) ‘ten’, De sʰu (H), Ba sʰo (H), Ba (TBL) su (H) ‘who’, De lō (H), Ba lo (H) ‘song’.
16. This terminal devoicing of final dental, labial and velar plosives resembles a similar process which took place from Old to Middle High German leading to the neutralization of the original phonological opposition between voiced and unvoiced stops in final position. In WT only voiced stops may occur in final position, and in those dialects where the final stops are kept till today they are realized unvoiced with delayed release. Apparently, in Tibetan the three kinds of stops are also neutralized and reduced to one kind in final position, probably voiced in WT and unvoiced in the dialects today.


18. Slight exceptions are CT Kyirong and some closely related CT varieties in Nepal (Kagate, Yolmo, Tsum, Langtang) which kept initial labial stop followed by r, e.g. WT 'bras ‘rice’ > Kyirong brč: (LF), and ST Dzongkha, which kept initial labial stop followed by y as labial followed by w, e.g. WT bya ‘bird’ > Dzongkha pšoa (L). Slight exceptions are also some WIT dialects like the Ladakhi varieties of Zanskar or Trangtse, where ld- and lt-clusters are still found. In addition to that the Zanskar varieties have no phonemic tone.

19. In certain Kham dialects, voiceless prenasalization may occur with the voiceless aspirates, e.g. in Derge. But in the Bathang (TBL) records compiled by Kesang Gyurme, a distinguished linguist and native speaker prenasalization never occurs. And with initial labial voiceless aspirated stops we find variation with and without prenasalization already in WT.


21. In Southern Mustang phonemic voicedness is not completely lost. Usually the correspondences to the WT nasal-prefixed voiced initial stops have kept their voicedness, but exceptions are not rare. Exceptions to the devoicing of the correspondences to the WT oral-prefixed voiced initial stops, however, are very rare. Thus, Southern Mustang seems to belong to a type with a different merger. In this dialect like, e.g., in the CT dialect of Yolmo in Nepal, the WT oral-prefixed voiced initial stops and the plain voiced initial stops have merged into a plain voiceless series. In contrast, the WT nasal-prefixed voiced initial series remained voiced but lost the prenasalization.

22. This additional aspiration seems “superfluous”, as it is a second distinctive feature in addition to voicedness distinction. This is different to CT dialects like Shigatse, where phonemic voicedness is lost and the aspiration of the devoiced stop is the only distinctive feature, cf. below.

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