On the origins of multiple exponence in Crow

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Acknowledgements

I acknowledge with respect that I study and work on the traditional, ancestral, and unceded land of the Ohlone people.

Many thanks to:

- my Crow teachers Felice Big Day, Cyle Old Elk, Jack Real Bird, Riley Singer, and Charles Yarlott Jr. for their enduring friendships, patience, and hospitality during my visits to the Crow Reservation.
- Andrew Garrett and Raksit Lau for helpful and insightful comments and feedback throughout this project.

Data that come from my fieldwork on Crow are indicated with the name of the speaker I worked with and the source; the data presented here have been checked with multiple speakers.
Crow has a highly regular and predictable system of multiple exponence (ME) whereby morphemes that encode the same information are realized multiple times:

(1) baa-1a-lisshí dance -k 'I danced' [Cyle Old Elk; Cyle_072018_005.wav]

(2) baa-1a-xalússhi run -w -1a -ii -fut -k 'I will run' [Felice Big Day; 2018-17.084.004:46]

Why do these kinds of redundancies exist in language and how do they arise over time?
Crow has a highly regular and predictable system of multiple exponence (ME) whereby morphemes that encode the same information are realized multiple times:

(1) \texttt{baa-} \texttt{lissší -k}  
\texttt{1A-} \texttt{dance -DECL}

‘I danced’  
[Cyle Old Elk; Cyle_072018_005.wav]
• Crow has a highly regular and predictable system of multiple exponence (ME) whereby morphemes that encode the same information are realized multiple times:

(1) \textcolor{red}{\textbf{baa-}} lişší -k
\textcolor{red}{\textbf{1}_A-} dance -\textbf{DECL}

‘I danced’

[\text{Cyle Old Elk; Cyle\_072018\_005.wav}]

(2) \textcolor{red}{\textbf{baa-}} xalússhi \textcolor{red}{\textbf{-w}} \textcolor{red}{\textbf{-ii}} -k
\textcolor{red}{\textbf{1}_A-} run \textcolor{red}{\textbf{-1}_A} -\textbf{FUT} -\textbf{DECL}

‘I will run’

[\text{Felice Big Day; 2018-17.084.004:46}]
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1. \textbf{baa-} lisší -k
\textit{1A-} dance -\textit{DECL}

\textit{‘I danced’} [Cyle Old Elk; Cyle_072018_005.wav]

2. \textbf{baa-} xalússhi \textcolor{red}{-w} \textcolor{red}{-ii} -k
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\textit{‘I will run’} [Felice Big Day; 2018-17.084.004:46]

Why do these kinds of redundancies exist in language and how do they arise over time?
1. Delineate the pathways to ME focusing on the set of so-called modal auxiliaries in Crow -ii ‘will’, -iih ‘may, might’, -iimmaachi ‘will, must’, -iishdaachi ‘should’, and -isshi ‘eager to’.
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2. Account for the grammaticalization pathways of these modals, three of which are not found in any other Siouan languages.
• In this talk, I describe three main pathways to ME in Crow:

1. Coalescence of periphrastic constructions in which inflectional morphemes become trapped.

2. Combination of an ME-triggering morpheme with non-ME-trigger morpheme.

3. Extension of an alternating pattern to a non-alternating pattern.
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   - -isshi ‘eager to’
• Although ME occurs in at least 200 (out of ~7000) languages belonging to at least 25 (out of ~135) language families, ME is considered typologically uncommon (Harris 2017).
ME in a typological perspective

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• Caballero and Harris (2012) show that patterns of ME display a great deal of diversity cross-linguistically.

  ▶ For example, ME may be optional or obligatory, inflectional or derivational, identical or different in form, adjacent or non-adjacent, etc.
Siouan is one such language family in which ME can be observed. For example, ME may surface in dative/benefactive constructions.

• Lakota: 
  \[\text{w/ y-initial stems} \quad o-wa-ki-(bl)-yakA \quad \text{stm-1a-dat1-(1a)-tell} \quad \text{I tell to} \quad \text{(Ingham 2003:24)}\]

• Hoocąk: 
  \[\text{w/ 2nd person šV} \quad \text{ho-ra-gí-ša-rak} \quad \text{pv-2a-appl.ben-2a-tell} \quad \text{you tell s.o. something} \quad \text{(H&L 2008)}\]

• Osage: 
  \[\text{wáða-ki-š-pą} \quad \text{3b.pl-2a-dat-2a-invite} \quad \text{did you invite them?} \quad \text{(Quintero 1997:273, Ex.270)}\]

• Omaha: 
  \[\text{i-thØ-shpaxu} \quad \text{1b.ben-2a.ben-2a.write} \quad \text{you write it to me} \quad \text{(Marsault 2019, Ex.5b)}\]

• However, they do not occur for all types of verbs.
ME across the Siouan language family

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\[\text{o-wa-ki-}(\text{b1})\text{yakA} \]

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- However, they do not occur for all types of verbs.
• Crow is a polysynthetic, active-stative language with a large number of verbal morphemes that trigger ME on active verbs. For example:

- Andative ('going'): 
  - dee 'andative' (< dee 'go')

- Continuatives ('keep on'): 
  - daachi 'continuative (continuous)' (< daachi 'remain'), 
  - dahku 'continuative (iterative)' (< dahku 'stay, live at'), 
  - iluu 'do or happen repeatedly' (< ilúu 'stand'), etc.

- Benefactive ('do something for X'): 
  - ku 'benefactive' (< ku 'give')

- Desiderative ('want'): 
  - bia 'want to, will' (< *maaíihee 'want')
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ME in Crow
What are the origins of ME?

- Many of the ME-triggering morphemes in Crow share similar diachronic pathways to those reported in the literature (see Harris 2017): grammaticalization of a verb or auxiliary bearing inflection that ultimately results in ME.

Example sentences:

(7) Paradigm I:

a. \texttt{dii-2b-wah-1a-chiwaká-a-junct-wa-1a-kú-ben-k-decl} 'I prayed for you' (Felice Big Day; FBD_022619)

b. \texttt{baapáalikisshe-m-dii-2b-wa-1a-kú-k-decl} 'I gave you a flower' (Felice Big Day; FBD_022619)
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• I illustrate this with the benefactive -ku which comes from ‘give’:
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(7) Paradigm I:

a. **dii**
2b- wah- chiwaká -a **-wa**
1a- pray **-ku**
-k **-JUNCT -1A -BEN -DECL**

‘I prayed for you’

(Felice Big Day; FBD_022619)
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b. \text{baapáalikisshe-m} \text{dii-} \text{wa-} \text{kú} \text{-k}
flower-INDEF 2B- 1A- give -DECL

‘I gave you a flower’
(Felice Big Day; FBD_022619)
• Both verbal paradigms appear on the independent word ‘give’ and in its use as a benefactive.

(8) Paradigm II:

a. bah- chiwaká -a -wa -1a -ku -k
   1A- pray -JUNCT -1A -2A -BEN -DECL
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Trapped morphemes during grammaticalization

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   ‘I gave you a flower’ (Felice Big Day; FBD_022619)
• While many Siouan languages have benefactive prefixes, Hidatsu and Mandan express benefactives via periphrastic constructions where the benefactive follows the main verb:

Hidatsa
mada-macidóò-hgee
1pos-awl-dimunóbcaai-Ø
stick.in-junct
m-gúP-Ø1b-give-imp.sg

'Make a hole for me!' (Park 2012:543, Ex.116)

Mandan
á˛aweall
rusháatake
ma-kú'-ta1b-give-imp.masc

'take all for me' (Hollow 1973:78, cited in Kasak 2019)
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(9) Hidatsa

mada-macidóò-hgee óbcaai-Ø m-gú?-Ø
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(10) **Mandan**

\[ \text{áawe rusháa } \boxed{\text{ma-kú’-ta}} \]
\[ \text{all take } 1\text{B-give-IMP.MASC} \]

‘take all of it for me’ (Hollow 1973:78, cited in Kasak 2019)
Modal auxiliaries in Crow

• In this talk, I focus on the following modal auxiliaries:

  1. -ii 'will'
     E.g. baa-xalússhi-w-ii-k 'I will run'
     [Felice Big Day; 2018-17.084.004:46]

  2. -iih 'may , might'
     E.g. b-eé-w-iih 'I may have'
     (Graczyk 2007:343, Ex.26, adapted)

  3. -iimmaachi 'will, must'
     E.g. baa-lisshí-w-iimmaachi-k 'I will dance'
     [Cyle Old Elk; 2018-17.084.003:15]

  4. -iishdaachi 'should'
     baa-waláx-b-iishdaachi-k 'I should sing'
     [Cyle Old Elk; 2018-17.084.002:29]

  5. -isshi 'eager to'
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   (Graczyk 2007:343, Ex.26, adapted)

3. **-iimmaachi ‘will, must’**
   
   E.g. **baa-lisshí-w-iimmaachi-k** ‘I will dance’
   
   [Cyle Old Elk; 2018-17.084.003:15]

4. **-iishdaachi ‘should’**
   
   **baa-waláx-b-iishdaachi-k** ‘I should sing’
   
   [Cyle Old Elk; 2018-17.084.002:29]
• In this talk, I focus on the following modal auxiliaries:

1. **-ii ‘will’**
   E.g. *baa*-xalússhi-*w*-ii-*k* ‘I will run’
   [Felice Big Day; 2018-17.084.004:46]

2. **-iih ‘may, might’**
   E.g. *b*-ée-*w*-iih ‘I may have’
   (Graczyk 2007:343, Ex.26, adapted)

3. **-iimmaachi ‘will, must’**
   E.g. *baa*-lisshí-*w*-iimmaachi-*k* ‘I will dance’
   [Cyle Old Elk; 2018-17.084.003:15]

4. **-iishdaachi ‘should’**
   *baa*-waláx-*b*-iishdaachi-*k* ‘I should sing’
   [Cyle Old Elk; 2018-17.084.002:29]

5. **-isshi ‘eager to’**
Modal auxiliaries in Crow

• In this talk, I focus on the following modal auxiliaries:

1. -ii ‘will’
   E.g. baa-xalússhi-w-ii-k ‘I will run’
   [Felice Big Day; 2018-17.084.004:46]

2. -iih ‘may, might’
   E.g. b-eé-w-iih ‘I may have’
   (Graczyk 2007:343, Ex.26, adapted)

3. -iimmaachi ‘will, must’
   E.g. baa-lisshí-w-iimmaachi-k ‘I will dance’
   [Cyle Old Elk; 2018-17.084.003:15]

4. -iishdaachi ‘should’
   baa-waláx-b-iishdaachi-k ‘I should sing’
   [Cyle Old Elk; 2018-17.084.002:29]

5. -isshi ‘eager to’
   baa-lisshí-w-isshi-k ‘I wish to dance’
   [Riley Singer; 2018-17.029.001:41]
*híi ‘arrive’ > -ii ‘will’

1. *híi ‘arrive’ > -ii ‘will’
The future marker in Crow -ii is cognate to -hi in Hidatsa which may also express futurate meaning:

(11) Crow

\begin{verbatim}
baa-xalússhi-w-ii-k
1A-run-1A-FUT-DECL
\end{verbatim}

‘I will run’

[Felice Big Day; 2018-17.084.004:46]

(12) Hidatsa

\begin{verbatim}
maa-háhgu-wi-c
1A-stay-1A.FUT-DECL
\end{verbatim}

‘I will stay’

(Park 2012:410, Ex.14)
*híi ‘arrive’ > -ii ‘will’

- The inflectional paradigm for future marker -ii differs substantially from the paradigm of híi ‘arrive’. (The Crow verbal paradigms come from my own fieldwork and from Wallace 1993 and Graczyk 2007.)
The inflectional paradigm for future marker *-ii differs substantially from the paradigm of *híi ‘arrive’. (The Crow verbal paradigms come from my own fieldwork and from Wallace 1993 and Graczyk 2007.)

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<tbody>
<tr>
<td></td>
<td>*-ii ‘will’</td>
<td></td>
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</tr>
<tr>
<td>1SG</td>
<td>-bii</td>
<td>1EXCL</td>
<td>-bii-lu</td>
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<td>-dii</td>
<td>2PL</td>
<td>-dii-lu</td>
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<tr>
<td></td>
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<td></td>
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<tr>
<td>1SG</td>
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<td>1PL</td>
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</table>
*hii ‘arrive’ > -ii ‘will’

• The inflectional paradigm for future marker -ii differs substantially from the paradigm of hii ‘arrive’. (The Crow verbal paradigms come from my own fieldwork and from Wallace 1993 and Graczyk 2007.)

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<td>hii ‘arrive’</td>
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<td>-bii-lu</td>
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<tr>
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</tr>
</tbody>
</table>

• **Claim:** The highly irregular paradigm of hii ‘arrive’ developed through a series of phonological and morphological changes after the grammaticalization of *hii ‘arrive’ to future.
Hidatsa has a “defective” paradigm of *híi ‘arrive’ (Park 2012). (The Hidatsa verbal paradigms come from Boyle and Gwin 2005, Boyle 2007, and Park 2012.)
Hidatsa has a “defective” paradigm of *hii ‘arrive’ (Park 2012). (The Hidatsa verbal paradigms come from Boyle and Gwin 2005, Boyle 2007, and Park 2012.)

<table>
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<tr>
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<td>hií ‘arrive’</td>
<td>hií ‘arrive’</td>
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<td>baá</td>
<td>1sg</td>
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<td>dáláa</td>
<td>2sg</td>
</tr>
<tr>
<td>3sg</td>
<td>hií</td>
<td>3sg</td>
</tr>
<tr>
<td>1pl</td>
<td>bií-o</td>
<td>1pl</td>
</tr>
<tr>
<td>2pl</td>
<td>dalíí-o</td>
<td>2pl</td>
</tr>
<tr>
<td>3pl</td>
<td>dií-o</td>
<td>3pl</td>
</tr>
</tbody>
</table>
*híi ‘arrive’ > -ii ‘will’

- There are similarities in phonological shape between the inflectional paradigm for híi ‘arrive’ and húu ‘come’ in Crow.

<table>
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<tr>
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<td></td>
</tr>
<tr>
<td>1SG</td>
<td>baá</td>
<td>—</td>
</tr>
<tr>
<td>2SG</td>
<td>daláa</td>
<td>—</td>
</tr>
<tr>
<td>3SG</td>
<td>híi</td>
<td>—</td>
</tr>
<tr>
<td>1PL</td>
<td>bií-o</td>
<td>1PL</td>
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<td>2PL</td>
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<td>2PL</td>
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<tr>
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<td>dií-o</td>
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<td></td>
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<tr>
<td>1SG</td>
<td>boó</td>
<td>máahuu</td>
</tr>
<tr>
<td>2SG</td>
<td>dalóo</td>
<td>naráhuu</td>
</tr>
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<td>3SG</td>
<td>húu</td>
<td>húu</td>
</tr>
<tr>
<td>1PL</td>
<td>buú-o</td>
<td>máahuu-a</td>
</tr>
<tr>
<td>2PL</td>
<td>daluú-o</td>
<td>2PL</td>
</tr>
<tr>
<td>3PL</td>
<td>duú-o</td>
<td>náahuu-a</td>
</tr>
</tbody>
</table>
*híi ‘arrive’ > -ii ‘will’

- The inflectional paradigm for Hidatsa húu ‘come’ provides us with clues on how to fill the gap for híi ‘arrive’.

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<th>Crow</th>
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<td>2pl</td>
</tr>
<tr>
<td>3sg</td>
<td>híi</td>
<td>3pl</td>
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<td></td>
<td></td>
<td>húu ‘come’</td>
</tr>
<tr>
<td>1sg</td>
<td>boó</td>
<td>1pl</td>
</tr>
<tr>
<td>2sg</td>
<td>dalóo</td>
<td>2pl</td>
</tr>
<tr>
<td>3sg</td>
<td>húu</td>
<td>3pl</td>
</tr>
</tbody>
</table>

1sg máahuu 1pl máahuu-a
2sg nárahuu 2pl nárahuu-a
3sg húu 3pl náahuu-a
*híi ‘arrive’ > -ii ‘will’

- The proposed forms for the gaps are given below (see §3.1.1 and §3.1.2 for justification and additional information).

<table>
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<td><strong>híi ‘arrive’</strong></td>
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<td><strong>1pl</strong> bií-o</td>
<td><strong>1pl</strong> máahii-a</td>
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<tr>
<td><strong>2sg</strong></td>
<td><strong>1pl</strong> bií-o</td>
<td><strong>1pl</strong> máahii-a</td>
</tr>
<tr>
<td><strong>3sg</strong></td>
<td><strong>3pl</strong> dií-o</td>
<td><strong>3pl</strong> náahii-a</td>
</tr>
<tr>
<td></td>
<td><strong>húu ‘come’</strong></td>
<td><strong>húu ‘come’</strong></td>
</tr>
<tr>
<td><strong>1sg</strong></td>
<td><strong>1pl</strong> buú-o</td>
<td><strong>1pl</strong> máahuu-a</td>
</tr>
<tr>
<td><strong>2sg</strong></td>
<td><strong>2pl</strong> daluú-o</td>
<td><strong>2pl</strong> náahuu-a</td>
</tr>
<tr>
<td><strong>3sg</strong></td>
<td><strong>3pl</strong> duú-o</td>
<td><strong>3pl</strong> náahuu-a</td>
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</table>
Comparing ‘arrive’ and ‘go’, we find that the proposed plural forms of ‘arrive’ in Hidatsa are the same as the plural of ‘go’.

<table>
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<td>1sg</td>
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<tr>
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<tr>
<td>3sg</td>
<td>híi</td>
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<thead>
<tr>
<th></th>
<th>Crow</th>
<th>Hidatsa</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>dée ‘go’</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1sg</td>
<td>baalée</td>
<td>1sg</td>
</tr>
<tr>
<td>2sg</td>
<td>dalée</td>
<td>2sg</td>
</tr>
<tr>
<td>3sg</td>
<td>dée</td>
<td>3sg</td>
</tr>
</tbody>
</table>

19
First, the plural forms of ‘go’ for Crow and Hidatsa come from the plural forms of ‘arrive’.

<table>
<thead>
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<th>Crow</th>
<th>Hidatsa</th>
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</thead>
<tbody>
<tr>
<td><em>híi ‘arrive’</em></td>
<td><em>híi ‘arrive’</em></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1sg baá</td>
<td>1pl bií-o</td>
</tr>
<tr>
<td>2sg daláa</td>
<td>2pl dalií-o</td>
</tr>
<tr>
<td>3sg híi</td>
<td>3pl dií-o</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><em>dée ‘go’</em></td>
<td><em>née ‘go’</em></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1sg baalée</td>
<td>1pl baá-u</td>
</tr>
<tr>
<td>2sg dalée</td>
<td>2pl dalaá-u</td>
</tr>
<tr>
<td>3sg dée</td>
<td>3pl daá-u</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1sg: first person 2sg: second person 3sg: third person 1pl: first person plural 2pl: second person plural 3pl: third person plural
*híi ‘arrive’ > -ii ‘will’

- This change is not observed in the other Siouan languages.
*híi ‘arrive’ > -ii ‘will’

- This change is not observed in the other Siouan languages.

<table>
<thead>
<tr>
<th>Language</th>
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<tbody>
<tr>
<td>Osage</td>
<td>ađé</td>
<td>b-đé</td>
<td>ąk-ađá api</td>
<td>š-đé</td>
<td>š-đá api</td>
<td>ađé</td>
<td>ađá api</td>
</tr>
</tbody>
</table>

*Source: Quintero 1997*
*híi ‘arrive’ > -ii ‘will’

- This change is not observed in the other Siouan languages.

<table>
<thead>
<tr>
<th>Osage</th>
<th>Omaha</th>
</tr>
</thead>
<tbody>
<tr>
<td>aðé ‘go’</td>
<td>ðé ‘go’</td>
</tr>
<tr>
<td>1sg</td>
<td>b-ðé</td>
</tr>
<tr>
<td>1pl</td>
<td>ąk-aðá api</td>
</tr>
<tr>
<td>2sg</td>
<td>š-ðé</td>
</tr>
<tr>
<td>2pl</td>
<td>š-ðá api</td>
</tr>
<tr>
<td>3sg</td>
<td>aðé</td>
</tr>
<tr>
<td>3pl</td>
<td>aðá api</td>
</tr>
</tbody>
</table>

Source: Quintero 1997

Source: Rankin 2008
*híi ‘arrive’ > -ii ‘will’

- This change is not observed in the other Siouan languages.

<table>
<thead>
<tr>
<th>Osage</th>
<th>Omaha</th>
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</thead>
<tbody>
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<td>aḏé ‘go’</td>
<td>ḏé ‘go’</td>
</tr>
<tr>
<td>1sg b-ḏé</td>
<td>1sg b-ḏé</td>
</tr>
<tr>
<td>1pl ḗk-aḏá api</td>
<td>1pl ḗk-aḏa=i</td>
</tr>
<tr>
<td>2sg š-ḏé</td>
<td>2sg š-né</td>
</tr>
<tr>
<td>2pl š-ḏá api</td>
<td>2pl š-na=i</td>
</tr>
<tr>
<td>3sg aḏé</td>
<td>3sg ŏé</td>
</tr>
<tr>
<td>3pl aḏá api</td>
<td>3pl aḏa=i</td>
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</table>

Source: Quintero 1997

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<td>1sg b-ḏé</td>
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<td>1pl ḗk-aḏa=i</td>
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<tr>
<td>2sg š-né</td>
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<td>2pl š-na=i</td>
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<tr>
<td>3sg ŏé</td>
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<td>3pl aḏa=i</td>
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Source: Rankin 2008

<table>
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<tr>
<th>Lakota</th>
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<tbody>
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<td>yÁ ‘go’</td>
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<tr>
<td>1sg bl-é</td>
</tr>
<tr>
<td>1pl ṣ-yá pi</td>
</tr>
<tr>
<td>2sg l-é</td>
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<tr>
<td>2pl l-á pi</td>
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<tr>
<td>3sg yé</td>
</tr>
<tr>
<td>3pl yá pi</td>
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</table>

Source: Rood and Taylor 1996
*híi ‘arrive’ > -ii ‘will’

- This change is not observed in the other Siouan languages.

<table>
<thead>
<tr>
<th>Osage</th>
<th>Omaha</th>
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</thead>
<tbody>
<tr>
<td>aðé ‘go’</td>
<td>ñé ‘go’</td>
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<tr>
<td>1sg  b-ðé  1PL  ąk-aðá api</td>
<td>1sg  b-ðé  1PL  ąk-áða=i</td>
</tr>
<tr>
<td>2sg  š-ðé  2PL  š-ðá api</td>
<td>2sg  š-né  2PL  š-na=i</td>
</tr>
<tr>
<td>3sg  aðé  3PL  aðá api</td>
<td>3sg  ñé  3PL  aða=i</td>
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Source: Quintero 1997

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<td>1sg  wa-reeh  1PL  rų-reeh</td>
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<td>2sg  l-é  2PL  l-á pi</td>
<td>2sg  ra-reeh  2PL  ra-reeh-rjit</td>
</tr>
<tr>
<td>3sg  yé  3PL  yá pi</td>
<td>3sg  reeh  3PL  reeh=kre</td>
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Source: Rood and Taylor 1996

Source: Kasak 2019
Second, the plural forms of ‘go’ in Crow represent the precursor to the contemporary plural forms of ‘arrive’ (see §3.1.3).

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<td>2sg</td>
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<td>2pl</td>
<td>dalií-o</td>
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<td>dií-o</td>
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<table>
<thead>
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<th>Hidatsa</th>
<th>Hií ‘arrive’</th>
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</tr>
<tr>
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<tr>
<td>3sg</td>
<td>néehi</td>
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<td>néahii-a</td>
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<td>baalée</td>
</tr>
<tr>
<td>2sg</td>
<td>dalée</td>
</tr>
<tr>
<td>3sg</td>
<td>déé</td>
</tr>
<tr>
<td>1pl</td>
<td>baá-u</td>
</tr>
<tr>
<td>2pl</td>
<td>dalaá-u</td>
</tr>
<tr>
<td>3pl</td>
<td>daá-u</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hidatsa</th>
<th>Née ‘go’</th>
</tr>
</thead>
<tbody>
<tr>
<td>1sg</td>
<td>maarée</td>
</tr>
<tr>
<td>2sg</td>
<td>narée</td>
</tr>
<tr>
<td>3sg</td>
<td>néehi</td>
</tr>
<tr>
<td>1pl</td>
<td>máahii-a</td>
</tr>
<tr>
<td>2pl</td>
<td>nárahii-a</td>
</tr>
<tr>
<td>3pl</td>
<td>néahii-a</td>
</tr>
</tbody>
</table>
bullet Why do the 2nd and 3rd plural forms of ‘arrive’ and ‘come’ look different from the other forms?

<table>
<thead>
<tr>
<th></th>
<th>Crow</th>
<th>Hidatsa</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>hii ‘arrive’</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1sg</td>
<td>baá</td>
<td>ṭmáahii</td>
</tr>
<tr>
<td>2sg</td>
<td>daláa</td>
<td>ṭnárahii</td>
</tr>
<tr>
<td>3sg</td>
<td>hií</td>
<td>ṭnáahii</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Crow</th>
<th>Hidatsa</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>húu ‘come’</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1sg</td>
<td>boó</td>
<td>máahuu</td>
</tr>
<tr>
<td>2sg</td>
<td>dalóo</td>
<td>nárahaa</td>
</tr>
<tr>
<td>3sg</td>
<td>húu</td>
<td>náahuu</td>
</tr>
</tbody>
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In contrast to most other Siouan languages, Crow and Hidatsa merged the verbal stems for ‘arrive here’ and ‘arrive there’.

Subsequently, the ‘arrive’ paradigm served as the model for extension to other paradigms, such as ‘come’ (see §3.1.4).
In contrast to most other Siouan languages, Crow and Hidatsa merged the verbal stems for ‘arrive here’ and ‘arrive there’.

Rankin et al. (2015) reconstruct ‘arrive here’ in Proto-Siouan (PS) as *re-híi and ‘arrive there’ as *híi; *re- indicates ‘here, now’.
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I suggest that the 2\textsuperscript{nd} and 3\textsuperscript{rd} person plural forms descend from *re-híi with other forms developing from *híi, interweaving the paradigms of ‘arrive here’ and ‘arrive there’.

<table>
<thead>
<tr>
<th></th>
<th>PS</th>
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<th>Crow</th>
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<th>GLOSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>*híi</td>
<td>*híi</td>
<td>híi</td>
<td>híi</td>
<td>híi</td>
<td>‘he/she arrives’</td>
</tr>
<tr>
<td>*ya-re-híi api</td>
<td>*rá-rahíi-a</td>
<td>da-lií-o</td>
<td>*ná-rahíi-a</td>
<td>‘you (pl.) arrive’</td>
<td></td>
</tr>
<tr>
<td>*re-híi api</td>
<td>*ráhíi-a</td>
<td>dií-o</td>
<td>*náahíi-a</td>
<td>‘they arrive’</td>
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</table>

Subsequently, the ‘arrive’ paradigm served as the model for extension to other paradigms, such as ‘come’ (see §3.1.4).
Unlike *híi ‘arrive’, the development of the future -ii lacks the prefix *re- altogether; the forms come straight from the paradigm of ‘arrive there’.

*híi ‘arrive’ > -ii ‘will’
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The inflectional paradigm of future -ii is also much more regular (see 3.1.5 for information about the plural suffix -lu).
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<th>PCH</th>
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<th>Hidatsa</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>*híi</td>
<td>*-hii</td>
<td>†-ii</td>
<td>-hi</td>
<td>‘he/she will’</td>
</tr>
<tr>
<td>*híi api</td>
<td>*-hii-a</td>
<td>†-iilu</td>
<td>-hi-a</td>
<td>‘they will’</td>
</tr>
<tr>
<td>*wa-híi</td>
<td>*-wa-híi</td>
<td>-bii</td>
<td>-wi</td>
<td>‘I will’</td>
</tr>
<tr>
<td>*ya-híi</td>
<td>*-ra-híi</td>
<td>-dii</td>
<td>-ri</td>
<td>‘you will’</td>
</tr>
<tr>
<td>*wa-híi api</td>
<td>*-wa-híi-a</td>
<td>-biilu</td>
<td>-wihi-a</td>
<td>‘we will’</td>
</tr>
<tr>
<td>*ya-híi api</td>
<td>*-ra-híi-a</td>
<td>-diilu</td>
<td>-rihi-a</td>
<td>‘you (pl.) will’</td>
</tr>
</tbody>
</table>
• Other Siouan languages also exhibit a regular inflectional pattern for ‘arrive there’.
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<table>
<thead>
<tr>
<th>Osage</th>
<th>ahí ~ hí ‘arrive there’</th>
</tr>
</thead>
<tbody>
<tr>
<td>1sg</td>
<td>pš-í</td>
</tr>
<tr>
<td>2sg</td>
<td>š-í</td>
</tr>
<tr>
<td>3sg</td>
<td>ahí</td>
</tr>
<tr>
<td>1pl</td>
<td>ąk-ahí api</td>
</tr>
<tr>
<td>2pl</td>
<td>š-í api</td>
</tr>
<tr>
<td>3pl</td>
<td>ahí api</td>
</tr>
</tbody>
</table>

Source: Quintero 1997
*híi ‘arrive’ > -ii ‘will’

- Other Siouan languages also exhibit a regular inflectional pattern for ‘arrive there’.

<table>
<thead>
<tr>
<th>Language</th>
<th>ahí ~ hí ‘arrive there’</th>
<th>ahi ~ hi ‘arrive there’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osage</td>
<td>pš-í 1sg, ąk-ahí api 1pl</td>
<td>p-hí 1sg, aq-áhi=i 1pl</td>
</tr>
<tr>
<td></td>
<td>š-í 2sg, š-í api 2pl</td>
<td>š-í=í 2sg, š-í api 2pl</td>
</tr>
<tr>
<td></td>
<td>ahí 3sg, ahí api 3pl</td>
<td>(a)hí 3sg, ahí api 3pl</td>
</tr>
<tr>
<td>Source: Quintero 1997</td>
<td></td>
<td>Source: Koontz 2001</td>
</tr>
</tbody>
</table>
*híi ‘arrive’ > -ii ‘will’

- Other Siouan languages also exhibit a regular inflectional pattern for ‘arrive there’.

<table>
<thead>
<tr>
<th>Osage</th>
<th></th>
<th>Omaha</th>
</tr>
</thead>
<tbody>
<tr>
<td>ahí ~ hí ‘arrive there’</td>
<td></td>
<td>ahi ~ hi ‘arrive there’</td>
</tr>
<tr>
<td>1sg</td>
<td>pš-í</td>
<td>1sg</td>
</tr>
<tr>
<td>1pl</td>
<td>ḥk-ahí api</td>
<td>1pl</td>
</tr>
<tr>
<td>2sg</td>
<td>š-í</td>
<td>2sg</td>
</tr>
<tr>
<td>2pl</td>
<td>š-í api</td>
<td>2pl</td>
</tr>
<tr>
<td>3sg</td>
<td>ahí</td>
<td>3sg</td>
</tr>
<tr>
<td>3pl</td>
<td>ahí api</td>
<td>3pl</td>
</tr>
</tbody>
</table>

**Source:** Quintero 1997

<table>
<thead>
<tr>
<th>Lakota</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>26</th>
</tr>
</thead>
<tbody>
<tr>
<td>í ‘arrive there’</td>
<td></td>
<td>Sources: B&amp;D, R&amp;T, U 2018</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1sg</td>
<td>wa-í</td>
<td>1pl</td>
<td>ṣ-í-pi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2sg</td>
<td>ya-í</td>
<td>2pl</td>
<td>ya-í-pi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3sg</td>
<td>í</td>
<td>3pl</td>
<td>í-pi</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**híi ‘arrive’ > -ii ‘will’**

- Other Siouan languages also exhibit a regular inflectional pattern for ‘arrive there’.

<table>
<thead>
<tr>
<th>Osage</th>
<th>Omaha</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>ahí ~ hí ‘arrive there’</em></td>
<td><em>ahi ~ hi ‘arrive there’</em></td>
</tr>
<tr>
<td>1sg pš-í  1PL ąk-ahí api</td>
<td>1sg p-hí  1PL ag-áhi=i</td>
</tr>
<tr>
<td>2sg š-í  2PL š-í api</td>
<td>2sg š-í  2PL š-í=i</td>
</tr>
<tr>
<td>3sg ahí  3PL ahí api</td>
<td>3sg (a)hí 3PL ahí=i</td>
</tr>
<tr>
<td><strong>Source:</strong> Quintero 1997</td>
<td><strong>Source:</strong> Koontz 2001</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lakota</th>
<th>Mandan</th>
</tr>
</thead>
<tbody>
<tr>
<td>í ‘arrive there’</td>
<td>hí ‘arrive there’</td>
</tr>
<tr>
<td>1sg wa-í  1PL ű-í-pi</td>
<td>1sg wa-hi 1PL rų-hi</td>
</tr>
<tr>
<td>2sg ya-í  2PL ya-í-pi</td>
<td>2sg ra-hi 2PL ra-hi-rįt</td>
</tr>
<tr>
<td>3sg í  3PL í-pi</td>
<td>3sg hi  3PL hi-kre</td>
</tr>
<tr>
<td><strong>Sources:</strong> B&amp;D, R&amp;T, U 2018</td>
<td><strong>Source:</strong> Kasak 2019</td>
</tr>
</tbody>
</table>
Most Siouan languages maintained verbal forms for ‘arrive there’ and ‘arrive here’ (Taylor 1974), but Crow and Hidatsa merged both ‘arrive’ stems – this has the effect of neutralizing speaker viewpoint.
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<table>
<thead>
<tr>
<th></th>
<th>Hidatsa</th>
</tr>
</thead>
<tbody>
<tr>
<td>HERE</td>
<td>híí</td>
</tr>
<tr>
<td>THERE</td>
<td>híí</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>HERE</td>
<td>híí</td>
</tr>
<tr>
<td>THERE</td>
<td>híí</td>
</tr>
</tbody>
</table>
**híí ‘arrive’ > -ii ‘will’**

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<thead>
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<th></th>
<th>Hidatsa</th>
<th>Crow</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ARRIVING MOTION</td>
<td>MOTION PRIOR TO ARRIVAL</td>
</tr>
<tr>
<td>HERE</td>
<td>híí</td>
<td>húu</td>
</tr>
<tr>
<td>THERE</td>
<td>híí</td>
<td>née</td>
</tr>
</tbody>
</table>

- Although the future forms come from the paradigm for *híí ‘arrive there’, the distinction between ‘arrive here’ and ‘arrive there’ has already started to collapse.
• In Crow and Hidatsa, *híi ‘arrive’ grammaticalized into the future – movement verbs are a common source for future (Bybee et al. 1994, Heine and Kuteva 2002).
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The irregular paradigm of *híi ‘arrive’ developed after grammaticalization to future had already begun; thus, the future maintained a more regular inflectional pattern.
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ME arose through coalescence of periphrastic constructions with *híi ‘arrive’ to express future, similar to how other constructions come to realize ME, such as the benefactive.
1. *hii ‘arrive there’ > -ii ‘will’
1. *hīi ‘arrive there’ > -ii ‘will’
2. *-ii ‘will’ + *-h ‘simple imperative’ > -iih ‘may, might’
Grammaticalization of modality

1. *híi ‘arrive there’ > -ii ‘will’
2. *-ii ‘will’ + *-h ‘simple imperative’ > -iih ‘may, might’
3. *-ii ‘will’ + *-waachi ‘emphatic imperative’ > -iimmaachi ‘must’
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4. *-ii ‘will’ + *-shdaachi ‘strong assertion’ > -iishdaachi ‘should’
• **Claim:** A number of modals in Crow are composed of future -ii with clause-final markers that specify a particular speech act.
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• Building on previous work by Lowie (1930, 1941), Kaschube (1967), Wallace (1993), and Graczyk (2007), I take a closer look at the semantics of a variety of modal auxiliaries in Crow.
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<tr>
<th>DEONTIC</th>
<th>NECESSITY</th>
<th>WEAK NECESSITY</th>
<th>POSSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPISTEMIC</td>
<td>-iimmaa(\textit{chi})</td>
<td>-iishdaachi</td>
<td>...\textit{dak kootiimmaa}</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-\textit{iih}</td>
</tr>
</tbody>
</table>

**Table 1:** A sketch of the modal space of Crow.
• The future -ii always directly precedes the clause-final markers, which typically specify speech act type (e.g. declarative, imperative, interrogative, etc.), in Crow (see §3.1.5 and §3.1.7):
Pathways to modality

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  ▷ \(-ii + \ast{-waachi} > \sim{-iimmaachi} \) ‘must, will’
  
  future + emphatic imperative > strong obligation > future
• The future -ii always directly precedes the clause-final markers, which typically specify speech act type (e.g. declarative, imperative, interrogative, etc.), in Crow (see §3.1.5 and §3.1.7):
  ▶ *-ii + *-waachi > -iimmaachi ‘must, will’
      future + emphatic imperative > strong obligation > future
  ▶ *-ii + *-h > -iih ‘may, might’
      future + simple imperative > epistemic possibility
Pathways to modality

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  ▶ *-ii + *-waachi > -iimmaachi ‘must, will’
    future + emphatic imperative > strong obligation > future
  ▶ *-ii + *-h > -iih ‘may, might’
    future + simple imperative > epistemic possibility
  ▶ *-ii + *-shdaachi > -iishdaachi ‘should’
    future + strong assertion > weak obligation
Pathways to modality

- The future -\textit{ii} always directly precedes the clause-final markers, which typically specify speech act type (e.g. declarative, imperative, interrogative, etc.), in Crow (see §3.1.5 and §3.1.7):
  - $*\text{-ii} + *\text{-waachi} > -\text{iimmaachi} \ \text{‘must, will’}$
    - future + emphatic imperative $> \text{strong obligation} > \text{future}$
  - $*\text{-ii} + *\text{-h} > -\text{iih} \ \text{‘may, might’}$
    - future + simple imperative $> \text{epistemic possibility}$
  - $*\text{-ii} + *\text{-shdaachi} > -\text{iishdaachi} \ \text{‘should’}$
    - future + strong assertion $> \text{weak obligation}$

- The inflectional affixes that occur alongside these modal come from future -\textit{ii} – in other words, ME begets additional ME.
Desiderative - *isshi

1. *híi ‘arrive there’ > -ii ‘will’
2. *-ii ‘will’ + *-h ‘simple imperative’ > -iih ‘may, might’
3. *-ii ‘will’ + *-waachi ‘emphatic imperative’ > -iimmaachi ‘must’
4. *-ii ‘will’ + *-shdaachi ‘strong assertion’ > -iishdaachi ‘should’
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4. *-ii ‘will’ + *-shdaachi ‘strong assertion’ > -iishdaachi ‘should’
5. *-hti > *-shi > -isshi ‘eager to’
The desiderative -isshi in Crow can be reconstructed in Proto-Siouan as *kte (Rankin et al. 2015) and cognate to future auxiliaries in other Siouan languages (see §3.1.8 for more information on the development of -isshi).
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Only in Crow does -isshi inflect for person suggesting -isshi acquired person inflection:
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- Only in Crow does -isshi inflect for person suggesting -isshi acquired person inflection:

<table>
<thead>
<tr>
<th>Person</th>
<th>-isshi ‘eager to’</th>
</tr>
</thead>
<tbody>
<tr>
<td>1sg</td>
<td>-b-isshi</td>
</tr>
<tr>
<td>2sg</td>
<td>-d-isshi</td>
</tr>
<tr>
<td>3sg</td>
<td>-isshi</td>
</tr>
</tbody>
</table>
The emergence of ME through analogical extension

- **Claim:** Inflection (and subsequently ME) arises on -isshi due to analogical extension, whereby an alternating pattern is imposed on a formerly non-alternating pattern.

<table>
<thead>
<tr>
<th></th>
<th>‘will’</th>
<th>‘may, might’</th>
<th>‘must, will’</th>
<th>‘should’</th>
<th>‘eager to’</th>
</tr>
</thead>
<tbody>
<tr>
<td>1sg</td>
<td>-b-ii</td>
<td>-b-iih</td>
<td>-b-iimmaachi</td>
<td>-b-iishdaachi</td>
<td>-b-isshi</td>
</tr>
<tr>
<td>2sg</td>
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<td>-d-iih</td>
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• Essentially, Crow comes to accumulate ME over time.
Ahóo!
Thank you!
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Questions?