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Hočank's challenge to morphological theory

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Abstract

Hočank is a highly endangered Siouan language of Wisconsin and Nebraska which currently is the object of an extensive documentation project at the University of Erfurt, Germany. The paper presents a descriptive investigation of parts of Hočank verb morphology and its implications for morphological theory. Hočank verb morphology - in particular the left side of the verbal complex - reveals cross-linguistically highly unusual and dispreferred patterns which pose a challenge to traditional and contemporaneous morphological theory. Hočank verbs show to some degree systematically a) discontinuous stems, b) stem-internal inflection, and c) inflectional morphology which is morphotactically closer to the verb root than derivational morphology. Diachronically, these patterns derive from the lexicalization of mostly derivational morphology or compounding which eventually led to the entrapment of inflectional prefixes, hence creating interfixes. The traditional notions of infixation and/or interfixation cannot account for these patterns in a satisfying way. Therefore, a partly new and systematized typology of affix types is proposed which takes into consideration the results of diachronic linguistics as well as grammaticalization theory. A grammaticalization path from interfixes to infixes is proposed with regard to the Hočank data but with relevance beyond this individual case.

1. Introduction

Hočank[1] (better known as Winnebago) is an endangered Central Siouan language of the Mississippi Valley subgroup. It is still spoken by approximately 200 people in Wisconsin and Nebraska. These are without exception over fifty years of age. Our description of part of the verbal morphology is based on exploitation of published texts and dictionaries and on fieldwork executed in the project *Documentation of the Hočank Language*, which is part of the Volkswagen Foundation program 'Documentation of Endangered Languages' (DoBeS).[2]

Since *morphological theory* appears in our title, a few words concerning our theoretical basis must be said at the outset. Both lexicalization and grammaticalization reduce independent words and morphemes to submorphemic status and finally annihilate them. Lexicalization merges both their significans and their significatum with adjacent material in idiosyncratic ways to produce an unanalyzable lexeme. Grammaticalization, while keeping the significata of the grammaticalized item and of its host apart, renders the grammaticalized item phonologically dependent on its host and combines it with the latter in ways that obey language-specific rules rather than iconic motivation (cf. Lehmann 2002). While there may be a biunique and direct association of significans and significatum in monosemous lexical items, this association becomes increasingly indirect and subject to all kinds of conditions for grammatical formatives. At the end of the grammaticalization process, the integrity of the linguistic sign is dissolved. To mention but one example from German: The grammatical meaning *plural* may be coded in a variety of ways, including suffixes, metaphony and combinations thereof. It is coded on words of a variety of word classes that the notion of plurality does not even apply to. It is expressed cumulatively with neighboring inflectional categories such as gender and case. In no case does the structural scope of the morphological process reflect the semantic scope of the plural operator. And on the other hand, metaphony taken as a purely formal process is polyfunctional since it not only codes plural, but also accompanies the expression of various other inflectional categories. There is, thus, no plural sign (in the Saussurean sense) in German.

At the highest levels of grammatical complexity, complex units are formed by **concatenation** of constituents whose contribution to the overall meaning may be computed from their significatum and by interpreting their order as reflecting their semantic scope. The more one moves down to the level of inflectional morphology, the less does the formation of complex units work in such a simple way. Instead, the lexeme is host to a set of grammatical categories which form paradigms and whose values are determined by the syntax. These values correspond to exponents that occupy cells in possibly multidimensional paradigms and

[1] The autonym is /ˈhoːʧãk/. There is, in international linguistics, no established spelling for this word.

[2] We are grateful to our research associates Jana-Iren Hartmann, Nils Jahn, and Juliane Lindenlaub. In addition, we would like to express our gratitude to our Hočank friends from the Hočank Wazija Haci Language Center in Mauston, Wisconsin who supported the project in every respect: the speakers who spent numerous hours patiently answering our questions, and Willard Lonetree, the director of the Language Center, who took care of the institutional side of the cooperation. Special thanks go to John Koontz and Bob Rankin for providing us with numerous Siouan etymologies and sharing with us their historical-comparative expertise on Siouan languages. Finally, thanks to Grev Corbett and the volume editors for critical comments and helpful suggestions.

whose coding on the stem may require elaborate morphological rules. In such cases, while the word form as a whole may constitute a linguistic sign in the traditional sense, the grammatical categories specified on it do not. Here a complex sign is created by **exponence**: grammatical information is coded by **modification** of a stem that contributes the lexical information.

This is a contrastive characterization of the endpoints of a continuum brought about by grammaticalization. In the contrast between concatenation and modification, the former is the simpler operation. Since it prevails in the syntax, most models of syntax have been concatenative. And since it works in the morphology to some extent, too, some models of morphology have been concatenative, too, just because it is simpler. However, the further morphology is grammaticalized, the more strongly modification prevails. In a concatenative model, morphological processes like metaphony are hardly describable at all, let alone in an intuitively satisfactory way. As a reaction to this situation, word-based models of morphology (e.g. Anderson 1992, Stump 2001) have been proposed to replace morpheme-based models. All inflectional morphology is there handled by *word formation rules* or *paradigm functions* involving *realization rules*. Instead of a unitary concatenative model of grammatical structure, which actually was appropriate only for constructions of one pole of the continuum, the grammar now involves a combination of two models, a concatenative and a realizational model, the former for the syntax, the latter for the morphology. In a sense, this is a progress. Again, either model is actually appropriate just for one pole of the continuum.

However, there are not just two categorically distinct modes of combinatorics in grammar, concatenation and modification (or exponence). It remains a continuum. The issue is not a binary decision of whether an affix is a morpheme or an exponent; the issue is how a model of grammar can adequately represent the gradual loss of autonomy, of the integrity of the linguistic sign, in the transition between a free morpheme via an affix to an internal modification.

In word-based (just as in morpheme-based) models of morphology, there is no such transition. When a word or morpheme becomes an affix, this is described (cf. Anderson 1992: ch. 13.3) by a reanalysis which converts a sign (with significans and significatum), subject to a syntactic rule or to a *word structure rule*, into some phonological material (a sheer significans, as it were), introduced by some *word formation rule*. These two things have nothing in common in the theory, so that there is no basis for a transition between them. The reanalysis is completely unmotivated and unaccounted for.

The facts about Hočank conjugation that we are going to present cover the gamut between full morpheme and internal modification. At one end, there are such conjugation prefixes as *wąqgá-*. It means '1st + 2nd person undergoer', and it is not polysemous or homonymous in any way; it is a legitimate morpheme by any standards. The same goes for many other affixes of the language. Further on, there is the prefix *ha-*, which is three ways ambiguous and sometimes does not make an identifiable contribution to the verb meaning; and likewise, the personal prefix *hį-* is syncretic, coding incompatible things that are only disambiguated in the verb form as a whole. At the other end of the gamut, there are such exponents as the change of the root-initial consonant /r/ into /t/ to code '1st person actor', as in (3)b below. Such formatives are appropriately treated as exponents in a paradigm combined with a stem by a realization rule.

It is not our intention to provide a formal account of these facts. We therefore do not opt for a morpheme-based or a word-based approach. We take a diachronic perspective,

describing the conjugation forms from the point of view of their genesis and then pursuing the grammaticalization and lexicalization of some of the morphological material. We thus strive to represent the intermediate nature of many of the forms in question. In referring to signs vs. elements that are forfeiting this status, we will use the concepts of morpheme and submorpheme, to be defined in §3.3.1. Needless to say, these represent just phases in a transition process.

Our presentation is organized as follows. In the following section, we briefly introduce those aspects of Hočank verb morphology which mark it as typologically unusual and which present a problem both for description and for the theory of grammar. Section 3 contains an attempt to come to grips with the multiplicity of kinds of affixation at the theoretical level. Section 4 gives a brief and to some extent simplified survey of the morphological structure of Hočank verbs. We will focus on the affixes to the left side of the root while ignoring suffixes. The subsequent section 5 provides an overview of the various diachronic processes that led to the emergence of the interfixation patterns to be found in Hočank today. For the majority of the internal affixing verbs in Hočank, it can be shown that this pattern emerged by a fossilization of certain derivational prefixes. These became part of the stem, which led to an entrapment of the personal prefixes within the verb stem.

2. The problem

The morphological structure of the Hočank verb is exceedingly complex. This does not so much concern its quantitative aspects; Hočank is only mildly polysynthetic. Instead, complexity stems from several properties of the formatives involved:

1. the ambivalent morphemic or submorphemic status of preverbs,
2. the discontinuous nature of many roots,
3. the existence of sizable paradigms of internal affixes,
4. the sequential order of affixes,
5. their syntagmatic interdependence.

A few examples will illustrate the problems. The verb *gi_ruk'as* 'take off quickly (as in a race)' conjugates for the second person singular as shown in (1):[3]

(1) *ra-gi-šu-ruk'as*
A.2SG-ISC-A.2SG-take.off
'you take off'

The abbreviation ISC appearing in the interlinear gloss means 'initial stem component'. The form in (1) presents all the problems mentioned:

1. The element *gi-* recurs in other verb stems, where it serves as a productive derivational morpheme forming benefactive applicatives, as illustrated in (2).

[3] Hočank orthography is essentially phonemic. Nasality in vowels is marked by the ogonek, as in <ą> = [ã]. The acute accent marks stress. For the sake of clarity, in quoting verb stems, we add an underscore to mark a morphological slot to be occupied by personal inflection.

(2) *a. gų́ų́s* *'counsel'*
b. *gi-gų́ų́s* 'teach someone'

It does not, however, do that in *gi_ruk'as*, which is intransitive. Actually, the segment *gi-* does not appear to be a morpheme there, since it does not make an independently identifiable contribution to the meaning of the form. Neither does *ruk'as* by itself mean anything. By this criterion, *gi-* in (1) is a kind of submorphemic unit or submorpheme.[4]

2. As a consequence of this, *gi-* here is semantically like a part of a discontinuous morpheme *gi_ruk'as*. Many Hočank roots are discontinuous or bipartite in this way. Universally, semantically unitary concepts have an autonomous representation in the mental lexicon and are represented preferably as continuous structural units (Bybee 1985). The formal integrity of the lexical stem therefore responds to an iconic form-meaning relationship (cf. Haiman 1985) that facilitates cognitive processing. Hočank, however, appears to prefer rather systematically counter-iconic structures.
3. By the same token, the second instance of person inflection shown in (1) appears to be infixal. There are, in fact, as we shall see in section 4, whole paradigms of affixes that show up in a morphological slot between the two parts of a lexicalized stem (see section 4.3.2.1 for this notion). The verb in (3)a is such a root. The first and second person actor forms in (3)b-c show how internal affixation in Hočank works. The first person of this verb requires the modification of the first consonant of the form *-rak*. Neither part of the stem, *ho-* (left of the infix) and *-rak* (right to the infix), means anything as such.

(3) *a. horák* *'tell sth'*

b. *hoták* 'I tell sth.'

c. *hošarák* 'you tell sth.'
{ho<ša>rák}
<A.2SG>tell

d. *horagíšarak* 'you tell him sth.'
{ho<ra-gí-ša>rak}
<A.2SG -APPL.BEN-A.2SG>tell

(3)d demonstrates that the derivational affix *gi-* (benefactive applicative) is regularly interfixed in the same way as the personal affixes. (We are not, at this point, going to resolve the alternative of infix vs. interfix.) There is no way of moving these interfixes to the left edge of the verb stem; and this holds in general for all internal affixing verb stems in Hočank. Internal affixes, however, are cross-linguistically rare and subject to all sorts of constraints. Here, again, Hočank appears to be unusual in making extensive use of internal affixation.

4. *Gi-* is in a paradigm of four valency-changing derivational affixes (see section 4), with which it shares its morphological ambivalence. When they are ordinary derivational operators, as in (2), then we have a sequence of derivational and inflectional affixes (e.g. *gi-šu-*) such that the latter are closer to the root than the former. By a universal principle of **proximity iconism** (cf. Bybee 1985), that morpheme order is iconic by which derivational affixes are closer to the root than inflectional affixes; and it is indeed cross-

[4] Such elements are called submorphs or quasimorphs in Kubrjakova 2000.

linguistically much more frequent and has a kind of default status. The Hočank order is deviant and counter-iconic. This is the more remarkable as (2) is not an isolated exception, but represents the majority of verbs of the language, viz. all verbs that are derived by a preverb that does not belong to a small class of inner instrumentals (to be treated in section 4.3.2.2).

This deviant pattern even occurs twice in the morphological structure of the verb. There are two further paradigms of derivational affixes – the locative and instrumental applicatives and the outer instrumental prefixes (see section 5 for details) – that are separated from the stem by two series of person markers.

5. There are all in all three morphological slots for personal affixes, two of which are illustrated by (1) and (3)d. Some person/number combinations are marked only in one of them, others in two of them simultaneously, as in (1). Thus, there are discontinuous dependencies among slot fillers. One might even call the 2nd person singular actor morpheme *ra- šV-* a transfix. This is only one of many cases where the occupation of one morphological slot is constrained by the occupation of another.

The above is just a glimpse of the phenomena that we encounter. We do not undertake in this article to solve all of these problems at once. This presupposes a comprehensive account of Hočank morphology, which remains to be written. What we would like to do here is to focus on descriptive and theoretical aspects of problems number 1 – 4. The descriptive problem consists in the question of whether a verb such as *gi_ruk'as* should be regarded as basic (monomorphemic) or derived (bimorphemic). If the former, then its person inflection is partly infixal (or transfixal). If the latter, then there are no infixes, but rather prefixes or interfixes, albeit in an unwonted sequential order. The theoretical problem consists in the question of whether an affix inserted in a complex base is an infix or an interfix.

Hočank thus presents a challenge at several methodological levels:[5]

1. It is hard to describe since the morphological structure of the verb form is neither a hierarchical constituent structure nor a pure template, but is intricately interlaced.
2. It presents a problem for the theory of grammar, since we lack appropriate concepts to account for the phenomena.
3. It is typologically unusual in all the respects #2, #3, #4 mentioned above: the omnipresence of discontinuous roots, the predilection for internal affixation and the order of affixes.

In section 3, we will first address the theoretical problem (#2). In subsequent sections, we will present a more comprehensive description of the Hočank facts (#1). We will have nothing to say about the typological aspects (#3). In the descriptive section, we will show that although lexicalized stems are frequent in the language and there is a variety of initial stem components, they do form a closed set which is a subset of the set of derivational morphemes of the language. Therefore the conclusion is unavoidable that lexicalized stems go back to (discontinuous) derived stems. In the description, we will have to invoke etymology and launch diachronic hypotheses to the extent that the meaning of a complex is not compositional.

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[5] It should be clear that by using Hočank as a specimen, we are not implying that this kind of morphological complexity is unique to Hočank. In fact, the morphological structure of the Athapaskan verb as described in Rice 2000 is very similar and is there (p. 9) also perceived as a "challenge".

3. Affixation

Part of the theoretical problems mentioned reflects the fact that current theories of affixation are either inconsistent or incomplete. We will show this for the concepts of infix and interfix, which are relevant to our concern, and then make a proposal for improvement.

3.1. The notion of infix

(4) presents a stock example of infixation from Latin.

(4) a. *scid-ī* *'I tore'*
LAT tear- PRF.1.SG

b. *sci<n>d-ō* 'I tear'
tear<PRS>-1.SG

There is a root *scid-* 'tear', which is disrupted by the infix. A root is by definition monomorphemic. This narrow notion of infix is captured by the definition provided in Ultan (1975:159), according to which an infix is "a continuous morph (or morpheme) which is inserted into another morph thus turning the latter into a discontinuous morph."[6]

However, there is a second, less strict notion of infix, according to which it "is positioned inside the base such that the preceding and following portions are not meaningful by themselves." (Moravcsik 2000:545). This allows for the possibility that the two parts of the base, although not morphemes, have a submorphemic status which enables them to occur in other contexts, although not with a stable meaning. This is true, e.g., of the *gi-* in Hočank *gi_ruk'as* (cf. section 5.3). Given this notion of infix, *šu-* in *ra-gi-šu-ruk'as* (1) would be one.

The two notions of infix have different consequences both in synchrony and in diachrony. In a synchronic description, the **insertion point** of the infix with respect to the base must be determined. If the base is a morpheme, then the insertion point can only be determined phonologically. In (4), e.g., the infix *-n-* is inserted before the root-final consonant. If, however, the base is morphologically complex, then the insertion point may be determined morphologically, viz. at a morpheme or submorpheme boundary. (We assume that submorphemes as well as morphemes have morphological boundaries.) The case of (1) would then be described by saying that the infix is inserted between the two submorphemic units *gi-* and *-ruk'as* (or, to be precise, that its morphological slot is between the slots occupied by these two units).

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[6] The definition of infixes provided in Mel'čuk (2000:528), "affixes which interrupt roots", agrees with the above in the respects relevant here.

On the diachronic axis the issue is how an affix gets into the internal position. Again, two distinct diachronic processes by which they can come into existence correspond to the two notions of infix.[7] An affix becomes an infix of a root by **metathesis**. For instance, the Proto-Indo-European grammatical morpheme *-n* started out as a verb suffix and became an infix by metathesis with the root-final consonant. This is a phonological process, and as a consequence the insertion point is determined phonologically. On the other hand, an affix becomes an infix of a complex base by **entrapment**. For instance, Hočank *šu-* started out as a prefix to a root *ruk'as*, and this inflected form was in turn preceded by the preverb *gi-*. At a second stage, *gi_ruk'as* got lexicalized as a unit, this process being possibly aided by the frequent adjacency of the two components whenever no person marking interceded. This is a semantic process leading to reanalysis of morphological structure, and consequently the insertion point of the infix is determined morphologically.[8]

We are thus dealing with two notions of infix which are distinct as prototypes in synchronic perspective and which have independent origins in diachrony. Before we come to a decision in this conceptual dilemma, let us turn to interfixes.

3.2. The notion of interfix

(5) presents a stock example of interfixation from German.

(5) *Komposition-s-fuge* *'composition juncture'*
GERM composition-LNK-juncture

There are two stems, *Komposition* and *Fuge*, which are compounded. Under specific conditions which obtain here, the composition juncture is marked by a submorphemic element, in this instance *-s*. Although there is evidence that it is a coconstituent of the first member of the compound (rather than belonging to the second or to both), it has no existence as a suffix, as there is no form **Kompositions*. On the basis of examples such as these, the term *interfix* was probably coined in Germanic linguistics and has been given narrow definitions like this: "Traditionally, interfixes ... are regarded as empty morphs occurring between two free elements in compounds" (Naumann & Vogel 2000:934).[9] In this conception, an interfix does not have the status of a morpheme (cf. Fleischer 2000:892). Consequently, it does not fit into a theory of
affixation which presupposes that an affix is a morpheme (or a morph). Therefore, there have been attempts to widen this concept, too. Mel'čuk (2000:528), e.g., conceives of interfixes as "affixes which are positioned between two roots". While this allows for morphemic status of interfixes, it still does not foresee the possibility that an interfix is intercalated between two morphemes that are not roots. Whether or not this is the case for Hočank, we will see below.

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[7] For metathesis and entrapment as the two origins of infixes, cf. Ultan 1975, section 3.2 and Moravcsik 2000, section 5.

[8] Another type of entrapment occurs if a periphrastic construction of inflected auxiliary plus nonfinite or nominal form of full verb gets univerbated. Such inflection of the auxiliary which is at the juncture of the coalescence then gets entrapped between the two roots. This type of entrapment, well-known from Bantu languages, happened in Siouan, too, contributing to the morphological complexity of the Hočank verb sketched in section 4.1.

[9] Similarly, Fleischer (2000:891): "Es handelt sich um Verbindungselemente an der Morphemgrenze in komplexen Wörtern, typischerweise z.B. die **Fugenelemente** in deutschen Komposita".

However, the problem has also been discussed for German (e.g. Fleischer 2000:891f). Abstract nouns may be derived productively from adjectival bases by the suffix *-keit*, as in (6)a.

(6) *a.* *Heiter-keit* *'cheerfulness'*
GERM gay-ness

b. *Schnell-ig-keit* 'quickness'
fast-y-ness

However, for some adjectives including *schnell*, the suffix is not appended directly. Instead, another affix, *-ig* '-y', must be intercalated (as if the base first had to be adjectivized), as shown in (6)b. A form **schnellig* does not exist. Thus, *-ig* is not a suffix here, but an interfix. While this is one more example to render understandable the Germanists' idea that interfixes have no significatum, it also shows that interfixes are not limited to roots as their neighbors.

To conclude, as in the case of the infix, narrower and wider notions of interfix are current, depending on which kind of phenomena analysts have intended to account for by this concept.

3.3. Towards a theory of affixation

3.3.1. Classification of affixes

The Hočank affixes of the kind of *šu-* A.2SG are not infixes in the narrow sense because they are not inserted at a certain phonological position in a morpheme. Nor are they interfixes in the narrow sense, either, simply because they are morphemes. It is apparent that received morphological theory is inconsistent or incomplete as far as types of affixes are concerned. Problems stem from the fact that received conceptions of affixation are empirically based in the sense that they provide concepts and terms in reaction to observed phenomena while failing to provide a coherent theoretical framework. In particular, three sources of the theoretical problems can be identified:

1. A morpheme has a significans and a significatum. A minimal element that has a significans but no (clear) significatum falls short of the status of a morpheme and is therefore called a submorphemic unit or submorpheme. Having or lacking an identifiable significatum is not, however, an either-or question, but a gradual issue. Grammaticalization may lead to the desemanticization of an interfix (or of other affixes, for that matter). Lexicalization may lead to the loss of independence of a morpheme and to its becoming part of another morpheme. As a consequence, submorphemes inherit the positional properties of morphemes, so that it does not make sense to define one positional class of affix as a kind of morpheme and another positional class as a kind of submorpheme.
2. The core of the theory of affixation is constituted by suffixes and prefixes, which occupy opposite sides of the stem. No borderline cases between prefix and suffix can exist. As a consequence, the theory makes no provision at all for a transition between different types of affix. Such cases, however, do exist. They may result, *inter alia*, from the lexicalization of outward material.
3. The criteria by which affixes are classified are heterogeneous. Prefixes and suffixes are defined by their position relative to a stem. An infix in the narrow sense is defined by its position relative to a root, not to a stem. The interfix, finally, is defined (by some) by its

position relative to two roots. Given the heterogeneity of the criteria, it is no wonder that the theory is inconsistent and/or incomplete.

The following sketch tries to account for these three theoretical problems while conserving as much as possible of the tradition in this field.

First, the notion of affix is independent of the alternative 'morpheme vs. submorpheme'. Any kind of affix, not only interfixes, can be morphemes or submorphemes.

Second, affixes are subdivided by three parameters:

1. the nature of the host: root or (possibly complex) stem;
2. the nature of the affix: simple (continuous)[10] or discontinuous;
3. the position of the affix with regard to the host: peripheral or internal (with further subdivisions).

The first two of these parameters cross-classify, as do parameters 2 and 3. As for #1 and 3, parameter 3 is only needed for stem affixes.

Starting with parameter 1, we get the following two kinds of affixes:

- A **stem affix** is an affix that combines with a stem (regardless of the latter's morphological complexity).
- A **root affix** is an affix that combines with a root (but not with a complex stem).

Both of these kinds of affix are now subdivided by criterion 2. There are two kinds of root affixes, simple and discontinuous:

- An **infix** is a simple affix that is inserted into a root.
- A (root) **transfix** is a discontinuous affix that is inserted into a root (at more than one position).

Likewise there are two main kinds of stem affixes:

- A **simple stem affix** is one that occupies one morphological slot of the host.
- A **discontinuous stem affix** is one that occupies more than one morphological slot of the host.

By criterion 3, there are two main kinds of simple stem affixes, peripheral and internal. Taking obvious further alternatives into account, there are four kinds of peripheral simple stem affixes:

- A **prefix** is a simple affix attached at the left edge of a stem.
- A **suffix** is a simple affix attached at the right edge of a stem.
- An **ambifix** is an affix attached at either edge of a stem.
- A **simple interfix** is an affix inserted at an internal morphological boundary of a stem.[11]

Likewise, there are two main kinds of discontinuous stem affixes, peripheral and (partly) internal:

- A **circumfix** is a discontinuous affix attached at both edges of a stem.

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[10] As indicated, the term *simple* is here taken to mean 'continuous'. It could not possibly mean 'not morphologically complex', because an affix is by definition a morpheme or submorpheme. There have, however, been dissenting opinions. For instance, one way of avoiding the interfix analysis of (6)b is to regard the sequence *-ig-keit* as a complex suffix. This, of course, presupposes that the basic premise mentioned be dropped.

[11] Anderson (1992: esp. ch. 8.2) does not mention interfixes. He restricts the possible positions of affixes to either before or after a reference point and allows as morphological reference points only words and their heads. (He also allows (o.c. 210) the first or last or main stressed "element of a given type within the constituent" in question, but explains this only for phonological constituents.) As will be seen in 4.1f, this does not account for the Hočank pronominal affixes, as there is no evidence for constituent status of the material that they precede.

- A **discontinuous interfix** (or stem transfix) is a discontinuous affix attached or inserted at any combination of morphological slots of a stem except at both edges.

The somewhat clumsy definition of the discontinuous interfix guarantees that circumfixes and discontinuous interfixes complement each other.

The definitions of peripheral affixes refer to the edges of the host. This, of course, does not mean that every peripheral affix is at the edge of a word form, in the sense that, e.g., a suffix would have to be the last morpheme of a word form.[12] Instead, putting it in a morpheme-based approach, we assume that the default procedure for building up a complex word form is by stepwise attachment of affixes to a base, where one peripheral affix may overlay an "earlier" one. Alternatively, in a word-and-paradigm based approach, the above definitions would presuppose a template with slots determined with respect to fixed points such as the two edges of a root or a word form.

Although this system is a bit more streamlined than the ones reviewed in sections 3.1f, it is not entirely deductive but still takes into account known empirical facts. There are two constraints on affixes that appear to hold universally:

First, roots are only one kind of morpheme. Theoretically, the host of a root affix could be any kind of morpheme (as the definition by Ultan quoted on p. 7 might lead one to expect). However, infixes or transfixes in affixes do not seem to occur. Pending falsification, we have taken this for granted and consequently speak of root affixes instead of morpheme affixes.[13]

Second, all root affixes appear to be internal, i.e. inserted into their host. This, too, may well turn out empirically to be otherwise. It appears possible that a language has a set of prefixes or suffixes that only combine with a root, never with a complex stem.[14] If they exist, then not only the first two, but all three of the classificatory parameters cross-classify. Accordingly, the above system of affixes will then have to be remodeled in order to provide for two kinds of peripheral affixes, stem prefixes/suffixes and root prefixes/suffixes (and theoretically likewise for ambifixes and circumfixes). At the moment, we will leave it at that and summarize the classification in Schema 1.

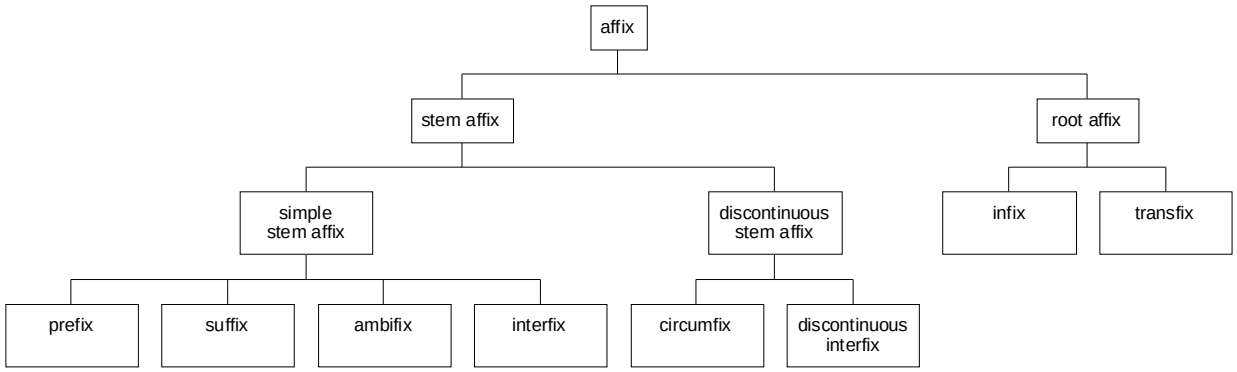
---

[12] Apparently in order to avoid this problem, some definitions of peripheral affixes (e.g. in Mel'čuk 2000:528) do not refer to the stem, but to "the root". This is, however, inappropriate, since in bases that contain more than one root (e.g. Engl. *pickpocket* taking the suffix *-s*), it would require to determine which is the relevant root.

[13] We are aware of one possible exception to this generalization. In Yucatec Maya, the passive of a verb is formed by an infix that consists in a glottal stop, inserted before the final consonant of the base. If the phonotactic structure of the base is CVC, the infix is inserted in the root. Otherwise, it is inserted in the TAM suffix. For example: *tok* 'snatch away' – *to'k-ol* (snatch<PASSIVE>-INCOMPLETIVE) 'be snatched away', but *tóok* 'burn' – *tóok-o'l* (burn-INCOMPLETIVE<PASSIVE>) 'be burnt', where *-ol* (< *-Vl*) is the incompletive suffix for inactive intransitive verbs. This analysis could only be avoided by ignoring the obvious phonological correspondence. The latter move would receive some support from the completive forms: these have a suffix *-a'b* in the passive (e.g. *tóok-a'b* 'was burnt'), while basic inactive intransitive verbs have a zero suffix, so that there is no phonological correspondence there.

[14] The German prefix *ge-*, to be seen in (7)f below, may come close to what is required here. It never combines with stems derived by a prefix; cf. *gebaut*, past participle of *bauen* 'build', with (**ge*)*bebaut*, past participle of *bebauen* 'cover with buildings'. In separable compound verbs like *aufbauen* 'build up', it always precedes the verb root: *aufgebaut*. The exception, however, is with inseparable compounds like *handhaben* 'handle', whose past participle is *gehandhabt*, not **handgehabt*. Thus, *ge-* may be a root prefix, but it is not an affix that combines with the head root of a word in the sense of Anderson (1992:206). Moreover, it should be noted that the existence of peripheral affixes that only occur at a root boundary is not in doubt. Instead, the methodological problem consists in showing that the putative peripheral root affix must be attached before any other peripheral morpheme at the opposite side of the root.

Schema 1. **Classification of affixes**



continuous		discontinuous		continuous	discontinuous
peripheral	internal	peripheral	internal	internal	

A number of consequences may be deduced from this theory, of which we comment on two that are of special methodological relevance for infixes. First, if the insertion point of an internal affix is not determined phonologically, then it is not a root affix and, consequently, not an infix. Methodologically this means that the level of the conditions of the insertion point helps telling infixes and interfixes apart (and likewise transfixes and discontinuous interfixes).

Another consequence of the theory concerns the number of slots that a host may have for affixes of a certain category. Given that

a) discontinuous affixes are more complex than continuous ones,[15]
b) internal affixation is more complex than peripheral affixation,
c) stems are more complex than roots,

the following hypotheses may be deduced:

In the morphological structure of a given word category of a given language,

a) the number of slots for discontinuous affixes will never be greater than the number of slots for continuous affixes;
b) the number of slots for internal affixes will never be greater than the number of slots for peripheral affixes;
c) the number of slots for root affixes will never be greater than the number of slots for stem affixes.

Given that root affixes are internal affixes, it in turn follows that the slots of root affixes are subject to two constraints at once, b) and c). As an empirical fact, no language has been found with more than one infix slot in a root category. Since this generalization is accounted for by the theory, it may – as long as it is not falsified – be used as another heuristic in distinguishing infixes from interfixes: If there is, in a word form, more than one slot for internal affixes, then this is a strong *prima facie* reason not to regard them as infixes. If they are at all internal, they may be sequences of interfixes. However, given generalization b), even the number of subsequent interfix positions is constrained. Thus, if there are long sequences of apparent interfixes, chances are that they should be analyzed as peripheral. We will come back to this at the end of the next section.

[15] This is the basis for Greenberg's (1963[1966]:92) "Universal 26. If a language has discontinuous affixes, it always has either prefixing or suffixing or both."

3.3.2. Transitions between kinds of affixes

Finally, the theory has to provide for transitions between kinds of affixes. They are of various kinds:

Grammaticalization may turn a morpheme into a submorpheme. For example, all the German composition juncture elements stem from declension suffixes. The transition from morpheme to submorpheme in itself does not alter its affixal status. However, as grammaticalization of an element is its subjection to arbitrary rules of grammar, it implies an increase in structural rather than semantic conditioning of the element. With regard to syntagmatic variability, this comprises a transition of its construction from scope order to template order. In the case of the German composition juncture elements, this means that from ordinary declension suffixes appended to a stem under conditions of syntax, they became interfixes conditioned by the morphological configuration surrounding them. This is an instance of a general mechanism by which a peripheral affix can be reanalyzed as an internal affix.

In the same way, if an affix starts conditioning another affix, then the two may functionally coalesce to a discontinuous affix. (In a sense, each of them viewed separately then becomes a submorpheme.) This is a general mechanism by which a combination of two affixes may be reanalyzed and lexicalized as a discontinuous affix. **Lexicalization** turns a regular combination of two significative units into a whole whose parts forfeit their independent meaning or function. Consider the formation of the German perfect participle of particle verbs as an example. For root verbs, the perfect participle is a circumfix (*ge- -t* for regular verbs), as in (7)a.

(7)	*a.*	*bau-en*	– *ge-bau-t*	*'build*	– *built'*
GERM	b.	*auf-bau-en*	– *auf-ge-bau-t*	'build up	– built up'

Particle verbs are formed productively from an adverb and a verb stem, and their semantics may be compositional, like *aufbauen* in (7)b. The formation of their past participle considers only the base; the particle is attached as the final step. As a result, the prefixal part of the past participle morpheme *ge- -t* gets entrapped between the preverbal particle and the base, thus becoming an interfix. The morpheme as a whole becomes a discontinuous interfix (or stem transfix). This is an instance of a general mechanism of the transition of a prefix to an interfix, and of a circumfix to a discontinuous interfix.

(8)	*a.*	*hör-en*	– *ge-hör-t*	*'hear*	– *heard'*
GERM	b.	*auf-hör-en*	– *auf-ge-hör-t*	'stop	– stopped'

A German particle verb may be completely lexicalized, lacking any compositional relationship to its components. (8)b is an extreme example. The *auf* of (8)b is obviously homophonous with the *auf* of (7)b, just as the *hören* of (8)b is homophonous with the *hören* of (8)a. As long as there are no criteria of assigning an identifiable part of the meaning of *auf_hör-* to *auf* and the rest to *hör-*, *auf_hör* must be regarded as a lexicalized discontinuous stem, with both *auf* and *hör-* being reduced to the status of submorphemes. If *auf_hör* is a root, then *ge- -t* is a root transfix in (8)b; and if the latter morpheme only consisted of the prefixal part, this would

thereby become an infix.[16] Lexicalization of discontinuous stems thus does not only lead to the reduction of the morphemes involved to submorphemes, but also to the reanalysis of entrapped stem affixes as root affixes.

In the particular case of the German particle verb, there is a certain discrepancy between the semantic and the structural side of the phenomenon. Semantically, a large number of stems composed in this way are as idiosyncratic and holistic as *auf_hör-*. Structurally, these are separable compounds, since the particle – true to its name – is syntactically separated in finite forms of independent clauses. Therefore the two processes mentioned – first the reanalysis of the circumfix *ge- -t* as a discontinuous interfix, second the reanalysis of the latter as root transfix – are not yet completed; their origins are always recoverable. We will see below for Hočank that things may be more opaque if lexicalization is further advanced. The German case does, however, suffice to see that there are transitions by reanalysis

- from peripheral to inner affix,
- from stem affix to root affix.

Section 3.1 ended with a dilemma stemming from two notions of infix which differed not only systematically, but also genetically. This can now be resolved. An infix as defined in section 3.3.1 can result directly from metathesis. It cannot result directly from entrapment. Instead, entrapment leads to internal stem affixes. An internal stem affix, in turn, may become an internal root affix by lexicalization of its discontinuous base. Thus, an interfix may become an infix. Ultimately, an infix originated in this way may become indistinguishable from an infix resulting from metathesis. This, however, is a methodological problem that does not invalidate the conceptual distinctions made.

What has been said also implies that one and the same affix may be peripheral with relatively simple bases, but internal in certain derived ones; or that it may be a stem affix with transparent bases, but a root affix with lexicalized ones. In a linguistic description, it would be irritating to classify the same element in two ways depending on the context. Therefore, as long as stems showing the peripheral variant are around, one may always opt for a unitary categorization of the affix in question as a peripheral affix. And similarly, as long as transparent stems containing the affix are around, one may unify the analysis by consistently treating the affix in question as a stem affix. In our description of Hočank, we will distinguish between prefix, interfix and infix only where necessary and otherwise comprise the latter two under the cover term 'internal affix'.

4. Morphological structure of Hočank verbs

We will start by a brief overview of the morphological structure of the Hočank verb in order to provide the background for a better understanding of internal affixation in the language. The first step to this goal is a short presentation of the productive morphological processes of the Hočank verb. This will be done in section 4.1, focusing solely on affixes preceding the root. The second step is the distinction, in section 4.3, between root and stem for Hočank verb morphology. Many stems have a bipartite structure, involving an initial derivational affix or

[16] Categorization of these affixes as root affixes would, however, be hindered by the methodological criterion mentioned in section 3.3.1 that the insertion point is not determined phonologically.

submorpheme (ISC) in addition to the root, such that most of the inflection takes place by internal affixation.

The ISC is commonly called preverb in Siouan linguistics. This term traditionally designates a semi-grammatical morpheme which is preposed to a verb stem and thus forms a compound verb stem. A preverb differs from a prefix in that it may be a word, typically an adverb or an adposition. The Hočank ISCs may stem from Proto-Siouan preverbs. However, they are generally further advanced in grammaticalization or lexicalization. They do not occur as words and instead form a lexical unit with the rest of the root much like English *per-*, *con-* and *re-* do in *perceive*, *conceive* and *receive*. These are not called preverbs either. We will therefore not use this term in the synchronic description of Hočank.

4.1. Overview

The operational basis for the inflectional and derivational processes is the verb stem to be discussed in section 4.3. The various morphological possibilities are summarized in Table 1. The template description of inflectional and derivational morphology represents these processes as a structured set of slots to be filled with forms of the respective paradigms. The suffix shown in Table 1 will remain out of consideration in what follows.

Table 1. **Template representation of the morphology of the Hočank verb**

<table>
<tr><th colspan="2" rowspan="2">pron I</th><th colspan="2">outer applicatives</th><th rowspan="2">outer instru-mentals</th><th colspan="2">pron II</th><th rowspan="2">benefactive applicative/ reflexive/ reciprocal/ possessive reflexive</th><th rowspan="2">pron III A</th><th rowspan="2">inner instrumentals</th><th rowspan="2">verbal root</th><th rowspan="2">suffixes</th></tr>
<tr><th>instru-mental</th><th>locative</th><th>U</th><th>A</th></tr>
<tr><td colspan="2">hį-
1DI.A/
1PI.A</td><td rowspan="4">hi-
APPL.
INST</td><td>ha-
APPL.
SUPESS</td><td>boo-</td><td>hį-
1E.U</td><td>ha-
1E.A</td><td>gi-
APPL.BEN</td><td rowspan="4">second conjugation</td><td>gi-</td><td rowspan="4"></td><td rowspan="4">-kje
FUT
.
.
.</td></tr>
<tr><td colspan="2" rowspan="3">wą́ąga-
1DI.U/ 1PI.U</td><td rowspan="3">ho-
APPL.
INESS</td><td>nąą-</td><td>nį-
2U</td><td>ra-
2A</td><td>kii-
REFL</td><td>ra-</td></tr>
<tr><td>mąą-</td><td colspan="2" rowspan="2">nįį-
1→2</td><td>kiki-
RECP</td><td>ru-</td></tr>
<tr><td>taa-</td><td>kara-/ kV-
POSS.
REFL</td><td>wa-</td></tr>
<tr><td>-7a</td><td>-7b</td><td>-6a</td><td>-6b</td><td>-5</td><td>-4a</td><td>-4b</td><td>-3</td><td>-2</td><td>-1</td><td>0</td><td>1</td></tr>
</table>

Preceding the root, there are 10 distinct morphological slots, numbered from right to left in Table 1. Each is occupied by a paradigm of morphemes whose category provides the column heading and whose members are enumerated in the cells.

The two sets of instrumental affixes (slots -1 and -5) are derivational morphemes that usually transitivize the verbal root and add an instrumental or manner meaning to it such as 'V by shooting', 'V with foot / by kicking', 'V with knife / by cutting', 'V with mouth / by biting', and so on. The applicative markers are also derivational morphemes that appear in different morphological slots. They add a new argument position to the valence of the verb. The benefactive applicative (slot -3) adds a beneficiary or recipient argument that is represented by a pronominal affix of the undergoer series (slots -4a and -7b). The two locative applicatives (slot -6b) add a superessive and an inessive argument to the argument frame of the verb, to be cross-referenced by a pronominal affix of the same undergoer series. And likewise, the instrumental applicative (slot -6a) adds an instrument argument to the verb. Other grammatical categories, marked by the affixes of slot -3, are the reflexive, reciprocal (basically a reduplication of the reflexive marker), and the possessive reflexive marker indicating that the actor possesses the undergoer (⊃ patient/recipient/beneficiary).

The horizontal axis of the template in Table 1 indicates the possible alignment of forms and their relative order. The vertical axis presents the set of forms that belong to a paradigm. The forms in one column are mutually exclusive. Exceptions and problems will be discussed in a moment. The advantage of the template presentation is that it shows the morphological structure of the Hočank verb at a glance. In addition, it is a useful reference frame for the precise formulation of the many morphonological rules that often render the underlying morphemes of a word form entirely opaque on the surface.

The template representation of the verbal morphology in Hočank also has some disadvantages to be briefly addressed here.[17] Not all the slots of this template are available for every verb stem. First of all, there are semantic, structural (phonological) or simply arbitrary (lexical) restrictions with regard to the derivational possibilities of the stems. Secondly, there are many restrictions with regard to the co-occurrence of derivational or inflectional forms in this template:

1. There is no way for all the slots of the template to be filled in one verb form; such a verb form cannot exist.
2. Outer instrumentals (slot -6a) cannot be combined with inner instrumentals (-1).[18]
3. Certain pronominal affixes are mutually exclusive; e.g. 1DI.A *hį-* cannot co-occur with the 1E.A *ha-*. However, pronominal affixes of the Pron I/II slots can co-occur

[17] For a more comprehensive critique of a template analysis of the Siouan verb morphology, see Rankin et al. 2002. The critique is supported by two sets of data: noun-verb compounding and noun incorporation in Siouan and the concatenation of locative/instrumental applicatives and instrumental prefixes in Siouan languages. The latter, however, may be restricted to diachrony, in the following sense: At a given synchronic stage, only one member of these paradigms may be productively integrated in a verb form. Diachronically, however, stems with a fossilized locative prefix may undergo a locative derivation with another locative prefix, which in turn may undergo a process of fossilization itself.

[18] This mutual exclusiveness provides, incidentally, the kind of counterexample to his theory of disjunctive blocks that Anderson (1992:131) is looking for. Again, this claim is true for synchronic derivation. We are not claiming that verb stems containing a fossilized inner instrumental cannot be derived with outer instrumentals.

with pronominal affixes of the Pron III slot even if they are co-referential; see section 4.2.

4. As formalized in the template, the APPL.BEN *gi-* and the REFL/RECIP *kii-/ kiki-* are mutually exclusive – we did not find any instances where these morphemes co-occurred (although there is no principled reason to exclude this possibility).
5. However, contrary to the stipulations of the template, the APPL.BEN *gi-* and the POSS.REFL *kara-/kV-* do co-occur, and, in addition, the REFL/RECIP *kii-/ kiki-* and the POSS.REFL *kara-/kV-* do co-occur as well. The reason to subsume them under one column instead of two is that the orders of both pairs of forms vary.

4.2. Conjugation

In Table 1, there are three slots for **pronominal affixes**, Pron I, II, III (slots -7, -4, -2). Their paradigmatic structure is as follows: First, there is one subparadigm each for the actor (slots -7a, -4b, -2) and for the undergoer (slots -7, -4a). Transitive stems use both of these subparadigms; among intransitive verbs, active ones use the first, inactive ones the second subparadigm. Second, each of these two subparadigms is syntagmatically distributed over the two slots of Pron I and Pron II, in the following sense: Some of the morphemes constituting the actor subparadigm are in slot -7a, while the others are in slot -4b. And again, some of the morphemes constituting the undergoer subparadigm are in slot -7(b), while the rest is in slot -4a. In this sense, the morphemes of Pron I and Pron II form a superparadigm. In addition, the actor subparadigm includes Pron III. Since the latter's affixes show a high degree of allomorphy – they are partly phonologically conditioned depending on the initial consonant of the root –, they are not listed in Table 1.

There are two **conjugation classes** in Hočank which are defined by using pronominal affixes of the paradigm Pron III or not using them. The first conjugation is the regular and default conjugation. It uses Pron I & II for actor and undergoer and does not use Pron III. The second conjugation is irregular and constrained and uses Pron III, while affixes of Pron I & II may be involved in addition. The irregularities of the second conjugation comprise a modification of the root-initial consonant (cf. (18)a below) for the A.1SG, and an affix *šV-* consisting of /š/ plus a vowel copy of the following root vowel for the A.2SG.

Verbs belong to one or both of the conjugation classes as follows:

- Inactive intransitive verbs belong to the first conjugation.
- An active verb (whether transitive or intransitive) belongs to the second conjugation if it is either a root verb starting with a certain consonant (viz. *w, r, n, ', h, g, j, t'*) or it bears one of the affixes *ra-, ru-, wa-* of the set in slot -1. If neither of these conditions is fulfilled, it goes exclusively by the first conjugation. A verb that conjugates by the second conjugation may, in addition, take pronominal affixes of the first conjugation under one of the following conditions:
  - Since the second conjugation comprises no undergoer affixes, transitive verbs that fulfill the conditions for the second conjugation in addition take undergoer affixes of the superparadigm Pron I & II.
  - If a stem requiring second conjugation has an (additional) affix further to the left that triggers first conjugation (for instance, the benefactive applicative *gi-*), then it may

bear affixes of both conjugations; and in particular, the actor may be doubly referenced by affixes both of Pron I & II and of Pron III.

4.3. Verb stems

Morphological tradition distinguishes between the root, the stem and the inflected form. A root consists of a morpheme. A stem consists of a root and any number of non-inflectional morphemes which may be roots, derivational morphemes or submorphemes. An inflected form consists of a stem and inflectional morphemes. The complex units are formed stepwise by operations that build upon each other in the order indicated. By the proximity principle mentioned in section 2, if the order of the morphemes involved is iconic, then it reflects the order of these morphological operations. As we know, this is not so in Hočank. We will make no attempt here at a functional explanation of the structure of a complex Hočank verb form by a stepwise build-up from right to left (with respect to Table 1), but simply abide by the assumption that morphological structure does not reflect the functionality of the operations involved.

4.3.1. Root verbs

Most roots are monosyllabic. A root can be a free or a bound morpheme. A free root can exhaust a stem, thus forming a root verb; cf. the examples in Table 2. A bound root cannot form a root verb.

The crucial forms for the conjugation of a Hočank verb are the first and the second person singular. If one knows these, one can conjugate the verb. Therefore our tables of examples of Hočank verbs have the following structure: the first column contains just the stem/root itself, the second and third columns give the first and second person singular, and the last column indicates the meaning. As usual, morpheme boundaries are indicated by hyphens. Table 2 presents examples of free roots.

Table 2. **Root verbs**

stem = root	**A.1SG -**	**A.2SG -**	**meaning**
čáap	*ha-čáp*	*ra-čáp*	have as kin
číi	*ha-čí*	*ra-čí*	live, dwell
	U.1SG-	**U.2SG -**	
čų́ų	*hį-čų́*	*nį-čų́*	have many, plenty

The person affixes of the verbs of Table 2 are of paradigm Pron I & II. This is generally true of root verbs except if the conditions for the second conjugation are fulfilled, in which case they are of paradigm Pron III.

4.3.2. Complex stems

4.3.2.1. Basic notions

A **complex stem** consists of a root and an additional morpheme or submorpheme of one of the slots -6, -5, -3, -1. Since we are not treating compounding and incorporation (see Rankin et al. 2002 for this), this additional morpheme will be considered an affix. All these affixes are positioned to the left of the verbal root. Suffixes – inflectional and derivational – are not considered here.

According to the extent to which the meaning of the complex stem is a compositional function of the meanings of its components, we distinguish between a **derived stem** and a **lexicalized stem**. This distinction is, of course, gradual in synchrony and diachrony. Every lexicalized stem presumably was once a derived stem, in the sense of section 2. For prototypical cases, it is nevertheless useful to differentiate terminologically between the two kinds of affix involved in the complex: The affix of a derived stem is a morpheme and called a **derivational affix**. The affix of a lexicalized stem is a submorpheme and called an **initial stem component** (ISC).

The important point here is that, in the prototypical cases, lexicalization may be complete to the extent that the semantic relationship between the morphological components and the complex stem is perfectly idiosyncratic (much as in (1) and (8)b above). From a semantic – though not from a formal – point of view, such a discontinuous stem could even be considered a discontinuous root, in which case, as we have seen in section 3.3, the interfixes would have to be regarded as infixes. On this basis, we will show in section 5 that most Hočank ISCs go back to derivational affixes, i.e. viewed formally, they are a subset of the latter. Thus, a complex stem may be either continuous or discontinuous; and it may be either derived or lexicalized. These two criteria cross-classify in principle. However, as we will see shortly, continuous complex stems tend to be derived stems.

4.3.2.2. Inner instrumentals (*gi-, ra-, ru-, wa-*)

The inner instrumental affixes immediately precede the root. We will review them in their turn.

Gi- means something like 'by striking'. It is semantically the most neutral of all instrumental affixes and often has a purely transitivizing function. Almost all stems beginning with a *gi-* that comes from the inner instrumental (there is also the applicative benefactive *gi-* of slot -3) are transitive stems that preserve in one way or other the meaning of the derivational affix. There are only a few intransitive verb stems with *gi-* which select pronominal affixes of the A series (cf. (9) and (10)), and only one selecting affixes of the U series (cf. (11)). Note that the /g/ of *gi-* regularly drops after pronominal affixes of the A series, but not after affixes of the U series. Apart from the meaning, the deletion of the /g/ is the most reliable cue for tracing this morpheme back to the inner instrumental rather than the homonymous benefactive applicative affix.[19]

[19] John Koontz and Bob Rankin (p.c.) let us know that it is precisely the 'by striking' instrumental (< **(ra)ka-*) that displays a deviant morphological pattern in Siouan languages.

(9) *_gi-čgúx(ha-i-čgúx, ra-i-čgúx) 'cut across (an area)'*

(10) *_gi-žáp (ha-i-žáp, ra-i-žáp) 'slip, slide (as in car)'*

(11) *_gi-š'á (hį-gi-š'á, nį-gi-š'á) 'have a throat irritation, a tickle in the throat'*

Practically all stems with stem-initial *ra-* have a meaning component 'with the mouth, with the teeth, by biting', as illustrated in (12). *Ra-* is thus a derivational prefix rather than an ISC. Almost all verbs with *ra-* are transitive verbs. All verb stems with an inner instrumental affix *ru-* ('by hand, by pulling') and *wa-* ('by force, by pressure') are transitive and often exhibit very clearly the derivational meaning of the respective instrumental affixes. Compare the derived stems in (13) and (14).

(12) *_ra-kšáp (taa-kšáp, ša-ra-kšáp) 'split sth. (break sth. brittle) by biting'*

(13) *_ru-šgáp (tuu-šgáp, šu-ru-šgáp) 'catch with hand'*

(14) *_wa-cgís (paa-cgís, ša-wa-cgís) 'cut with a knife or other instrument by applying pressure with palm or heel of the hand'*

Stems with the inner instrumentals *ru-* and *wa-* that do not show the derivational meanings appear in (15) and (16). But even here, the instrumental/manner meaning can be recovered easily: The action of storing or putting something away is prototypically done with the hands. Writing implies some pressure applied with the writing tool on paper or other material carrying the marks.

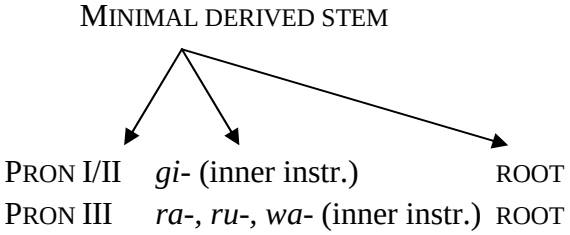
(15) *ru-cgús (tuu-cgús, šu-ru-cgús) 'store away, put away'*

(16) *wa-gáx (paa-gáx, ša-wa-gáx) 'write sth.'*

As a first generalization, we can retain that stems derived by an inner instrumental affix commonly exhibit a relatively high degree of compositionality. This is in contrast to the discontinuous stems to be discussed next and surprising in the perspective of the iconicity principle mentioned in section 2, which would make one expect that proximity of an affix and the root codes an intimate semantic relation between them which is liable to lexicalization. As a result, the inner instrumental affixes will not be resumed in section 5.

It is characteristic of all verb stems containing an inner instrumental that pronominal inflection precedes this affix, i.e. no internal affixation occurs. For the conjugation classes, see section 4.2 and compare (12)-(16). The structure of the stem is visualized in Schema 2.

Schema 2. **Structure of minimal derived stem**



4.3.2.3. Other derived stems

Although the inner and the outer instrumental affixes occupy different morphological slots, they are in a paradigm. Bound roots combined with one of the instrumental affixes are pervasive in the Hočank lexicon. Table 3 shows the bound root *-ce* first in combination with all of the outer instrumental prefixes of slot -5 and then with three of the four inner instrumental prefixes seen in the previous section.

Table 3. **Instrumental derivations from the bound root *-ce***

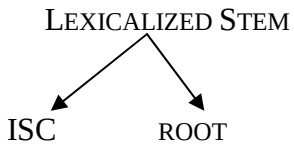
stem	**A.1SG**	**A.2SG**	**meaning**
boo_cé	*boáce*	*boráce*	shoot off a piece of soft substance
mąą_cé	*mą́ące*	*mąąną́ce*	cut off a piece of soft substance
nąą_cé	*nąą́ce*	*nąąną́ce*	kick a piece off something having a soft texture
taa_cé	*táace*	*taaráce*	burn off a piece of a soft substance
_racé	*taacé*	*šaracé*	bite off a piece of soft substance
_rucé	*tuucé*	*šurucé*	pull off a piece of soft substance
_wacé	*paacé*	*šawacé*	break off a piece of soft substance by pressure or pushing

These derivations yield transitive verb stems. The root *-ce* does not occur in other verb stems, only in forms derived from the stems given in Table 3. The derivational relation between instrumental affix and root is obvious from the semantics of the stem. All the stems clearly contain the basic meaning of the instrumental affix plus a meaning component 'break off a piece of soft substance', which seems to be the basic meaning of the verb root *-ce*. The semantics of such derivation is, thus, largely compositional. Other such derivational affixes include the locative applicatives and the instrumental applicative.

4.3.2.4. Lexicalized stems

The overwhelming majority of verb stems are discontinuous. A lexicalized discontinuous stem consists of a root plus one or more ISCs. They occupy the same slots of Table 1 as the derivational affixes seen before; but as announced in section 4.3.2.2, we will in the following neglect the slot that is adjacent to the root. The stem then has the structure of Schema 3.

Schema 3. **Structure of lexicalized stem**



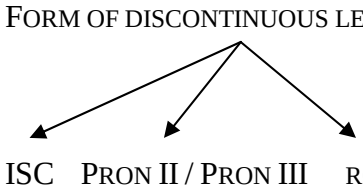
An ISC is an integral phonological and semantic part of the stem. It cannot be dropped without destroying the stem phonologically and semantically. No matter whether the root is bound or free, the ISC converts it into a separate lexeme.

Synchronically, the combination of an ISC with a root may be idiosyncratic to different degrees. Diachronically, ISCs stem from fossilized derivational morphology or from nouns and verbs semantically coalesced with the root. Often, the diachronic sources cannot be traced with certainty. For instance, the stem *ho_rák* 'tell sth., relate sth.' (cf. (18)) consists of an ISC

ho- plus a bound root *-rak* meaning 'tell sth.' The ISC *ho-* is homophonous with the locative applicative prefix *ho-* 'in sth.', but the inessive meaning component does not appear in the lexeme. We may assume it to have been lost.[20] The bound root *-rak* does appear in other words (often derived from *horák*) which have meanings related to 'telling'.

Person markers indexing the actor and/or undergoer of the clause are positioned between ISC and root; cf. Schema 4.

Schema 4. **Structure of minimal verb form of lexicalized stem**



The structure in Schema 4 may be illustrated with the examples in (17) and (18).

(17) *a.* *ha_pé* *'wait, wait for, stay home'*
{ha- ha- pé}
ISC-A.1SG -root

b. {ha- ra- pé}
ISC-A.2SG -root

(18) *a.* *ho_rák* *'tell sth., relate sth.'*
{ho- ták}
ISC-A.1SG.root

b. {ho- ša-rak}
ISC-A.2SG -root

(19) *ho_girák* *'tell someone sth.'*

a. *waagítak* 'I tell someone sth.'
{ho- ha- gí- tak}
ISC-A.1SG -APPL.BEN-A.1SG.root

b. *horagíšarak* 'you tell someone sth.'
{ho- ra- gí- ša-rak}
ISC-A.2SG -APPL.BEN-A.2SG-root

The lexicalized stem *ha_pé* in (17) consists of an ISC *ha-* (slot -6b) and a bound root *-pe*. This stem selects Pron II of the first conjugation to be interfixed between ISC and root. The lexicalized stem *ho_rák* in (18) consists of an ISC *ho-* plus a bound root that meets the conditions for Pron III, i.e. for the second conjugation. In (19)a-b, the lexicalized stem *ho_rák* contains an additional internal affix, the benefactive applicative (APPL.BEN *gi-*, slot -3). In this case, the A is indexed twice, a) by an interfix of the first conjugation before the *gi-* morpheme, and b) by a form of the second conjugation, i.e. root-initial consonant

[20] However, the ISC *ho-* in this verb could have a different source (Bob Rankin p.c.), viz. the body part noun *hoo-* 'voice' appearing in *hooxíwi* 'cough' (cf. (30)). The long vowel of this noun could have been shortened. We have no way of resolving this.

modification or *šV-* affix, respectively. This does not happen with the U, which is only marked by pronominal affixes of the first conjugation.

5. Origins of initial stem components in Hočank

In this section, the various sources of ISCs and the diachronic processes of their evolution will be examined. Besides the derivational morphology mentioned in section 4, nouns – mostly body part nouns – and verbs – mostly motion verbs – are also possible sources. Here is a complete enumeration of the etymological sources for ISCs:

1. Locative applicatives (*ha-, ho-*)
2. Instrumental applicative (*hi-*)
3. Combination of instrumental and locative applicative: (*hira/hiro* < **hiha/*hiho*)
4. Outer instrumental prefixes (*boo-, nąą-, mąą-, taa-*)
5. APPL.INST (*hi-*) plus Outer instrumental (*boo-*)
6. APPL.INST (*hi-*) plus Outer instrumental (*nąą-*)
7. APPL.INESS (*ho-*) plus Outer instrumental (*nąą-*)
8. APPL.BEN (*gi-*)
9. REFL/ RECP (*kii-/kiki-*)
10. 3.PL.OBJ / Indefinite Pronominal affix *(wa-*)
11. 3.PL.OBJ / Indefinite Pronominal affix (*wa-*) plus Outer instrumental (*mąą-*)
12. 3.PL.OBJ / Indefinite Pronominal affix (*wa-*) plus APPL.INST (*hi-*)
13. 3.PL.OBJ / Indefinite Pronominal affix (*wa-*) plus APPL.INESS (*ho-*)
14. Verbs
15. Nouns

This list of forms that have been identified will be illustrated and commented on in the following subsections.

5.1. Outer applicatives

The three prefixes of slots -6 have an initial /h/ in common. This is prothetic and occurs only in word initial position. The medial forms are *a-, o-, i-*; and they are, at the same time, the underlying forms. Hočank is the only Siouan language that has this prothetic /*h*/ (cf. Helmbrecht 2006). It is probably an areal trait Hočank shares with some of its neighboring languages. It has been a tradition in the description of Hočank at least since Susman (1943) and Lipkind (1945) to cite these morphemes with the prothetic /*h*/ instead of using the underlying forms, i.e. the medial forms. What has been said about prothetic /*h*/ in the outer applicatives also holds for the pronominal affixes of the first conjugation of Table 1.

5.1.1. Locative applicatives (*ha-, ho-*)

Locative applicatives are derivational prefixes that add a superessive 'on' and an inessive 'in' argument position to the valence of the verb. In (20)a-b, the active intransitive verb 'jump

down' receives an additional locative argument 'on sth.' which is marked by the locative applicative *ha-* The locative, or better superessive argument is pronominally indexed by an affix of the undergoer series. The result of *ha-* application is a transitive verb with an agent expressed by an affix of the actor series and a location/goal expressed by an affix of the undergoer series. The *ho-* inessive applicative functions in the same way.

(20) *a. tą́ąp* *'jump down'*
b. *ha-tą́p* 'jump down on sth.'

There are, however, many verbs in Hočank that begin with *ha-* or *ho-* without such a meaning. The morphological structure of these verbs resembles with surprising precision the structure of genuine applicative verbs. This formal resemblance allows one to hypothesize that these ISCs are fossilized applicative prefixes that became integral parts of the stem. The forms in Table 4 demonstrate that the locus of personal inflection is exactly where it would be expected for a regular derivation of the bound root *-pé* with the locative applicative *ha-*. This holds for the interfixation of the derivational morpheme *gi-* (APPL.BEN), too. This affix appears between pronominal affixes II and III, cf. e.g. *ha_gi_pé* and *ha_gi_rúkos*. In addition, we observe the same morphonological process in these stems with the 1D.I *hį-* as we would get in a productive derivation with APPL.SUPESS *ha-* (*hįį-* < *hį-* + *ha-*....). Cf. the examples in (21).

(21) *a. hįįgípe* 'we (1D.I) wait for someone'
{hį-ha-gi-pe}
1D.I-ISC-APPL.BEN-wait

b. *hįįgírukos* 'we (1D.I) hold sth. for someone'
{hį-ha-gi-rukos}
1D.I-ISC-APPL.BEN-hold

Table 4 presents some more examples of ISC *ha-*.

Table 4. **ISCs from the locative applicative *ha-***

ha_pé	*haapé, harapé*	wait
ha_gi_pé	*haagípe, haragípe*	wait for someone
ha_rukós	*hatukós, hašurukós*	hold sth.
ha_gi_rúkos	*haagítukos, haragíšurukos*	hold (something) for (someone)
ha_isų́č	*haísųč, haraísųč*	bring something to or toward completion
ha_karaží	*haakáraži, harakáraži*	encourage

Similarly, we find in the Hočank lexicon many instances of a fossilized locative applicative *ho-*, illustrated in Table 5. The fossilized applicative *ho-* triggers exactly the same morphonological processes as the derivational *ho-*, e.g. *waa-* in *waagíwe* 'I take a path' < *ho-* + *ha-* (A.1SG), which is fully regular. The last three *ho-* verbs in Table 5 have a root that triggers a second-class conjugation (Pron III) because of the phonological quality of the initial consonant. It can be hypothesized that at least *ra-* in *ho_racga* and *wa-* in *ho_važá* are diachronically inner instrumentals; compare the remarks on inner instrumentals in section 5.5 below.

Table 5. **ISCs from the locative applicative *ho-***

ho_giwé	*waagíwe, horagíwe*	take a path
ho_ki'ų́	*waakí'ų, horakíš'ų*	imitate (physical mannerisms)
ho_kit'ų́_re	*waakít'ųte, horakít'ųšere*	become trapped
ho_racgá	*hotačgá, hošaračgá*	guess
ho_roǧóč	*hotoǧóč,hošoroǧóč*	look at sth./so.
ho_waží	*hopažá,hošawašá*	be sick

5.1.2. Instrumental applicative (*hi-*)

Many stems in the Hočank verb lexicon begin with the syllable *hi-*, which shows the same morphological behavior as the instrumental applicative without conveying the same meaning, though. The examples in Table 6 demonstrate this. The first person singular of *hi_'e* 'find sth.' is *yaa'é* 'I find sth.' with *yaa-* < *hi-* + *ha-* (A.1SG). This is entirely regular and occurs in every derived form with *hi-*.

Table 6. **ISCs from the instrumental applicative *hi-***

hi_'é	*yaa'é, hira'é*	find
hi_čexí	*yaačéxi, hiračéxi*	try
hi_gí	*yaagí, hiragí*	recognize

There is evidence in from other Siouan languages that there was a third locative applicative which is homophonous with the instrumental applicative *hi-*. This locative applicative *(h)i-* has meanings such as 'towards, against', for instance in Lakota (cf. Boas & Deloria 1941:41f). However, there is no good evidence for such a locative applicative in the synchronic analysis of Hočank. However, the ISCs in Table 6 could well go back historically to this morpheme (Bob Rankin (p.c.). Given the complete lexicalization of the complex, this seems no longer decidable.

5.1.3. Combination of instrumental and locative applicative (*hira/hiro* < **hiha/*hiho*)

Some interfixing verb stems in Hočank begin with *hira-* (cf. Table 7) or *hiro-* (cf. Table 8). These are the modern Hočank reflexes of an earlier combination of the instrumental applicative *hi-* plus one of the two locative applicatives *ha-* and *ho-*. The /r/ in the combined forms is epenthetic; but unlike the Hočank prothetic /*h*/, the epenthetic /r/ is reconstructed for Proto-Mississippi-Valley-Siouan.[21] As the examples in Table 8 demonstrate, the rule for /r/ epenthesis in Hočank is still productive.

[21] Thus, current comparative Siouan morphology appears to hold that the respective proto-forms are *o-, *a-, *i- (Bob Rankin and John Koontz p.c.; cf. also Rankin & Carter & Jones n.d.; Helmbrecht 2006) and that there is both a Proto-MVS r-epenthesis if they are sequenced (Bob Rankin and John Koontz p.c.), and a Hočank h-prothesis (cf. beginning of 5.1) if any of them starts a word. By general phonological theory, the opposite processes are much more common and natural. I.e.: the proto-forms are **ho-*, **ha-*, **hi-* (maybe with some other continuant instead of the /h/); the consonant becomes *r* if they are sequenced; otherwise it disappears except in Hočank. Whether this alternative scenario is compatible with what else is known about Proto-Sioux, we ignore.

Table 7. **ISCs from a combination of **hi- + ha-***

hira_hí	*hiráahi, hiraráhi* (from *-hi* 'arrive going')	go to a place in order to find

Table 8. **ISCs from a combination of **hi- + ho-***

hiro_jąṕ (from *ho_jąṕ* 'look into, opening of the eyes')	*hiro-á-jąp, hiro-rá-jąp*	aim at
hiro_kíkurušų (from *ho_kikúrušų* 'wrap oneself (in a blanket or coverlet)')	*hiro-á-kikurušų, hiro-rá-kikurušų*	wrap (something) all around oneself

The form in Table 7 also shows that motion verbs could be combined with locative applicatives at some point in the history of Hočank. In contemporary Hočank, derivations with these applicatives are no longer possible. This holds for the set of 12 motion verbs that are distinguished by deictic ('here' and 'there') and aspectual ('start' – 'be on the way' – 'arrive') meanings.

5.2. Outer instrumental prefixes (*boo-, nąą-, mąą-, taa-*)

Derivations with the instrumental prefix *boo-* are quite productive. Almost all instances in the lexicon exhibit the characteristic meaning of *boo-* 'by shooting, by blowing, by a blow'. Only a few instances may be considered as fossilized ISCs. One of these is shown in Table 9. The verb stem *boo_kéwe* 'fall down' is intransitive and does not exhibit the manner/instrumental meaning of *boo-*. The root *-kewé* is not an independent stem.

Table 9. **ISCs from Outer instrumentals: *boo-***

boo_kéwe	*bo-á-kewe, boo-rá-kewe*	fall down (e.g. a hill, stairway)

The situation is different with *nąą-*, which in regular derivation means 'with foot / by kicking'. Many stems containing a *nąą-* ISC do not show such a meaning component. This may be explicable diachronically as follows: In addition to *nąą-* 'with foot / by kicking', Proto-Siouan possessed a homophonous instrumental prefix **nąą-* 'by inner force'. This is continued in other Siouan languages, for instance Dakota (cf. Boas & Deloria 1941:45), where it is likewise homophonous with the 'foot' instrumental prefix *na-*. It is absent from Hočank; but it seems probable that the ISC *nąą-* that does not mean 'with foot / by kicking' goes back to Proto-Siouan *nąą-* 'by inner force' (Bob Rankin p.c.). Table 10 contains some such cases.

Table 10. **ISCs from Outer instrumentals: *nąą-***

nąą_'íziį	*nąą́'iziį́, nąą-rá-'iziį*	be jealous
nąą_ğíre	*nąą́ğite, nąąňáğis`ere*	be frightened
nąą_xgų́	*nąą́xgų, nąąňąxgu*	hear

There are many derivations with *mąą-* that show the characteristic manner/instrumental meaning 'by cutting, with a knife', but some of the entries don't, e.g. the forms in Table 11.

Mąą_šją́ is an intransitive inactive verb, while instrumental prefixes usually derive transitive stems. In addition, there is no cutting or instrument meaning present. *Mąą_rác* illustrates the combination of the ISC *mąą-* with a root requiring the second conjugation. As before, the meaning or etymology of *mąą-* is unknown; there may have been several homophonous *mąą-* (Bob Rankin p.c.).

Table 11. **ISCs from Outer instrumentals: *mąą-***

mąą_šją́	*(mą-į́-šją, mąą-nį́-šją)*	be strong, to have power
mąą_ráč	*mąątáč, mąąšáračˇ*	make an appointment

As for *taa-*, it appears to practically always express the regular derivational meaning 'by heat / by burning', as in Table 12.

Table 12. **ISCs from Outer instrumentals: *taa-***

taa_xéwe	*táixewe, taanį́xewe*	be "all in" from the heat

An exception may be the form in (22), an intransitive inactive verb designating 'feel cold, have chills'. But even here, the dimension of temperature is implied and chills may also come from fever attacks and the like. From a comparative Siouan perspective, this instrumental prefix is better glossed as 'by extreme temperature', since it includes 'heat' as well as extreme 'coldness'. It is the only instrumental prefix that derives inactive verbs in Siouan languages (Bob Rankin p.c.), and this is true for Hočank, too.

(22) *a. taa_sák (ta-í-sak, taa-nį́-sak)* *'feel cold'*

b. *taa-sásak* (*ta-í-sasak, taa-nį́-sasak*) 'have chills'

5.2.1. APPL.INST (*hi-*) plus Outer instrumental (*boo-*)

Table 13 contains the more or less fossilized combination *hibo-* of the elements *hi-* + *boo-*, which cannot be analyzed with certainty. The outer instrumental *boo-* 'by shooting' is clearly involved, but the *hi-* part remains uncertain. Presumably, this is the locative applicative *(h)i-* 'toward' that could have an etymological bond with the motion verb *hii* 'arrive going' in Hočank.

Table 13. **ISCs from a combination of *hi-* + *boo-* Outer instrumental**

hibo_čgúx (from *boočgúx* 'traverse an area')	*hiboáčgux, hiboráčgux*	cut through (like through a thicket of shrubbery)
hibo_kéwe (from *bookéwe* 'fall down')	*hiboákewe, hiborákewe*	trip
hibo_šúruk (from *boošúruk* 'go through')	*hiboášuruk, hiborášuruk*	go all the way through something

5.2.2. APPL.INST (*hi-*) plus Outer instrumental (*nąą-*)

There are a few interfixing stems in the Hočank lexicon that begin with *hinąą-* without showing the expected derivational meanings. In the example of Table 14, the source for *nąą-* is certainly the outer instrumental 'by foot'. The source for *(h)i-* is either the instrumental applicative or the Siouan locative applicative 'toward'.

Table 14. **ISC from (*hi-*) + Outer instrumental (*nąą-*)**

hinąą_žį́ (from *nąžį* 'stand')	*hinąą́žį, hinąąňážį*	depend on

5.2.3. APPL.INESS (*ho-*) plus Outer instrumental (*nąą-*)

More frequent are stems with an ISC consisting of a combination of the locative applicative *ho-* and the outer instrumental *nąą-*, as in the example of Table 15. The etymology of *nąąxgų́* 'hear' was discussed above in connection with Table 10. The prefix *ho-* is probably not derived from *hoo* 'voice' since this Hočank noun would preserve its long vowel in word initial position. Instead, the prefix combination here apparently fulfills a causative function.

Table 15. **ISC from APPL.INESS (*ho-*) + Outer instrumental (*nąą-*)**

honą_xgų́ (*from nąąxgų́* 'hear')	*honąą́xgu, honąąňáxgų*	notify

5.3. APPL.BEN (*gi-*)

If the ISC *gi-* is a fossilized benefactive applicative (slot -3 of Table 1), then the stem containing it preserves the inflectional pattern we find in regular derivations with that *gi-*. Pronominal affixes of the second conjugation (slot -2) can appear only between *gi-* and the root. Pronominal affixes of the first conjugation (Pron I & II) precede the benefactive applicative *gi-*; cf. Schema 5. Etymologically, the benefactive applicative *gi-* is derived from a verb of motion 'return' (Bob Rankin p.c.), which formed a serial verb construction with the following full verb before it got grammaticalized.

Schema 5. **Structure of verb with APPL.BEN as ISC**

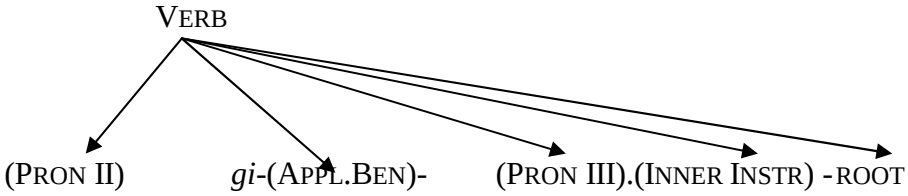


Table 16 shows three verbs containing *gi-* as an ISC.

Table 16. **ISC from applicative benefactive (*gi-*)**

_gikarahé	*ha-gi-kárahe, ra-gi-kárahe*	invite someone, ask to come along
_gi_ruk'ás	*ha-gi-túk'as; ra-gi-šú-ruk'as*	take off quickly (as in a race)
_giji_ré	*ha-gijí-te, ra-gijí-šere*	help, assist, lend a hand

The verb stem *gikarahé* contains the stem *karahé* 'be on the way leaving'.[22] This does not fulfill the conditions for pronominal affixes of the Pron III slot. Only pronominal affixes of the first conjugation (slots Pron I and II) are required here. They precede the ISC *gi-*.

The second example illustrates the case that the ISC *gi-* precedes a stem containing an inner instrumental affix (*ru-*). The stem *-ruk'as* is bound. In this case, we get a double conjugation, first conjugation before the ISC, second conjugation between ISC and root.

The complex stem *gijiré* consists of the ISC plus a complex root *jiré*. The latter occurs as independent verb stem meaning 'go by, pass by, begin, start'. It is certainly a combination of two motion verbs, *jíi* 'arrive coming' and *rée* 'go, start going'. As such, this stem is conjugated twice: cf. *ha-ji-té* 'I pass by', *ra-ji-šere* 'you pass by'. However, with the fossilized *gi-*, the slot for the person markers of the first conjugation moves to the left.

5.4. Reflexive/reciprocal (*kii-/ kiki-*)

If the ISC contains a fossilized reflexive marker *kii-*, or a combination of such a marker with other elements, the pronominal affixes of the first conjugation are placed before the *kii-*, following the morphological placement rules of section 4.2 and Table 1. Table 17 shows two examples.

Table 17. **ISC from reflexive/reciprocal (*kii-/kiki-*)**

a.	*hi_ki_'ó*	*yaa-kí-'o, hi-ra-kí-š'o*	touch, tag, tap, brush
b.	*_ki_ražéna*	*ha-ki-tážena, ra-ki-šá-ražena*	run out of words, end one's speech

In example (a), *kii-* precedes the root *'óo* (*ha'ó, š'ó*) which is an independent stem meaning 'hit the mark'. The semantic relation between the two morphemes and the lexicalized stem is so idiosyncratic that some homonymy may be involved here. Note that the stem *hiki'ó* preserves the second conjugation of the root for the second person, while the inflection of the first person is regularized by using the form of the first conjugation. The first person has no morphological reflex in the root. Thus, the verbal root *'óo* 'hit the mark' has a mixed conjugation, the first conjugation for the first person, the second conjugation for the second person. This is different with example (b), *kiražéna*. Here, the root preserves the personal inflection (second conjugation) entirely, while the pronominal affixes are placed before the ISC *ki-*.

Table 18 illustrates that the personal inflection of the root by means of the Pron III affixes (second conjugation) is blocked if there is a REFL.POSS marker *kV-* in the verb.

Table 18. **Conjugation of derived stem**

a.	*_rutí*	*tuutí, šu-rutí*	pull, lead by hand
b.	*ha_rutí*	*ha-túti, ha-šu-rúti*	haul

[22] Etymologically, this root consists of the motion verb *kere* 'leave' plus a bound form *-he* that appears with other motion verbs, too, indicating progressive aspect. The latter stems from an auxiliary verb (Lipkind 1945) whose cognates in the Dhegiha languages mean 'be in a place / be (LOC)' and which is probably also cognate to Dakota /e/ 'be' (Bob Rankin p.c.). Our Hočank consultants cannot make sense of it as a free form. The bound form *-he* obviously triggered the /e/ → /a/ metaphony yielding *karahé*.

c.	*_kiikúrutí*	*ha-ki-kú-ruti, ra-ki-kú-ruti*	crawl, draw oneself forward

The verb stem *rutí* consists of a bound root *-tí* plus an inner instrumental affix *ru-*. This stem requires forms of the second conjugation. The ISC *ha-* does not change this, although the stem is interfixing now. As soon as there is a possessive reflexive marker *kV-* (example c), no internal root conjugation appears.

5.5. OBJ.3PL / Indefinite Pronominal affix (*wa-*)

There are numerous interfixing stems in the Hočank lexicon containing an ISC *wa-*. None of them, however, contains the inner instrumental *wa-*. Stems consisting of a root with an inner instrumental *wa-* are not interfixing and trigger the second conjugation; compare the morphological template in Table 1 and section 4.3.2.2. This holds also for the other Inner instrumentals *ra-* and *ru-*. Some deviant patterns are associated with the Inner instrumental *gi-*. Instead, there is an object prefix *wa-* with two readings, 3PL and 'something', which may be homophonous or identical. If there is interfixation in stems of the form [*wa*-root], the *wa-* prefix is most likely etymologically derived from this object prefix. Compare the selection of examples in Table 19.

Table 19. **ISC from indef. OBJ/ OBJ.3PL *wa-***

wa_gé	*waagé, waragé*	mean
wa_ré	*waté, wašeré*	work
wa_šošé	*waišóše, wanįšóše*	be brave

Again, the semantic combination in these cases belongs to the field of etymology.

5.5.1. OBJ.3PL / Indefinite Pronominal affix (*wa-*) plus Outer instrumental (*mąą-*)

The indefinite object prefix *wa-* appears in a number of different ISCs. The example in Table 20 is a bound root plus an ISC *wamą-* that must be a combination of *wa-* + *mą-*. Etymologically, the former is probably the OBJ.3PL/INDEF morpheme, while the latter could be *mąą-* (Outer instrumental). In any case, the formation is not semantically compositional.

Table 20. **ISC from Indef. Obj. (*wa-*) plus Outer instrumental (*mąą-*)**

wamą_šją́	*wamą-į́-šją, wamą-nį́-šja*	be strong

5.5.2. OBJ.3PL / Indefinite Pronominal affix (*wa-*) plus APPL.INST (*hi-*)

There is a process that combines the two derivational prefixes *wa-* (INDEF.OBJ) and *hi-* (APPL.INSTR) into *wii-*. This complex derivation is employed productively to create instrument expressions such as *wiirú'as* 'key'.

(23) *wiirú'as* *'one opens sth. with it / key'*
{wa-hi-ru'as}
INDEF.OBJ-APPL.INSTR-open.sth.

However, there are also many instances in the lexicon where the initial *wii-* no longer shows any instrumental meaning. Some of these stems are given in Table 21. Morphologically, they behave like the productive derivation exemplified in section 4.

Table 21. **ISCs from INDEF.OBJ (*wa-*) plus APPL.INST (*hi-*)**

wii_káragų́s	*wiákaragų́s, wiirákaragų́s*	use full potential
wii_kérek	*wiákerek, wiirákerek*	be still
wii_rák'o	*wiiták'o, wiišárak'o*	eat up
wii_rúwį	*wiitúwį, wiišúruwį*	sell
wii_wágax	*wiipágax, wiišáwagax*	pawn

One also finds stems with an ISC that contain a sequence of the INDEF.OBJ form *wa-*, the instrumental applicative *hi-* and the locative applicative *ho-*, as illustrated in Table 22.

Table 22. **ISC from *wa-* (INDEF.OBJ) + *hi-* (APPL.INST) + *ho-* (APPL.INESS)**

wiiró_žu	*wiiroážu, wiiróražu*	use to sop up liquid

In the combination *wiiro-*, the MVS epenthetic /r/ is again operative.

5.5.3. OBJ.3PL / Indefinite Pronominal affix (*wa-*) plus APPL.INESS (*ho-*)

Similar to the process described in the previous section, there is a productive derivational process in contemporary Hočank involving an indefinite object prefix *wa-* plus the locative applicative *ho-* yielding *woo-*. There are, however, also lexicalized verb stems with the same initial element. Examples of these are given in Table 23.

Table 23. **ISC from INDEF.OBJ (*wa-*) + APPL.INESS (*ho-*)**

woo_gá	*wáaga, woorága*	give
woo_hí	*waahí, wooráhi*	win

One also finds stems that show a lexicalized sequence of *wa-* (INDEF.OBJ) + *ho-* (APPL.INESS) + *nąą-* (Outer Instr) resulting in an ISC *woonų-*, cf. the example in Table 24.

Table 24. **ISC from *wa-* (INDEF.OBJ) + *ho-* (APPL.INESS) + *nąą-* (Outer Instr)**

woonų́_'į	*woonų́ą'į, woonų́ňa'į*	desire

5.6. Compounding

The previous sections treat ISCs that derive diachronically from grammatical affixes that were frozen in the morphological slot they filled in the verbal form. In all these cases, the morphological position of the ISC is the slot that it occupied when it was a productive derivational prefix. In the last two subsections of section 5, ISCs with nominal and verbal sources will be discussed. Here, the diachronically underlying construction is not a derived verb form, but a syntactic construction. Given certain word-order rules, a finite verb is

regularly preceded by a certain syntactic constituent, with which it may coalesce by grammaticalization or lexicalization. What were personal prefixes of the finite verb get then entrapped after the agglutinated word.

Univerbation can be diagnosed rather safely by the criterion of stress placement. The general rule for stress placement is: primary stress falls on the third mora from the left edge of the word. This is in most cases either the third syllable (if all initial syllables are short), or the second syllable (if the first or second syllable is long). Thus, if a complex containing two roots bears only one stress on the third mora, it must be a word.

5.6.1. Verbs

In the Hočank clause, the position of the finite verb is final, following any lexical subject and lexical object, if the verb does not signal any actants by overt pronominal affixes. This holds for main as well as for subordinate clauses. The following patterns can be found:

1. Subject/ actor – dir. object/ undergoer – verb
2. Subject/ actor [subject/ actor – dir. object/undergoer – subordinate verb] matrix verb

The pattern in 1 is the regular word order found with lexical subjects and lexical direct objects in independent clauses. If one or both of the actants are represented by pronominal affixes in the verb, the order of the remaining lexical verb dependents becomes very flexible; even a post verbal position becomes available.

The pattern in 2 holds for complement clauses. The subordinate clause occupies the syntactic slot for objects, i.e. immediately before the finite verb. Word order rules within the subordinate clause are the same as in independent clauses. As is obvious from pattern 2, the matrix verb and the subordinate verb are normally adjacent to each other. Subordination in Hočank is not characterized by specific verb categories such as participle, gerund etc. Subordinate verbs may, in principle, be inflected like independent verbs. Various degrees of formal and distributional fusion can be observed with regard to the combination of matrix verb and subordinate verb. The fusion is particularly close if the matrix verb is a grammatical verb and the subordinate verb a full verb. Different degrees of fusion can be illustrated with respect to the so-called positionals. Positionals are auxiliaries designating 'to be' plus the spatial orientation of the subject of the predicate. Positionals do not occur independently. They are either preceded by a content verb or by another auxiliary of 'being' (which is not a positional). Positionals in these constructions indicate progressive aspect. This closest type of fusion can be illustrated with the positional *=nąk* 'to be (in a sitting position)'; cf. (24).

(24) *hįnąńągwi* *'we (inclusive) were sleeping'*
{hį-nąą-(h)a-nąk-wi}
A.1DU.I-sleep-COLL-POS.NTL-PL

The combination of verbs *nąą́* 'sleep' and *=nąk* 'to be (sitting)' in (24) is personally inflected in a peculiar way. The person category is marked on the dependent content verb, the number is marked twice on the auxiliary, a) with a collective marker which otherwise appears only in the plural categories of deictic motion verbs, and b) with the regular plural suffix *–wi* for the 1I.PL category. The whole complex is inflected like a single verb (with the exception of the "interfixed" collective marker). The person marker on the content verb must not be dropped. We find the same behavior with regard to the positional *=jée/=jąą́* 'to be (standing position)'

with one exception. With a first person singular actor, both parts are inflected for person, cf. (25).

(25) *hatą́bajeeną* *'I was jumping (standing)'*
{ha-tą́ąp-(h)a-jée-ną}
A.1SG -jump-A.1SG -be(standing)-DECL

As is the case with the collective marker *ha-* in (24), the prothetic /h/ of the 1SG prefix *ha-* does not appear in the inflection of the positional *=jée* in (25). Prothetic /h/ only appears in word initial position, and its lacking in (24) and (25) signals that there is no word boundary between the content verb and the auxiliary. The positionals are normally univerbated with the preceding full verb.[23]

The morphological bond is looser in combinations with full verb and one of the twelve deictic motion verbs. As can be seen in the examples in (26), there are word boundaries between the motion verb and its preceding subordinate verb. The patterns of personal inflection are different, too. In (26a), both verbs are inflected for the 1SG actor, but, as is shown in (26b), under the condition of co-reference, marking of the actor in the subordinate verb is optional. There is no meaning difference between (26a) and (26b). Interestingly, coreferential person marking in the subordinate verb is excluded if the actor/subject is a third person. This is illustrated in (26)b and c. This sentence is grammatical if the subordinate verb *gihí* 'to pick' appears without the SBJ.3PL pronominal suffix *-ire*.

(26) *a. háas hagihí hají* *'I came to pick berries'*
{háas ha-gihí ha-jí}
berries A.1SG-pick A.1SG-come
b. *háas gihí hají* 'they came to pick berries'
c. **háas gihíire hajiíre*
{háas gihí-ire ha-ji-íre}
berries pick-SBJ.3PL COLL-come-SBJ.3PL

This variation in inflection of the dependent verb can also be illustrated with *roo_gų́,* a control verb that requires co-reference with the subordinate subject, as in (27)a-b.

(27) *a. nįįną́wox taačgą́ roágųną* 'I want to drink beer'
{nįįną́wox taačgą́ ro<há>gų-ną}
beer A.1SG.drink<A.1SG>want-DECL

b. *nįįną́wox račgą́roágųną* 'I want to drink beer'
{nįįną́wox račgą́ ro<há>gų-ną}
beer drink <A.1SG>want-DECL

The sentences in (27)a-b are synonymous, the only difference being that the subordinate verb *racgą́* 'drink' is personally inflected for its subject in a), but not in b). Both are equally possible according to our consultants, the former involving perhaps more emphasis on the actor. Similar rules apply for the causative verb *=hii*; if the causee of the causative auxiliary *=hii* and *gigí* 'to cause, to allow' is identical with the causer, it is usually omitted. This is, again, obligatory for the third person.

[23] The same mechanism is described for the Muskogee language Alabama in Chiu 1987.

In these constructions, the main verb is generally semantically more general and subject to grammaticalization to an auxiliary or a support verb. Person inflection always appears on this second verb, while the conditions under which it also appears on the first verb remain to be investigated. What seems clear so far is that we are not dealing with a pattern of V-V compounding at the stem level, but instead with a syntactic construction which gets morphologized.

Univerbation of such a combination may be due to grammaticalization or lexicalization. A clear example of the latter process is given in Table 25, entry 1. The verb *ta'e_kere* is a compound of *taa'é* 'burn' and *keré* 'put, hold'. The latter form in this compound keeps the slot for the personal inflection, the first root remaining uninflected. The status of the complex as a single word instead of a juxtaposition can be seen from stress placement as explained above. As can be seen in the two inflected word forms in entry 1, the primary stress falls on the third syllable in both cases. If it were syntactic juxtaposition, both words would bear their own stress.

Table 25. **ISC from verbs**

1.	*ta'e_kére* (from *keré* 'put, hold')	*ta'ehákere, ta'erákere*	keep something burning
2.	*nįį_'ą́p*	*nįą'ą́p, nįįňą'ą́p*	be alive
3.	*howa_ré*	*howaté, howašére*	go forward

The case of entry 2 is less clear. *Nįį* occurs in many Siouan languages as a verb meaning 'be alive' (Bob Rankin p.c.). In the Hočank lexicon, *nįį* is listed as a noun meaning 'water', which could indeed have some etymological connection with 'be alive'. The second part of this combination is not easy to identify either. It may consist of an auxiliary verb *'ą* 'be' plus a stem extension *-p*. If so, the auxiliary retains the inflection of the complex stem.

A very frequent source for originally lexical ISCs are motion verbs. In the texts of our corpus, we find many different combinations of motion verbs; and they are often in first position of a verb complex. (28) is an example of a more or less transparent combination of two motion verbs.

(28) *a. ha-ji-té* *'I pass by'*
A.1SG-come-A.1SG.go
b. *ra-ji-šé-re* 'you pass by'
A.2SG-come-A.2SG-go

Ji_ré means 'go by, pass by, begin, start'. It is composed of *jíi* 'arrive coming' and the very frequent motion verb *rée* 'go, start going'. They form a complex stem in the Hočank lexicon which is conjugated twice, as seen in (28)a-b.

Entry 3 of Table 25 features the same verb *rée* in second position. It is this verb that retains the slot for the inflection, in this case, of the second conjugation. The first component of the complex stem is here further reduced. The ISC *howa-* is the verb *howé* 'go a certain way' (*waawé, horawé*) plus metaphony (/e/ → /a/), which rarely occurs as an independent verb.

In addition, it has to be recalled (cf. §5.3) that there is historical-comparative evidence that the APPL.BEN *gi-* in Hočank derived from a deictic motion verb 'to return' (Bob Rankin, p.c.) which grammaticalized to an APPL.BEN marker via a serial verb construction

with the motion verb preceding the full verb. The motion verb was not personally inflected for the actor, because its actor is co-referential with the actor of the full verb. There is a similar motion verb *gíi* 'arrive returning' in the synchronic lexicon of Hočank which is likely to be the historical predecessor.

5.6.2. Nouns

The second important lexical source for ISCs in Hočank are nouns, most notably body part nouns. The lexical subject in the intransitive clause and the lexical direct object in the transitive clause immediately precede the finite verb as the normal word order. Univerbation may lead to noun-verb compounds, which appear frequently in Hočank. Different degrees of lexicalization and coalescence may be distinguished. The example given in (29)a-c may illustrate the point. The stem *'ii_wús* 'be thirsty' is a lexicalized combination of the noun *'ii* 'mouth' + the intransitive verb *wuus* 'be dry'. That we have one stem instead of a juxtaposition of two stems is again shown by accent placement: there is one primary stress on the third mora from left, counting the nominal stem as part of the word.

(29) *a. 'iiwús* *'be thirsty'*
{'ii-wuus}
mouth-dry

b. *'į́įwus* 'I am thirsty'
{'ii-hį-wuus}
mouth-U.1SG -dry

c. *'iinį́wus* 'you are thirsty'
{'ii-nį́-wuus}
mouth-U.2SG -dry

A very similar example is in Table 26. The noun *páa* 'nose, point, tip, etc.' is compounded with the transitive verb *'ų́ų* 'make, do', resulting in a stem meaning 'sharpen'. Again, the complex is not merely a juxtaposition, but a word, witness the stress pattern. And once more, the personal inflection is retained by the verbal root of this stem, preserving thus the syntactic pattern in the internal morphological structure of the verb.

Table 26. **ISC from nouns**

paa_'ų́	*páa'ų, paaš'ų́*	sharpen

6. Conclusion

In this paper we presented a preliminary description of the morphological structure of the Hočank verb with special attention to the phenomenon of internal affixation. We have shown that internal affixation emerged in Hočank (as in other Siouan languages) by the fossilization of derivational prefixes. This happened with a large array of elements with very different grammatical and semantic functions. Even combinations of prefixes are reanalyzed as parts of the verb stem. The reanalysis of derivational prefixes as ISCs leads to entrapment of the

pronominal inflection. The entire diachronic process may be conceived as consisting of the four stages shown in Table 27.

Table 27. **Entrapment of inflectional affixes**

element \ **stage**	**1**	**2**	**3**	**4**
derivational	preverbal constituent	preverb	derivational prefix	part of discontinuous root
pronominal	preverbal clitic	prefix to preverb or to verb	interfix	infix

Stage 1 may be reconstructed for Proto-Siouan. The etyma of Siouan derivational verb prefixes may be adverbs or postpositions at that stage. Pronominal elements are clitics preceding the verb and/or governed by the postpositions.

Stage 2 is minimally distinct from 1 and still reconstructed. It is characterized by an advanced degree of coalescence of the elements involved: the preverbal adverbs or postpositions get attached to the ensuing verb, the pronominal clitics become prefixes to their hosts.

Stage 3 is historically observable in Hočank and other Siouan languages. The preverb is reanalyzed as a derivational prefix of the verb, and the combination accordingly is perceived as a complex stem. The pronominal prefix of the verb consequently becomes an interfix; and the same happens to a prefix of a postposition if preceded by another such complex.

Stage 4 is the endpoint of the development that has already been reached by such Hočank ISCs which are semantically and formally dissociated from derivational morphemes. They form a discontinuous root with what was the verb root theretofore; and consequently the pronominal interfixes become infixes, except that their insertion point is not (yet) determined phonologically.

Much more thorough morphological analysis and comparative Siouan work is necessary in order to achieve more clarity in the syntactic structure to be posited at stage 1. In contemporary Hočank, some of the derivational elements and ISCs trigger additional Pron I & II affixes. It is therefore possible that they formed a syntactic constituent – e.g. a postpositional phrase – with those pronouns at stage 1. The template of Table 1 evidently comprises a set of diachronic layers which we cannot yet disentangle. To the extent that these issues get clearer, the template could be replaced by a more hierarchical structure.

The consequence of those diachronic processes is a set of morphological patterns in Hočank that are typologically peculiar: stems are discontinuous, inflectional affixation is internal, inflectional morphology is closer to the root than derivational morphology. There is plenty of evidence that languages usually iron out such irregular and functionally disfavored patterns by moving the trapped interfixes to the left or right edge of the word (cf. Haspelmath 1993 on externalization of inflection). Neighboring Siouan languages did externalize the pronominal inflection by moving it to the beginning of the complex verb form. For instance, the Hočank stem *hoo_xiwí* 'cough' in (30) is an interfixing stem requiring the first person marker between the ISC *hoo-* and the bound root *-xiwí*. The Dakota cognate *hóxpe* in (31) has the same stem structure. Diachronically, *hóxpe* is a noun-verb compound < *hoo-* 'voice' +

-xpe 'weak, weaken'. However, Dakota speakers have lost awareness of the etymological source. Here the person marker *wa-* has been moved to the left edge of the word, appearing now in front of the stem (cf. Rankin et al. 2002:186).

(30) *a. hooxíwi* *'cough'*

b. *hoáxiwi* 'I cough'
{ho<ha>xiwi}
<1SG.A>cough

(31) *a. hóxpe* *'cough'*

DAK b. *wa-hóxpe* 'I cough'
1SG.A-cough

The movement of personal affixes from an interfixing to a prefixing position is, of course, not captured by Table 27. It can be observed in Siouan languages to different degrees. The transition from stage 3 to stage 4 of Table 27 leads to a kind of infixation where a word form may contain more than one infixal slot and infixation slots are not determined phonologically, but arbitrarily. Such a type of infixation is not attested and comes out as strongly dispreferred by the theoretical principles exposed in section 3.3.1. We may therefore hypothesize that it is exactly the transition from stage 3 to stage 4 of Table 27 that tends to be avoided.

Nonetheless, in Hočank as well as in Kansa and Quapaw (both belong to the Dhegiha subgroup of Mississippi Valley Siouan), verb stems remain interfixing; Hočank strictly refuses to regularize this burdensome pattern. We are in no position to identify the typological connections of this obviously peculiar pattern. Thus, Hočank remains a challenge, if not for morphological theory, then certainly for typology.

Abbreviations (see Lehmann 2004, section 3)

1, 2, 3	first, second, and third person
1→2	first person acts on second person
A	actor
APPL.BEN	benefactive applicative
APPL.INESS	inessive applicative
APPL.INST	instrumental applicative
APPL.SUPESS	superessive applicative
COLL	collective marker
E	exclusive
DECL	declarative
DAK	Dakota
DU	dual
GERM	German
I	inclusive
ISC	initial stem component
LAT	Latin
LNK	linker
N	noun
OBJ	object
PL	plural
POS.NTL	positional (sitting position)
POSS.REFL	possessive reflexive
RFL	reflexive
RECP	reciprocal
SBJ	subject
SG	singular
U	undergoer
V	vowel/ verb
-	morpheme boundary
_	locus of personal inflection
< >	infix boundaries

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