On the origins of multiple exponence in Crow

Edwin Ko (University of California, Berkeley)
40th Annual Siouan and Caddoan Languages Conference

May 21, 2020

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.

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- Why do these kinds of redundancies exist in language and how do they arise over time?

Goals of this talk

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.

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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, adjacenct or non-adjacent, etc.

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  - Desiderative (‘want’): -bia ‘want to, will’ (< *maaíihee ‘want’)

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(7) Paradigm I:

a. **dii-** wah- chiwaká -a **-wa** **-ku** -k
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‘I prayed for you’ (Felice Big Day; FBD_022619)

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b. baapáalikisshe-m **dii-** **wa-** **kú** -k
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‘I gave you a flower’ (Felice Big Day; FBD_022619)

Trapped morphemes during grammaticalization

- Both verbal paradigms appear on the independent word ‘give’ and in its use as a benefactive.

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     baa-lisshí**-w-isshi**-k 'I wish to dance'
     [Riley Singer; 2018-17.029.001:41]

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- The future marker in Crow *-ii* is cognate to *-hi* in Hidatsa which may also express futurate meaning:

(11) Crow
baa-xalússhi**-w-ii**-k
1A-run**-1A-FUT-DECL**
‘I will run’
[Felice Big Day; 2018-17.084.004:46]

(12) Hidatsa
maa-háhgu**-wi**-c
1A-stay**-1A.FUT-DECL**
‘I will stay’
(Park 2012:410, Ex.14)

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Crow *-ii* ‘will’			
1SG	-bii	1EXCL	-bii-lu
2SG	-dii	2PL	-dii-lu
3SG	—	3PL	—

Crow *híi* ‘arrive’			
1SG	baá	1PL	bií-o
2SG	daláa	2PL	dalií-o
3SG	híi	3PL	dií-o

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2SG	-dii	2PL	-dii-lu
3SG	—	3PL	—

Crow *híi* ‘arrive’			
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2SG	daláa	2PL	dalií-o
3SG	híi	3PL	dií-o

- **Claim:** The highly irregular paradigm of *híi* ‘arrive’ developed through a series of phonological and morphological changes *after* the grammaticalization of **híi* ‘arrive’ to future.

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1SG	baá	1PL	bií-o
2SG	daláa	2PL	dalií-o
3SG	híi	3PL	dií-o

Hidatsa *híi* ‘arrive’			
1SG	—	1PL	—
2SG	—	2PL	—
3SG	híi	3PL	—

*híi ‘arrive’ > *-ii* ‘will’

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

Crow *híi* ‘arrive’			
1SG	**baá**	1PL	**bií-o**
2SG	**daláa**	2PL	**dalií-o**
3SG	**híi**	3PL	**dií-o**

Hidatsa *híi* ‘arrive’			
1SG	—	1PL	—
2SG	—	2PL	—
3SG	híi	3PL	—

Crow *húu* ‘come’			
1SG	**boó**	1PL	**buú-o**
2SG	**dalóo**	2PL	**daluú-o**
3SG	**húu**	3PL	**duú-o**

Hidatsa *húu* ‘come’			
1SG	máahuu	1PL	máahuu-a
2SG	nárahuu	2PL	nárahuu-a
3SG	húu	3PL	náahuu-a

*híi ‘arrive’ > *-ii* ‘will’

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

Crow *híi* ‘arrive’			
1SG	baá	1PL	bií-o
2SG	daláa	2PL	dalií-o
3SG	híi	3PL	dií-o

Hidatsa *híi* ‘arrive’			
1SG	—	1PL	—
2SG	—	2PL	—
3SG	híi	3PL	—

Crow *húu* ‘come’			
1SG	boó	1PL	buú-o
2SG	daló	2PL	daluú-o
3SG	húu	3PL	duú-o

Hidatsa *húu* ‘come’			
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).

Crow *híi* ‘arrive’			
1SG	baá	1PL	bií-o
2SG	daláa	2PL	dalií-o
3SG	híi	3PL	dií-o

Hidatsa *híi* ‘arrive’			
1SG	†**máahii**	1PL	†**máahii-a**
2SG	†**nárahii**	2PL	†**nárahii-a**
3SG	híi	3PL	†**náahii-a**

Crow *húu* ‘come’			
1SG	boó	1PL	buú-o
2SG	daló́o	2PL	daluú-o
3SG	húu	3PL	duú-o

Hidatsa *húu* ‘come’			
1SG	máahuu	1PL	máahuu-a
2SG	nárahuu	2PL	nárahuu-a
3SG	húu	3PL	náahuu-a

*híi ‘arrive’ > *-ii* ‘will’

- Comparing ‘arrive’ and ‘go’, we find that the proposed plural forms of ‘arrive’ in Hidatsa are the same as the plural of ‘go’.

Crow *híi* ‘arrive’			
1SG	baá	1PL	bií-o
2SG	daláa	2PL	dalií-o
3SG	híi	3PL	dií-o

Hidatsa *híi* ‘arrive’			
1SG	†máahii	1PL	**†máahii-a**
2SG	†nárahii	2PL	**†nárahii-a**
3SG	híi	3PL	**†náahii-a**

Crow *dée* ‘go’			
1SG	baalée	1PL	baá-u
2SG	dalée	2PL	dalaá-u
3SG	dée	3PL	daá-u

Hidatsa *née* ‘go’			
1SG	maarée	1PL	**máahii-a**
2SG	narée	2PL	**nárahii-a**
3SG	née	3PL	**náahii-a**

*híi ‘arrive’ > *-ii* ‘will’

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

Crow *híi* ‘arrive’			
1SG	baá	1PL	bií-o
2SG	daláa	2PL	dalií-o
3SG	híi	3PL	dií-o

Hidatsa *híi* ‘arrive’			
1SG	†máahii	1PL	**†máahii-a**
2SG	†nárahii	2PL	**†nárahii-a**
3SG	híi	3PL	**†náahii-a**

Crow *dée* ‘go’			
1SG	baalée	1PL	baá-u
2SG	dalée	2PL	dalaá-u
3SG	dée	3PL	daá-u

Hidatsa *née* ‘go’			
1SG	maarée	1PL	**máahii-a**
2SG	narée	2PL	**nárahii-a**
3SG	née	3PL	**náahii-a**

*híi ‘arrive’ > *-ii* ‘will’

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

*híi ‘arrive’ > *-ii* ‘will’

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Osage *aðé* ‘go’			
1SG	b-**ðé**	1PL	ąk-**aðá** api
2SG	š-**ðé**	2PL	š-**ðá** api
3SG	**aðé**	3PL	**aðá** api

Source: Quintero 1997

*híi ‘arrive’ > *-ii* ‘will’

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

Osage *aðé* ‘go’			
1SG	b-**ðé**	1PL	ąk-**aðá** api
2SG	š-**ðé**	2PL	š-**ðá** api
3SG	**aðé**	3PL	**aðá** api

Source: Quintero 1997

Omaha *ðé* ‘go’			
1SG	b-**ðé**	1PL	ąk-**áða**=i
2SG	š-**né**	2PL	š-**na**=í
3SG	**ðé**	3PL	**aða**=í

Source: Rankin 2008

-

*híi ‘arrive’ > *-ii* ‘will’

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

Osage *aðé* ‘go’			
1SG	b-**ðé**	1PL	ąk-**aðá** api
2SG	š-**ðé**	2PL	š-**ðá** api
3SG	**aðé**	3PL	**aðá** api
Source: Quintero 1997			

Omaha *ðé* ‘go’			
1SG	b-**ðé**	1PL	ąk-**áða**=i
2SG	š-**né**	2PL	š-**na**=í
3SG	**ðé**	3PL	**aða**=í
Source: Rankin 2008			

Lakota *yÁ* ‘go’			
1SG	bl-**é**	1PL	ų-**yą́** pi
2SG	l-**é**	2PL	l-**á** pi
3SG	**yé**	3PL	**yá** pi
Source: Rood and Taylor 1996			

*híi ‘arrive’ > *-ii* ‘will’

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

Osage *aðé* ‘go’			
1SG	b-**ðé**	1PL	ąk-**aðá** api
2SG	š-**ðé**	2PL	š-**ðá** api
3SG	**aðé**	3PL	**aðá** api

Source: Quintero 1997

Omaha *ðé* ‘go’			
1SG	b-**ðé**	1PL	ąk-**áða**=i
2SG	š-**né**	2PL	š-**na**=í
3SG	**ðé**	3PL	**aða**=í

Source: Rankin 2008

Lakota *yÁ* ‘go’			
1SG	bl-**é**	1PL	ų-**yą́** pi
2SG	l-**é**	2PL	l-**á** pi
3SG	**yé**	3PL	**yá** pi

Source: Rood and Taylor 1996

Mandan *reeh* ‘go’			
1SG	wa-**reeh**	1PL	rų-**reeh**
2SG	ra-**reeh**	2PL	ra-**reeh**-rįt
3SG	**reeh**	3PL	**reeh**=kre

Source: Kasak 2019

*híi ‘arrive’ > *-ii* ‘will’

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

Crow *híi* ‘arrive’			
1SG	baá	1PL	**bií-o**
2SG	daláa	2PL	**dalií-o**
3SG	híi	3PL	**dií-o**

Hidatsa *híi* ‘arrive’			
1SG	†máahii	1PL	†máahii-a
2SG	†nárahii	2PL	†nárahii-a
3SG	híi	3PL	†náahii-a

Crow *dée* ‘go’			
1SG	baalée	1PL	**baá-u**
2SG	dalée	2PL	**dalaá-u**
3SG	dée	3PL	**daá-u**

Hidatsa *née* ‘go’			
1SG	maarée	1PL	máahii-a
2SG	narée	2PL	nárahii-a
3SG	née	3PL	náahii-a

*híi ‘arrive’ > *-ii* ‘will’

- Why do the 2nd and 3rd plural forms of ‘arrive’ and ‘come’ look different from the other forms?

Crow *híi* ‘arrive’			
1SG	baá	1PL	bií-o
2SG	**daláa**	2PL	**dalií-o**
3SG	híi	3PL	**dií-o**

Hidatsa *híi* ‘arrive’			
1SG	†máahii	1PL	†máahii-a
2SG	**†nárahii**	2PL	**†nárahii-a**
3SG	híi	3PL	**†náahii-a**

Crow *húu* ‘come’			
1SG	boó	1PL	buú-o
2SG	**dalóo**	2PL	**daluú-o**
3SG	húu	3PL	**duú-o**

Hidatsa *húu* ‘come’			
1SG	máahuu	1PL	máahuu-a
2SG	**nárahuu**	2PL	**nárahuu-a**
3SG	húu	3PL	**náahuu-a**

*híi ‘arrive’ > *-ii* ‘will’

- In contrast to most other Siouan languages, Crow and Hidatsa merged the verbal stems for ‘arrive here’ and ‘arrive there’.

*híi ‘arrive’ > *-ii* ‘will’

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- 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 2nd and 3rd person plural forms descend from *re-híi with other forms developing from *híi, interweaving the paradigms of ‘arrive here’ and ‘arrive there’.

PS	PCH	Crow	Hidatsa	gloss
*híi	*híi	híi	híi	‘he/she arrives’
*ya-**re**-híi api	*rá-**ra**hii-a	da-**l**íi-o	†ná-**ra**hii-a	‘you (pl.) arrive’
***re**-híi api	***rá**hii-a	**d**íi-o	†**náa**hii-a	‘they arrive’

*híi ‘arrive’ > *-ii* ‘will’

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PS	PCH	Crow	Hidatsa	GLOSS
*híi	*híi	híi	híi	‘he/she arrives’
*ya-**re**-híi api	*rá-**ra**hii-a	da-**l**íí-o	†ná-**ra**hii-a	‘you (pl.) arrive’
***re**-híi api	***rá**hii-a	**d**íí-o	†**náa**hii-a	‘they arrive’

- Subsequently, the ‘arrive’ paradigm served as the model for extension to other paradigms, such as ‘come’ (see §3.1.4).

*híi ‘arrive’ > *-ii* ‘will’

- Unlike *híi* ‘arrive’, the development of the future *-ii* lacks the prefix *re- altogether; the forms come straight from the paradigm of ‘arrive there’.

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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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- The inflectional paradigm of future *-ii* is also much more regular (see 3.1.5 for information about the plural suffix *-lu*).

PS	PCH	Crow	Hidatsa	gloss
*híi	*-hii	†-ii	-hi	‘he/she will’
*híi api	*-hii-a	†-iilu	-hi-a	‘they will’
*wa-hii	*-wa-hii	-bii	-wi	‘I will’
*ya-híi	*-ra-hii	-dii	-ri	‘you will’
*wa-híi api	*-wa-hii-a	-biilu	-wihi-a	‘we will’
*ya-híi api	*-ra-hii-a	-diilu	-rihi-a	‘you (pl.) will’

*híi ‘arrive’ > *-ii* ‘will’

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

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

Osage			
ahí ~ *hí* ‘arrive there’			
1SG	pš-**í**	1PL	ąk-**ahí** api
2SG	š-**í**	2PL	š-**í** api
3SG	**ahí**	3PL	**ahí** api
Source: Quintero 1997			

*híi ‘arrive’ > *-ii* ‘will’

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Osage			
ahí ~ *hí* ‘arrive there’			
1SG	pš-**í**	1PL	ąk-**ahí** api
2SG	š-**í**	2PL	š-**í** api
3SG	**ahí**	3PL	**ahí** api
Source: Quintero 1997			

Omaha			
ahi ~ *hi* ‘arrive there’			
1SG	p-**hí**	1PL	ąg-**áhi**=i
2SG	š-**í**	2PL	š-**í**=i
3SG	**(a)hí**	3PL	**ahí**=i
Source: Koontz 2001			

*híi ‘arrive’ > *-ii* ‘will’

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2SG	š-**í**	2PL	š-**í** api
3SG	**ahí**	3PL	**ahí** api
Source: Quintero 1997			

Omaha			
ahi ~ *hi* ‘arrive there’			
1SG	p-**hí**	1PL	ąg-**áhi**=i
2SG	š-**í**	2PL	š-**í**=i
3SG	**(a)hí**	3PL	**ahí**=i
Source: Koontz 2001			

Lakota			
í ‘arrive there’			
1SG	wa-**í**	1PL	ų-**í**-pi
2SG	ya-**í**	2PL	ya-**í**-pi
3SG	**í**	3PL	**í**-pi
Sources: B&D, R&T, U 2018			

*híi ‘arrive’ > *-ii* ‘will’

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

Osage			
ahí ~ *hí* ‘arrive there’			
1SG	pš-**í**	1PL	ąk-**ahí** api
2SG	š-**í**	2PL	š-**í** api
3SG	**ahí**	3PL	**ahí** api
Source: Quintero 1997			

Omaha			
ahi ~ *hi* ‘arrive there’			
1SG	p-**hí**	1PL	ąg-**áhi**=i
2SG	š-**í**	2PL	š-**í**=i
3SG	**(a)hí**	3PL	**ahí**=i
Source: Koontz 2001			

Lakota			
í ‘arrive there’			
1SG	wa-**í**	1PL	ų-**í**-pi
2SG	ya-**í**	2PL	ya-**í**-pi
3SG	**í**	3PL	**í**-pi
Sources: B&D, R&T, U 2018			

Mandan			
hí ‘arrive there’			
1SG	wa-**hi**	1PL	rų-**hi**
2SG	ra-**hi**	2PL	ra-**hi**-rįt
3SG	**hi**	3PL	**hi**-kre
Source: Kasak 2019			

*híi ‘arrive’ > *-ii* ‘will’

- 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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	Hidatsa	
	ARRIVING MOTION	MOTION PRIOR TO ARRIVAL
HERE	híi	húu
THERE	híi	née
	Crow	
	ARRIVING MOTION	MOTION PRIOR TO ARRIVAL
HERE	híi	húu
THERE	híi	dée

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THERE	híi	née
Crow		
	ARRIVING MOTION	MOTION PRIOR TO ARRIVAL
HERE	híi	húu
THERE	híi	dée

- Although the future forms come from the paradigm for *híi ‘arrive there’, the distinction between ‘arrive here’ and ‘arrive there’ has already started to collapse.

Interim summary: *híi ‘arrive there’ > -ii ‘will’

- 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).

Interim summary: *híi ‘arrive there’ > -ii ‘will’

- 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).
- The irregular paradigm of *híi ‘arrive’ developed *after* grammaticalization to future had already begun; thus, the future maintained a more regular inflectional pattern.

Interim summary: *híi ‘arrive there’ > -ii ‘will’

- 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).
- The irregular paradigm of *híi ‘arrive’ developed *after* grammaticalization to future had already begun; thus, the future maintained a more regular inflectional pattern.
- 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.

Grammaticalization of modality

1. *híi ‘arrive there’ > *-ii* ‘will’

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3. *-ii ‘will’ + *-waachi ‘emphatic imperative’ > *-iimmaachi* ‘must’
4. *-ii ‘will’ + *-shdaachi ‘strong assertion’ > *-iishdaachi* ‘should’

Grammaticalization of modality

- **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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Grammaticalization of modality

- **Claim:** A number of modals in Crow are composed of future *-ii* with clause-final markers that specify a particular speech act.
- 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.
- Methodology: I employed a modal questionnaire (Vandler Klok 2014) and storyboards (Burton and Matthewson 2015) that target certain modals based on a given context. (For more information, see §3.2.)

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	NECESSITY	WEAK NECESSITY	POSSIBILITY
DEONTIC	*-iimmaa(chi)*	*-iishdaachi*	*...dak kootíimmaa*
EPISTEMIC			*-iih*

Table 1: A sketch of the modal space of Crow.

Pathways to modality

- 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):

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    future + emphatic imperative > strong obligation > future

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    future + emphatic imperative > strong obligation > future
  - ▷ **-ii* + **-h* > -iih ‘may, might’
    future + simple imperative > epistemic possibility

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  - ▷ **-ii* + **-h* > -iih ‘may, might’
    future + simple imperative > epistemic possibility
  - ▷ **-ii* + **-shdaachi* > -iishdaachi ‘should’
    future + strong assertion > weak obligation

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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
- The inflectional affixes that occur alongside these modal come from future *-ii* – in other words, ME begets additional ME.

Desiderative *-isshi*

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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’

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’
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5. ***-hti** > ***-shi** > ***-isshi* ‘eager to’**

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- 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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-isshi 'eager to'

1SG	***-b*-isshi**	1PL	***-b*-iss-uu**
2SG	***-d*-isshi**	2PL	***-d*-iss-uu**
3SG	*-isshi*	3PL	*-iss-uu*

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.

	'will'	'may, might'	'must, will'	'should'	'eager to'
1SG	**-b**-ii	**-b**-iih	**-b**-iimmaachi	**-b**-iishdaachi	**-b**-isshi
2SG	**-d**-ii	**-d**-iih	**-d**-iimmaachi	**-d**-iishdaachi	**d**-isshi
3SG	-ii	-iih	-iimmaachi	-iishdaachi	-isshi

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     - ▷ *-isshi* 'eager to'
- Essentially, Crow comes to accumulate ME over time.

Ahóo!

Thank you!

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Questions?