

Yu, Alan C. L. 2007. *A Natural History of Infixation*. Oxford: Oxford University Press [*Oxford Studies in Theoretical Linguistics* 15]. xii+264 pp. (ISBN 978-0-19-927938-8)

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A standard hypothesis about the nature of linguistic signs claims that a non-separable conceptual domain (*signifié*) is normally correlated with an articulatory chain (*signifiant*) that shares the feature of inseparability. In other words, inseparability is said to constitute an iconic relation between a *signifiant* and its *signifié*. This principle is perhaps most clearly expressed as the Lexical Integrity Hypothesis (LIH, see Bauer 1978, Lapointe 1980, Williams 1981, Anderson 1982, Di Sciullo & Williams 1987, among many others). Nevertheless, descriptive traditions in linguistics have long known of instances that seem to violate this principle. A typical case is that of the Indo-European *n*-stems forming up to three types of present tense stems (compare Latin *vi<n>co* 'I win' vs. *vici* 'I won', see Strunk 1967, Szemerényi 1989: 290–293 with extensive references). Other well-known examples are the non-concatenative morphology of Semitic, e.g. the derivational *ta*-insertion into verbal roots, (compare Arabic *kasaba* 'he acquired' vs. (*i*)*k<ta>saba* 'he gained'), as well as the position of (more or less) possessive affixes in Ulwa (a Misumalpan language in Nicaragua), e.g. *tápas* 'mouth' > *tá<ka>pas* 'his/her mouth', see Green 1999: 52–55. Bouazza-Marouf (2002: 21) even argues that lengthening of vowels as in Arabic *kātaba* 'he corresponded (with)' < *kataba* 'he wrote' should be interpreted as an instance of infixation (*ka<a>taba*), a hypothesis that is sometimes applied to ablaut phenomena too (as present for instance in Indo-European and Semitic).

In order to distinguish such phenomena from infixation, it is reasonable to argue that ablaut phenomena lack the notion of *derived discontinuity*, as suggested by Alan Yu in the book at issue (Yu 2007: 9). That is, infixation should disrupt a contiguous chain of phonological elements that form a lexical stem and should derive a functional variant of the stem. With respect to ablaut, however, it should be noted that if we start from Ø-forms (*zero grade*) of say Germanic *\*bhēdh-* 'bound' (historically plural of past tense plus past participle) as some kind of 'base form', we might claim that *e*-grade (*\*bh<e>ndh-* (present)) and *o*-grade (*\*bh<o>ndh-* (singular past)) represent augmented forms that are marked for discontinuity. However, such a view goes against standard assumptions about the morphological make-up and stress patterns of Germanic ablaut verbs. I only allude to this

hypothetical argument in order to show that the definition of what infixation is in a given language heavily depends on how base forms are described. For instance, it is mere convention to say that in Arabic, verbal base forms are represented by the third person masculine perfective (e.g. *kataba* ‘he wrote’) showing ablaut (zero grade + *-u-*) for instance in the imperfective *ya-ktub-u*. Nevertheless, it may be likewise argued that the base form in Arabic is given by the imperative (second singular) *ktub* ‘write!’. In this case, the base form would have been marked for derivational discontinuity in the perfective (plus ablaut *-a-* in the second syllable), resulting in *k<a>tab-a*.

Yu’s reliance on the criterion of derived discontinuity necessitates one further comment: He argues that “infixes create derived discontinuous morphs by splitting apart meaningful roots or stems that otherwise surface as a unitary whole” (p. 10). But what is meant by “meaningful root”? On page 11, the author alludes to the case of Old Irish that shows an infix-like position of so-called object pronouns and of certain modal particles, such as (*-*)*ro-* in *as<ro>beir* ‘can say’ (Pokorny 1969: 109). The element *as-* reflects IE *\*eks-* ‘out’, serving as a preverb in Old Irish. The verbal meaning once was ‘to carry out (a word)’ > ‘to say’. From a diachronic point of view, *-ro-* is the second part of a proclitic (PROC) chain that itself is marked for enclisis (ENC): PROC-VERB → [PROC-ENC]<sub>PROC</sub>-VERB. From a synchronic point of view, however, the compositional nature of *asbeir* is no longer transparent, representing instead a “distinct meaning whole” in the words of Yu (p. 11). Yu devotes a whole chapter to this type of ‘entrapment’ (p. 148–156), that nicely illustrates some diachronic aspects of this issue. Nevertheless, his assumption that (in Old Irish) “the person markers always occur between parts that are decomposable based on the synchronic data available” (p. 12) should be adopted with care: What we need is a compatible semantic model that allows us to evaluate the (non-)decomposability of a given lexical form. Otherwise, we risk mixing a diachronic perspective with synchronic features of cognitive processing by actual speakers. To give additional examples: on page 44–45, Yu reports on infixation strategies in Archi (East Caucasian, Lezgian) related to class marking agreement, comparing *axas* ‘to lie down’ > *o<w>xu* ‘having lain down’.<sup>1</sup> At least from a diachronic point of view, *a-* is an old preverb, as illustrated by cognates such as Rutul *sa- $\dot{x}$ -as* etc. Hence, the class marker occupies the typical Wackernagel position. This position is blocked in case it is already taken by another element such as the durative marker *-r-*, compare *w-a-r- $\dot{x}$ -a-r* [I-lie<sub>1</sub>-DUR-lie<sub>2</sub>-nPAST-DUR] ‘lying’. The same holds for the Dargi (East Caucasian) examples given on page 152: Here, Yu calls the class marking element *-b-* (class III [nHum]) an ‘infix’ in forms like *ka-b-i $\dot{r}$*  ‘sit down’, *ka-b-ac* ‘descend’, *a-b-ac* ‘ascend’, *če-b-a $\dot{r}$*  ‘see’. However, it is easy to show that these forms carry preverbs — compare the pair *ka-\_-ac* ‘descend’ and *a-\_-c* ‘ascend’ (*ka-* ‘down’, *a-* ‘up’). So, the question remains as to which evidence

helps to determine the extent that formal composition matches semantic composition and vice versa. According to Yu, infixation would be present only if the lexical stem at issue represents a non-composable base (from a semantic point of view). The logically possible relationships between *signifié* and *signifiant* can be described with the help of Figure 1.

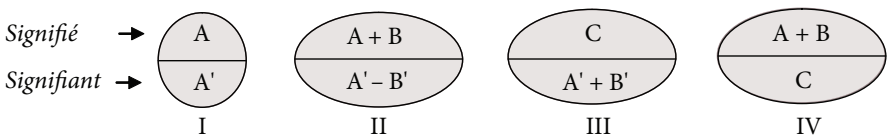


Figure 1. Logically possible relationships between *Signifié* and *Signifiant*

Accordingly, a semantically composed *signifié* may be matched by a *signifiant* that is not composed (type I), or that is composed, too (type II, e.g. German *weg-fahren* 'drive away'). Type III represents a synchronically non-composable *signifié* that is marked for a composed *signifiant* (e.g. German *an-geben* 'to boast'). The fourth type indicates composability of the *signifié* and non-composability of the *signifiant*, as in English *kill* (CAUSE + DIE) or *bring* (CARRY+COME). The main point is that a lexical form affected by infixation may correspond to type III synchronically (showing fusion of the two elements of the signifiant), but to type II diachronically.

It is clear that the description of the very nature of infixation heavily depends on the theoretical and methodological point of view adopted. The present volume (an adaptation of the author's UC Berkeley doctoral thesis) can undoubtedly be regarded as a major step towards a comprehensive understanding of infixation based on well-defined theoretical principles (basically Optimality Theory) and applying sound methodological tools. Yu combines the typological sampling of more than one hundred languages<sup>2</sup> with a clear diachronic perspective, claiming that "typological tendencies of language may be traced back to its origins and the mechanisms of language transmission" (p. ix).<sup>3</sup>

The overall aim of the book is to provide information about both the diversity of infixation processes and possible generalizations concerning the interface of phonology and morphology (as a matter of fact some of the issues addressed by the author also concern syntax, e.g. endoclysis in Udi). As has been said above, Yu considers a wide range of languages in order to illustrate the world of infixation. Nevertheless, he concentrates on some specific languages such as Takelma, Hunzib, Hausa, Pingding Mandarin, Hua, Hopi, Yurok, Udi, Pashto, Kashaya Pomo, and Tiene when elaborating specific points especially from a historical point of view. The choice of language is not necessarily grounded in the standard principles of typological sampling. Rather, Yu refers to these languages because they

**Table 1.** Numbers of languages in the sample, by language family

|                   |    |               |     |
|-------------------|----|---------------|-----|
| Austronesian      | 26 | Isolate       | 2   |
| Afro-Asiatic      | 10 | Misumalpan    | 2   |
| Austro-Asiatic    | 8  | Uto-Aztecan   | 2   |
| Niger-Congo       | 8  | Algic         | 1   |
| Australian        | 7  | Carib         | 1   |
| Hokan             | 6  | Chimakuan     | 1   |
| Muskogean         | 6  | Huavean       | 1   |
| Sino-Tibetan      | 6  | Isolate/Hokan | 1   |
| Nakh-Daghestanian | 5  | Mixe-Zoque    | 1   |
| Salishan          | 5  | Penutian      | 1   |
| Indo-European     | 3  | Siouan        | 1   |
| Mayan             | 3  | Tupi          | 1   |
| Trans-New Guinea  | 3  | Total         | 111 |

help to illustrate the different types described for the emergence of infixation. Still, it should be noted that the sampling seems slightly biased: Table 1 gives the individual figures for the language families (or macro-families) referred to in the language list (pp. 231–233; also compare fn.1):

Table 1 illustrates that there is a pronounced preference for Austronesian, Afro-Asiatic, and Austro-Asiatic languages (44 out of 111). This preference is obviously grounded in the fact that these language families are strongly marked for infixation patterns. Nevertheless, languages from Eastern Europe and the regions of the former Soviet Union (e.g. Turkic, Uralic, Mongolian, Tungus) are hardly even taken into consideration.<sup>4</sup> On p. 199, Latvian is mentioned, but I doubt whether the two terms at issue (*erschlug* and *Abel*) can be interpreted as Latvian (rather, *erschlug* is German ('I/(s)he hit')). “Lappish” is mentioned once (p. 22), as it is true for Norwegian Saami (p. 230).<sup>5</sup> True, the author maintains that “languages without infixes were not surveyed” (p. 73), but the reader may be irritated when looking at such white spots on the map: Does this mean that languages of the region just depicted do not know infixation strategies at least from a diachronic point of view, or did the author not monitor them for practical reasons? The author’s claim according to which “the final corpus nevertheless contains languages from twenty-five language phyla from all major geographic areas” (p. 74) is perhaps a little too optimistic. Maybe some readers would have appreciated learning more about the inherent claim given in the quote above, namely that infixation is not limited to certain linguistic areas, but rather is a universal option.

Yu's monograph is organized in the following way: A very readable introduction (pp. 1–8) is followed by three chapters that address theoretical and typological issues: Chapter 2 (pp. 9–46) sets the general frame by asking “What is infixation?”. Chapter 3 (“Subcategorization in context”) elaborates the theoretical foundations (pp. 47–66), while Chapter 4 (“Pivot Theory and the typology”, pp. 67–136) discusses the question of phonological pivots, adding an extremely valuable template for the typological patterning of infixation. Chapter 5 (pp. 137–180) proposes an illuminating typology of those processes that are said to be causal for the emergence of infixation. Finally, Chapter 6 (pp. 181–230) discusses linguistic features that are somehow related to infixation but that do not fully correspond to the basic definition given on p. 10.

For readers not acquainted with the technical apparatus applied by the author, certain sections of the book will remain slightly opaque. This holds especially for the three chapters following the introduction. In Chapter 2, the author discusses several explanatory proposals for the emergence of infixation, all of them based mainly on assumptions of Optimality Theory (Prince and Smolensky 1993). Yu concentrates on two approaches, namely Phonological Readjustment and Phonological Subcategorization (both terms coined by the author). Phonological Readjustment treats infixes as secondary, not primary ‘objects’, deriving them from either prefixes or suffixes via metathesis. However, the conditions that block such a process may vary from language to language. A frequently quoted example is the Dakota dual marker *-ɥ(k)* ([uŋ]/[uŋk]). Yu (p. 37) argues that the morpheme is infixal to consonant-initial polysyllabic verb roots of a lexically specified subclass, but prefixed, if the root is vowel-initial. It should be noted, however, that this generalization does not hold for all data available<sup>6</sup>. Compare for instance *ó-ɥ-kiya pi* (not: \**ɥk-ókiya pi*) [help<sub>1</sub>-DU-help<sub>2</sub> PL] ‘we helped him’ ~ ‘he/they helped us’. Also note that with the additional marker for animate plural objects (*-wičha-*), vowel initial stems may show a mixture between infixation and reduplication, compare *i-wičh-ɥ-iču pi* [take<sub>1</sub>-PL:O-DU-take<sub>2</sub> PL] ‘we took them’ (*iwičhɥču pi* being possible, too).<sup>7</sup> These data show that without a full coverage of the infixation strategies in the individual languages, generalizations as given by Yu (and others) have to be taken with care.

Phonological Subcategorization (strongly favored by the author) rejects the possibility of affix movement: “[A]n affix, *A*, takes a phonological constituent, *X*, as its left sister. When the right edge of *X* is within the domain of the morphological host (...), the infixal distribution of *A* obtains.” (p. 25). In other words: “[*W*] hile prefixes and suffixes target morphological constituents, infixes target phonological ones” (p. 48). The notion of Phonological Subcategorization is further elaborated in Chapter 3 (“Subcategorization in context”) that relates this model to Generalized Alignment (McCarthy and Prince 1993) and Sign-Based Morphology

(Orgun 1996). This section lays the ground for the hypothesis that infixation is also driven by two grammar-external factors, namely diachrony and morphological learning. In Chapter 4, the aspect of morphological learning is elaborated in terms of what Yu calls the Pivot Theory, that is “a theory of [a specific type of, W.S.] inductive bias in morphological learning” (p. 8). Yu identifies two basic types of pivots — edge pivots and prominence pivots. Edge pivots concern segmental phonological elements such as first consonant, last vowel, last syllable etc., whereas prominence pivots are prosodic in nature (stressed foot, stressed syllable, stressed vowel). In Chapter 4, the pivot typology is extensively illustrated with the help of a synchronic typology. Yu also considers problematic instances, such as final consonant pivot. He broadly discusses data from Hunzib<sup>8</sup> (East Caucasian; Tsezian) to show that such a pivot is indeed possible (compare *k’ot’le* ‘be good’ (singular), but *k’ot’<baa>le* (plural), *-ekle* ‘let fall (singular), but *-ek<a>le* (plural)).

Chapter 5 turns to diachrony. The author isolates four major pathways for the emergence of infixation: Metathesis, morphological entrapment, reduplication mutation, and morphological excretion (pp. 138–9). The first two types are well-known explanatory models, nicely illustrated by the author. Most importantly, Yu argues in favor of a perception based motivation for metathesis processes, related to “the listener’s misidentification of the source of certain elongated phonetic cues” (p. 147). Here, I cannot dwell upon the question whether such a listener-oriented theory of sound change can explain all types of observable sound changes (as strongly advocated for by Ohala 1993, Blevins 2004 and others). Nevertheless, it should be noted that metathesis leading to infixation can also be (partially) explained in terms of articulatory issues, for instance the avoidance of certain CC-clusters emerging when a C-initial suffix is added to a C-final stem. A typical instance would be the emergence of the Indo-European n-stems (present stems) mentioned above, e.g. *\*y(e)ug-n(-e)-* > *\*yu<n(e)>g-* ‘to bind, join’, *\*kl(e)u-n(-e)-* > *\*kl<n(e)>u-* ‘to close’, *\*p(e)wH-n(-e)-* > *\*pu<n(e)>H-* ‘to clean’ (Szeemerényi 1989: 290).

Yu states (p. 148) that reference towards entrapment is the perhaps most typical way to explain infixation. By this is meant that a given affix (usually a suffix, less often a prefix) was linked to a lexical element that later fused with another lexical element following or preceding this group. Note that according to Yu (p. 148) the primary host of the later infix was an adpositional affix, too. But this is not necessarily true: We also have to deal with lexical hosts, as exemplified by the German *Fugen-s* (*Ansicht-s-Karte* ‘picture postcard’) or by local adverbs, such as Udi (East Caucasian) *ci-ne-sa* [go=down<sub>1</sub>-3Sg-go=down<sub>2</sub>-PRES] ‘(s)he goes down’ < *\*ci-ne eġ-sá* ‘down (s)he [is] going’. The overall strength of this section is given by the fact that Yu refers to a number of languages the history of which has not been fully described yet. Hence, his observations not only help to feed the entrapment

hypothesis with new data, but also importantly contribute to the knowledge of historical aspects relevant for the given languages. The same holds for the section on reduplication and morphological excretion (the more or less spontaneous emergence of infixation).

The final chapter of the book (“Beyond infixation”) discusses issues of stem-internal changes that can be related to and parameterized in accordance with infixation. Yu first considers Homeric infixation<sup>9</sup> in English, before turning to other types of language gaming. The question of endoclitics is addressed in a section about Udi and Pashto. As for Udi, Yu refers to the work by Alice Harris (2002) that addresses the problem from an OT perspective, too. Nevertheless, it should be mentioned that Yu does not consider alternative proposals to handle Udi endoclitization (see Schulze 2004 for a details review of Harris 2002). In addition, he unfortunately repeats a problematic claim made by A. Harris. Accordingly, “whether a PM [Personal Agreement Marker, W.S.] is infixed to a monomorphemic verb root is determined by the transitivity of the stem” (p.209). He quotes examples like *ús-ne-ǵ-sa* [drink<sub>1</sub>-3Sg-drink<sub>2</sub>-PRES] ‘(s)he drinks’ (endoclititic) vs. *úsǵ-ne-sa* [drink-3Sg-PRES] ‘it is drinkable’ (*recte*: ‘it is drunk’). However, the correct analysis of the second form is [drink-3Sg-LV<sub>INT</sub>:PAST], that is, the present stem tense marker has fused with the light verb *e(y)*- < \*eǵ- ‘to go’ > ‘to become’. We thus have to reconstruct \**úsǵ-ne-e(ǵ)-sa*. Accordingly, the placement of the clitic element *-ne* does not differ from its position in compounds such as *kalá-ne-bak-sa* [old-3Sg-become-PRES] ‘(s)he becomes old’.<sup>10</sup> As for Pashto, the author refers to Tegey 1977.<sup>11</sup> Pashto is marked for the use of personal agreement markers with two sets of verbs, namely verbs beginning with a stressed *á-* and others that show shift of stress to the first syllable in their perfective stem. Yu adopts Tegey’s assumption, according to which these verbs are not analyzable in terms of earlier preverbal structures. Nevertheless, it should be stressed that the discussion should include the world of other Northeast Iranian languages (e.g. Ossetic) together with their history before coming to a final conclusion.

Summing up, it can safely be stated that Yu’s book is a valuable contribution to a general understanding of infixation. A full and probably more adequate appraisal of Yu’s theoretical arguments must be left to the expertise of others. However, I want to stress that the book is not easy to read for those who are not used to the OT terminology. Most importantly, the book lacks a list of those technical abbreviations that are applied in the OT context. Hence, readers who want to know what, e.g., “MWD” means (‘morphological word’) have to consult other sources. Still, even for those who do not share the extensive commitment to OT (as the author of this review), the volume is of high relevance. The collection of data is impressive, although it has to be admitted that some of the data may call for a different analysis or a more comprehensive and in-depth presentation. Readers

(from whichever camp) will especially welcome the typology of pivotal features as well as the diachronic typology. The parameters proposed by Yu will undoubtedly help to better understand the amazing world of infixation. Yu's book also lays the ground for one aspect not pursued by the author, namely the correlation of his pivot typology to functional features of the individual infixes. What are the functional domains covered by infixation from a typological point of view? Based on Yu's data, the tendencies illustrated in Table 2 emerge (note that I did not consider reduplication-based infixation and other minor types; the functional labels in Table 2 are rather general).

It is interesting to see that infixation often expresses plurality, intensiveness, and pluractionality. On the other hand, case (for instance) seems to be less likely to be expressed by infixation. It will be a matter of further research to see whether the form/function correlation plays an additional role in the selection of infixation procedures. Yu's book certainly lays the ground for elaborating such questions. Without it, our understanding of infixation (with respect to both phonology and morphology) would have been far more rudimentary.

**Table 2.** Correlations between functional features and infixation, by language

|                              |   |
|------------------------------|---|
| Aspect markers (Perfective)  | Tagalog, Bunun  |
| Causative                    | Lepcha  |
| Class Agreement Markers      | Archi, Dargi  |
| Diminutive                   | Pingding Mandarin, Northern Interior Salish   |
| Durative                     | Budukh, Archi   |
| Focus marker                 | Tagalog, Atayal, Chamorro, Toratan  |
| Indefinite actor             | Huave   |
| Intensifier                  | Yurok, Mangaryi, KiChaga, Tigre   |
| Intransitivity/Medio-Passive | Tzeltal, Tzutujil; Choctaw, Alabama, Chickasaw  |
| Modal                        | Muna  |
| Nominalization               | Mlabri, Leti  |
| Person Agreement Markers     | Dakota, Udi, Pashto, Hua  |
| Plural/Pluractional          | Uradhi, Hunzib, Maricopa, Pangasinan, SiSwati, Kinande, Mangarayi, Bole; Quileute, Mikasuki, Koasati, Kamaiurá, Hausa, Hopi |
| Possessors                   | Ulwa, Miskitu   |
| Tense formation (Present)    | Indo-European   |
| Verbal derivation            | Arabic  |



## Notes

1. Yu gives the misleading gloss AOR:1Sg which suggests personal agreement. Archi, however, lacks personal agreement. *Recte*: *o-w-x-u* [lie<sub>1</sub>-I-lie<sub>2</sub>-PERF], with ‘T’ = class I [male].
2. The appendix (pp.231–233) lists 111 languages. However, the list ignores some of the languages discussed in more details in the volume, such as Udi and Pashto. Some languages that occur in this list are not included in the language index itself (e.g. Malagasy, Rutul and others). In sum, 69 languages are mentioned both in the language list (the author’s data base) and the language index. 33 languages are mentioned only in the list, and 39 only in the index. Unfortunately, Yu does not refer to sources written in Russian. Hence, he occasionally has to work with rather problematic sources, representing extremely condensed presentations of the given language (e.g. Alekseev 1994a, 1994b for Rutul (instead of Ibragimov 1978) and Budukh (instead of Talibov 2007), Kibrik 1994 (not 1989, as quoted on p.245) for Archi (instead of Kibrik et al. 1977).
3. Unless the author has made a typographical error, omitting the indefinite article from *of language*, this quote is somewhat ambiguous: What does Yu mean by “of language”? A generic interpretation of this phrase would suggest that the author relates the motivation for typological tendencies to language origins as such. This would also mean that present-day conceivable language universals are just a reflex of those linguistic patterns (transmitted over time) that emerged in those pre-historical times. In case Yu refers to ‘preferences *in* languages’, it is difficult to understand what is meant by “its origins”: I think that it is common ground to assume that languages do not have an ‘origin’ or starting point, but always figure as states of a diachronic chain the beginnings of which are lost in the obscurities of pre-history.
4. For instance, Turkish may well have been discussed in the context of reduplicative alternation (p.161–2), compare the well-know examples *kırmızı* ‘red’ > *kı-p-kırmızı* ‘very red’, *güzel* ‘pretty’ > *gü-p-güzel* ‘very pretty’, *uzun* ‘long’ > *u-p-uzun* ‘very long’ etc., see e.g. Keleşir 2000.
5. I cannot fully understand the choice of the term ‘Lappish’ (as opposed to Saami): Lappish (or Lappic) is just a pejorative exonym for the Saami people. Maybe that the author has drawn the term from the source he has consulted, namely Bergsland 1976.
6. Yu takes his examples (*ma-\_-nu* and *a(-\_-)li*, no glosses given) from “McCarthy and Prince (1993, n.26) who in turn cited them from or construed them on the basis of the description in Boas and Deloria 1941:78–9” (fn. 14). *manú* (sic!) means ‘to steal’, *ali* means ‘to climb’.
7. Data are taken from the 1976 draft of the manual *Beginning Lakhota*, prepared by the University of Colorado Lakota Project, vol. 2, p.13–5.
8. In the language index (p.256), the language name is erroneously given as “Hunzit”.
9. The term refers to Homer Jay Simpson, the main character of the animated TV series *The Simpsons*, who is said to have invented the *-ma*-insertion. Others attribute this technique to a passage in the children’s book *The Lorax* by Theodor Seuss Geisel (Dr. Seuss) (1971).
10. Schulze (forthcoming) entails a different proposal for the emergence of Udi endoclitization that starts from a functional and semantic interpretation of prosodic features of Udi. In addition, certain constraints can only be explained from a diachronic point of view.

11. According to an abstract written by Mohammad Abid Khan and Fatima Tuz Zuhra, the thesis has been published in International Center for Pashto Studies (Kabul, Afghanistan) in 1978.

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