In this paper the focus is on syntactic and prosodic structures in a language that is typologically quite different from the majority languages of Europe and Asia. Mohawk, a language of the Iroquoian family, is indigenous to northeastern North America. Examples cited here are drawn from unscripted conversations. Though much of the grammatical structure of Mohawk differs substantially from that of European languages, many of the devices exploited by speakers to shape the flow of information converge.

1. Introduction

It is generally recognized that sentences are more than simple strings of words; they can be sequences of hierarchically organized constituents, with the potential for recursion and embedding. This understanding has shaped not only the way we conceive of the syntax of European languages, on which most early work was based, but also our ideas about what constitutes the nature of human language. Researchers documenting languages outside of Europe have been poised to discover such structures in other languages, eliciting basic simple sentences (‘John loves Mary’), then more elaborate simple sentences (‘The quick brown fox jumped over the lazy dog’), and complex sentences (‘That the queen discovered the assassin’s plot so quickly proves that she knew who was responsible for the unrest’).

Over the past several decades, the greater accessibility of technology has allowed us to broaden our views in important ways. It is now much easier to record and analyze substantial bodies of spontaneous, unscripted speech, including interaction. The resulting corpora have revealed constructions that rarely occur under elicitation, in part because our theories had not focused attention on them, and in part because speakers rarely produce them convincingly out of context. We can now investigate the choices speakers make as discourse unfolds through time and as they interact with each other. And we can include a major dimension of language structure that was easily overlooked earlier: intonation.
The accessibility of corpora of lesser-known languages is also deepening our understanding of language in general. We are learning more about what speakers say when left to their own devices, and relying less on elicited translations of sentences from a major contact language. The opportunity to observe unscripted, interactive speech in such languages is making it possible to delve more deeply into the nature of cross-linguistic diversity and commonality.

Here the focus is on syntactic and prosodic structures in a language that is typologically quite different from the majority languages of Europe and Asia. Mohawk, a language of the Iroquoian family, is indigenous to northeastern North America. Examples cited here are drawn from unscripted conversation at Kanehsatà:ke, Quebec, recorded by the speakers themselves. The main topic of discussion was a major land dispute between the community and the Catholic Church. The recordings were not originally made for the purpose of linguistic analysis, but some of the individuals present later assisted with transcription and translation. In particular, speakers Skawén:nti Montour and Kanerahentahawí:wi. Hilda Nicholas have contributed their expertise, both linguistic and extra-linguistic. As will be seen, though much of the grammatical structure of Mohawk differs substantially from that of European languages, many of the devices exploited by speakers to shape the flow of information converge. (Further information on Mohawk, Iroquoian languages, and languages indigenous to North America can be found in Mithun (1999, 2005, 2006a, and 2011).

2. Basic typology

Mohawk is a polysynthetic language. There are just three lexical categories, clearly differentiated by their morphological structure. Particles, by definition, contain no internal structure, though they may be compound. They serve a variety of syntactic and discourse functions.

(1) Particles
   a. tsí ‘as, how, that’
   b. ki’ ‘in fact, actually’
   c. iáh NEGATIVE

Basic nouns contain a gender or possessive prefix, a noun stem, and a noun suffix. The noun stem may be a simple noun root, or a nominalized verb stem. Nominals may, in addition, contain various enclitics.

(2) Nouns
   a. kahwá:tsire’
      ka-hwatsir-e’
      NEUTER-family-NOUN.SUFFIX
      ‘family’
Morphological nouns are used as referring expressions. They are significantly less frequent in spontaneous speech than in many other languages.

Morphological verbs can be elaborate morphologically. They contain minimally a pronominal prefix identifying their core arguments, a verb stem (which may itself be complex), and an aspect suffix. They may also contain various prefixes, suffixes, and an incorporated noun stem.

(3) Verbs

a. Wa’thaterien’tawénrie’.
   wa’-t-ha-ate-rien’t-a-wenrie-’
   FACTUAL-DUPPLICATIVE-M.SG.AGT-MIDDLE-KNOWLEDGE-LINKER-STIR-PFV
   ‘he stirred his own knowledge’ = ‘he made a mistake’.

b. Ronwanhó:tonhkwe’
   romwa-nho-ton-hkwe’
   3PL>MSG-DOOR-COVER-FORMER.PAST
   ‘They locked him up.’

c. Shohroriánionhskwe’.
   s-h o-hrori-anion-hs-kwe’
   REPETITIVE-M.SG>M.SG-TELL-DISTR-HAB-PAST
   ‘He was re-telling it to him.’

Verbs function as predicates, as might be expected. They can also function as complete sentences on their own; all contain pronominal reference to their core arguments and specification of aspect. Morphological verbs can also function as referring expressions, as syntactic arguments with no overt nominalization.

(4) Morphological verb as nominal

tehari’wakéhnhahs
   te-ha-rí’w-a-kenh-ahs
   DUPPLICATIVE-M.SG.AGT-MATTER-LINKER-HELP-HAB
   ‘he argues’ = ‘lawyer’

Here words that function as referring expressions, whatever their morphological structure, are called ‘nominals’.

The fact that verbs can be self-contained clauses in themselves, complete with reference to their core arguments, has effects on syntactic structure as well. Grammatical relations are specified uniquely within the verb. There is no case marking on nominals. Word order is not syntactically determined: there is no basic constituent order, such as SOV, VSO, etc. Order is fully pragmatic: constituents occur essentially in decreasing order of newsworthiness at that point in the discourse (apart from various orienting
particles). At one point in the conversation examined here, for example, it was asked how a certain person had died. The answer is in (5).

(5) *Ratitsihénhstæsi* ronwário.

<table>
<thead>
<tr>
<th>rati-tsihenhstæsi</th>
<th>ronwa-rio</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.PL.AGT-priests</td>
<td>M.PL&gt;M.SG-kill</td>
</tr>
<tr>
<td>priests</td>
<td>they killed him</td>
</tr>
<tr>
<td>‘The priests killed him.’</td>
<td></td>
</tr>
</tbody>
</table>

The priests were mentioned first here because their identity constituted the most important information at this point. It had already been established that the victim had died. At another point in the conversation the same speaker explained that his grandfather Anias had argued on the side of the community in the land claims case. The trial had been held on the Commons. He added the statement in (6).

(6) *Wa’tæn’sha’* ne Anià:s.

<table>
<thead>
<tr>
<th>wa’t-ha-aten’sha-’</th>
<th>ne</th>
<th>Anià:s</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACTUAL-DUPLICATIVE-M.SG.AGT-win-Pfv</td>
<td>the,aforementioned</td>
<td>NAME</td>
</tr>
<tr>
<td>he won</td>
<td>the aforementioned</td>
<td>NAME</td>
</tr>
<tr>
<td>‘Anias won it.’</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Here the newsworthy information was the winning. Anias was already under discussion.

All words (except for some particles) contain just one primary stress, distinguished mainly by pitch. Stressed syllables carry either rising tone, marked with an acute accent (é), or what is termed falling tone, marked with a grave accent (è). The falling tone actually has a complex pitch contour: it begins with a steep rise then plunges to a level below the baseline pitch. The two patterns on stressed syllables can be seen in the pitch traces in Figure 1 and heard in audio (6a).

![Pitch traces](image)

Figure 1. Rising and falling tone

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>Pitch (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.661</td>
<td>300</td>
</tr>
<tr>
<td>onón:ta’</td>
<td>hill</td>
</tr>
<tr>
<td>onón:ta’</td>
<td>milk</td>
</tr>
<tr>
<td>onón:ta’</td>
<td>hill</td>
</tr>
<tr>
<td>onón:ta’</td>
<td>milk</td>
</tr>
</tbody>
</table>

Stress is basically penultimate, though certain epenthetic vowels are not counted. Open stressed syllables are lengthened. If a word with a high, open, stressed syllable is phrase-medial, the pitch continues to rise into the following syllable. This pattern can
be seen by comparing the pitch traces on the word \textit{ki:ken} ‘this’ in Figure 2 and audio (6b) where it is phrase-final, and Figure 3 and audio (6c) where it is phrase-medial. (The continuing rise into the post-tonic syllable is indicated here with an acute accent, as in \textit{ki:kén}, though in the standard orthography words are consistently spelled with their phrase-final forms.)

The polysynthetic structure of Mohawk affects the prosodic structure of larger stretches of speech. In many cases what might be expressed in a multi-word sentence in other languages is expressed within a single word in Mohawk, which will bear only one primary stress.

3. The sentence: Syntactic and prosodic structure

When our understanding of language structure is based on the printed word alone, it is easy to conceive of it in terms of syntactic sentences. Syntactic structure often coincides with prosodic structure. The sentence in (7) was pronounced as a single intonation unit or prosodic phrase, characterized by a pitch reset at the beginning, a
progressive decrease in pitch or declination from stressed syllable to stressed syllable, and a full terminal fall at the end. Intensity and speech often decrease as well.

(7) $\text{Iah nowe} \text{nton teionti} \text{e} \text{non.}$

\begin{tabular}{ll}
  iah & nowenton \\
  not & ever \\
  not & ever \\
\end{tabular}

\begin{tabular}{ll}
  NEG-INDEF.AGT & 1SG-grab-stative \\
  has one caught me \\
\end{tabular}

‘I was never arrested.’

The sound wave and pitch contour of (7) are in Figure 4 and can be heard in audio (7).

![Figure 4. Intonation unit with one simple sentence](image)

Each bump on the pitch trace corresponds to the stressed syllable of a word. On nowen:ton ‘ever’ the pitch continues to rise into the last syllable, indicating that more is to follow. (The glide [j] is written <i> in the standard orthography; nasalized vowels are written as digraphs <en> for [ʌ̨] and <on> for [ʊ]. Glottal stop is written with an apostrophe <’>.)

Very often sentences identifiable in terms of their syntactic structure coincide with those identifiable in terms of their prosodic structure, as above. But this is not always the case. Sometimes a prosodic sentence is smaller than a syntactic sentence, as in the first element of (8). (The entire conversation was in Mohawk, but sometimes, as in the first line here, just the free translation is given of preceding or following context.)

(8) ‘It says that the Indians gave it to the priests. The seigneur.’

Judgment.

The judgment.

\begin{tabular}{ll}
  Ikhawe' & ne judgment. \\
  i-k-haw-e' & ne judgment \\
  PROTHETIC-1SG.AGT-have-stative & the judgment \\
\end{tabular}

I have the judgment.’
Other times a prosodic sentence is larger than a syntactic sentence, as in (9) (audio (9)).

(9) Onhwentsakaión:ne nonkwá:
old country side
wa’thonnatáhkwahte’
you took it with them
niahatíhawe’
you carried it there

‘They transferred the case to Europe.’

This utterance contains two full syntactic sentences, ‘They took it with them to Europe’ and ‘They carried it there.’ Either would be complete in isolation. But the two were combined in a single phrase, with no break between. The overall pitch contour began with a full pitch reset (extra high due to the lexical falling tone), then continued with a regular declination on each succeeding stressed syllable to a final terminal fall at the end.

It is interesting to compare syntactic and prosodic constituent structure more closely. The land claims case under discussion was tried first in Quebec, then in Europe. A free translation of one sentence is in (10).
(10) ‘I thought they used to say that in Europe they put the case aside and they left room for appeal.’

The syntactic constituent structure might be as in (11).

(11) ‘I thought [they used to say [that in Europe they put it aside]] and they left room [for someone to appeal].’

As can be seen in Figure 7 and heard in audio (12), the original Mohawk utterance was clearly a single prosodic sentence, with the highest pitch on the stressed syllable of the first word, followed by a regular descent in successive stressed syllables, and a full terminal fall at the end. (The extra-high rise followed by the steep fall on the word onhwentsakaion:ne ‘Europe’ is the lexical falling tone.)

Within the sentence, sub-units can be identified by smaller pitch resets, and in some cases brief pauses and a hesitation particle. Each line in the transcription in (12) represents a separate intonation unit: each shows a slight pitch reset on the stressed syllable and ends with a non-terminal fall until the last, which ends in a full fall. All but one are separated from the preceding by a small pause.

(12) I:kéhre’ ni’ rón:ton’ ken thi:kén,
    I think myself they say that
    ‘I thought they say that
    ne:--
    the--
    onhwentsakaion:ne,
    old world place
    in Europe
    en:,
    um
    kénh nonká:ti roti:ién’
    there side they have set it
    they set it aside
    thanon’ io-- rotináktote’
    and it-- they have space
    and they left a chance
    nahónhka’ taontaiekétso’.
    someone one could raise it again
    for someone to appeal.’

For the most part the intonation units correspond to syntactic constituents. Most of the clauses are in separate phrases: ‘they set it aside,’ ‘and they left a chance,’ ‘someone could appeal.’
I thought that the in Europe um, they set it aside, and there was a chance for someone to appeal.
The word *onhwentskaiòn:ne* ‘Europe’ occurs in a clear intonation unit of its own, however. It was separated from the following verb ‘they set it aside’ by a pause, hesitation particle, and significant pitch reset. It could be argued that it simply constitutes a constituent of the clause ‘they set it aside in Europe’. But a few moments later, another speaker uttered the sentence in (13) as a single intonation unit. The same word ‘Europe’ occurred in what appears to be the same syntactic construction (audio (13)).

(13) \begin{align*}
Kì:kèn \ & \text{onhwentskaiòn:ne ne nonkwá:ti} \ & \text{ia’teiotia’toréhton} \ & 1910.
\end{align*}

\text{this \ old \ world \ place \ the \ side \ it \ was \ judged}

‘This (case) was tried in Europe in 1910.’

Here there was no break between ‘Europe’ and the following predicate.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure8.png}
\caption{Single intonation unit}
\end{figure}

The prosodic difference is no accident. As pointed out by Chafe (1994 and elsewhere), speakers tend to introduce no more than one significant new idea at a time in an intonation unit. At the point in the conversation when (13) was uttered, the location of the trial in Europe had already been established. The packaging of information of one significant new idea at a time into intonation units might also explain why the speaker combined two clauses in the first intonation unit of (12): ‘I thought they say’. She was apparently not treating the thinking and saying as two distinct ideas. They were both part of an epistemic stance.

Another sentence in this discussion contains the same word ‘Europe’, but this time it follows the verb. The speaker had already explained that the case was tried in both Europe and Montreal, so the mention of Europe was not particularly newsworthy (audio (14)).

(14) \begin{align*}
To:ské \ & \text{ò:ni' wahonwa’nehare' nonhwentskaiòn:ne nekwá:}.
\end{align*}

\text{true \ too \ they \ lost \ the \ old \ country \ side}

‘They did indeed lose in Europe.’
Figure 9. Single intonation unit

An element may be set off in its own intonation unit because it conveys one new idea, or for other reasons pertaining to information structure. Mohawk, like most other languages, contains special constructions for giving texture to the flow of information. Many of these structures would be undetectable if observed in isolation and only in print.

3.1 Pragmatically marked constructions

The sentence in (14) ‘They did indeed lose in Europe’, was immediately followed by (15) (audio (15)).

(15) Tanon’ ne kën:thon,
    and the here
‘And the one here,
    tehatia’torehten:ní ne Tiohtià:ke,
    judgment the Montreal
the case in Montreal,
    rotkwénionnen’ nè:’è.
    he won CONTR
he won.’

This time the location ‘here’ appeared at the beginning of the sentence. Though not brand new information, it was newsworthy. It expressed a focus of contrast, an opposition to the previously mentioned Europe. This construction consists of more than the basic ordering of the constituents of a clause according to their newsworthiness. The focused element carries extra-high pitch, often but not always followed by a pause. It could be analyzed as outside of the nuclear clause.
Again without the opportunity to examine the discourse context and the intonation pattern, this distinct construction could go unnoticed.

There is another construction which might look like a basic subject-predicate sentence if seen only in print and with no context. An example from this conversation involves a man named Kwen'teshon (audio (16)).

(16) Kwen'tè:shon ratewenakará:tså:kwe'.
   (Name) he used to word turn
   ‘Kwen'teshon used to translate.’

The prosody shows that this sentence is more than a basic clause. The initial nominal was spoken with high pitch (higher in part due to the lexical falling tone), then followed by a significant pause. This nominal represented a shifted topic. The speaker had been talking about his grandfather Anias, who had argued the case locally and won. The defendants, unsatisfied with the outcome, took the case to Europe, but Anias did not go, because his wife was afraid that he would drown on the way. The speaker then introduced another participant in the case with the construction in (16). This sentence shifted the local topic of discussion from Anias to this man Kwen'teshon. The prosodic contour can be seen in Figure 11.
The speaker noted that another person, the lawyer for the community, urged them to remove him from the case because he drank too much. The speaker then returned to a description of Kwen'teshon with the sentence in (17) and audio (17).

(17) *Tanon’ ki:kén ne Kwen’tè:shon*

and this the aforementioned **name**

‘And this Kwen’teshon *Ahkwesahshro:nón’ nahaia’ã:ten’.*

Ahkwesahsne resident he was such a kind of person

was from Ahkwesahsne.’

Here Kwen’teshon again appeared in initial position, but this time with less prosodic separation from the following clause.

![Waveform with pitch values](image-url)

**Figure 12.** Topic shift

The speaker then continued discussing Kwen’teshon using only the pronominal prefix in the verb to refer to him. (His English name was John Reed.)

(18) *Reed ronwá:iaks’we’.*

one used to call him

‘His name was Reed.’

In the next sentence, Kwen’teshon was again mentioned by name, but this time at the end of the sentence (audio (19)).

(19) *Tóka’ken John Reed ki:kén ronwá:iatskwe’ ne Kwen’tè:shon.*

maybe this one used to call him the Kwen’tè:shon

‘Perhaps this guy was named John Reed, Kwen’teshon.’

This sentence illustrates yet another structure which can be understood only in terms of its place in the unfolding discourse. It is an antitopic construction: an established, continuing topic is confirmed with a sentence-final nominal. Such constructions are often used when multiple participants are on the scene, or to close off a particular discussion. Like focus of contrast and topic shift constructions, antitopic constructions

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have distinctive prosodic patterns. They are often though not necessarily separated from the nuclear clause by a brief pause, and are typically pronounced with a relative flat pitch and sometimes creaky voice.

![Waveform and Pitch Graph]

Figure 13. Antitopic construction
(The antitopic here shows increased pitch movement due to the lexical falling tone.)

3.2 Constituents: The Determiner Phrase

Most current syntactic models posit a Determiner Phrase as a fundamental constituent of the sentence, a phrase headed by an article or demonstrative, such as the quick brown fox or that boy.

English articles distinguish identifiability: speakers use indefinite articles before referents they believe their listeners cannot identify, and definite articles before those they believe they can. The referent may be identifiable from common knowledge (I washed the car), from uniqueness (Don’t look at the sun), from previous mention (I found a jackknife and a flashlight. The jackknife was rusty), or association with an identifiable referent (I bought a laptop. The keyboard is a bit sticky). Mohawk contains no indefinite article, but there is an article ne. Its use often coincides with that of English the. The difference between the two would be easy to miss when looking at isolated constructed sentences alone. Mohawk ne corresponds only to the last two possibilities listed above for English the. It is generally used for either previously mentioned referents, or those associated with previously mentioned referents. An example of the difference between ne and the can be seen in (20).

(20) **Ónhka’ enietshiri’wanón:tonhse’**
    ‘If someone asks you
    *oh nioiti:ren kí:këh,
    why
    *kakoráhsera* teiotonhwentsó:ni
    the government wants

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a:iota:kénhse’ to: nionkwè:take,  
to know how many people there are,
orihiwí:io ki’ nà: tsi  
it is actually certain that
ioterièn:tare’ ne kakoráhsera'.
it already knows, the government.

The Canadian government is uniquely identifiable, so mention of it consistently occurs with the definite article in English. At this first mention of it in this Mohawk conversation, however, there was no ne. At the second mention, in the antitopic construction at the end, the ne appeared. Unlike English the, Mohawk ne can occur with possessed nouns, proper names, and demonstratives.

The Mohawk article ne is usually associated prosodically with a following nominal, even when this is a proper name. This can be seen in Figure 9 with n-onhwentsakaiòn:ne ‘the aforementioned Europe’. (In rapid speech the vowel of ne is dropped before another vowel.) There is, however, sometimes a prosodic break between ne and a following nominal, as seen earlier in Example (12), part of which is repeated here.

(12) ne:--  
the aforementioned--
onhwentsakaiòn:ne,  
old country
en:,  
um
kénh nonká:ti roti:ién’ …
there side they have set it

‘They set it aside in the aforementioned-- Europe …’

This is a familiar phenomenon cross-linguistically: determiners are a point at which speakers often pause for a lexical search. A similar break occurred in the following line as the speaker searched for an appropriate predicate.

The demonstratives present a more interesting picture. Mohawk contains a proximal kí:ken ‘this/these’, a distal thí:ken ‘that/those’, a discourse anaphor né: ‘that one’, and adverbial demonstratives kén: ‘here’ and thó ‘there’. It is easy enough to elicit prototypical Demonstrative Phrases from bilingual speakers, and such constructions often appear in pedagogical materials. The example below is from a teaching grammar (not written by a first-language speaker).

(21) Thí:ken ken raksà:’à rotkáhthon thí:ken kanonhsowá:nen?
that Q boy he has seen that it is house big
‘Did that boy see that big house?’
The individual words are technically correct, but such sentences do not normally occur in the spontaneous speech of first-language speakers. Speakers seldom pack so many heavy referring expressions together into either an intonation unit or a sentence.

The demonstratives *kí:ken* ‘this’ and *thí:ken* ‘that’, often shortened to *ki:* and *thi:*, do occur on occasion before nominals.

(22)  
R. G.,  
‘R. G.,  
*né: rohni:nón ki: kahiatónhsera*.  
that one he has bought this paper  
he bought this paper.’

But this construction is relatively rare in spontaneous speech. Demonstratives themselves are pervasive, however.

The demonstratives can serve a tracking function through discourse, distinguishing referents that are nearer or further not only in time and space, but also in the minds of speakers. Often the proximal *kí:ken* ‘this/these’ is used for more recently mentioned referents, and the distal *thí:ken* ‘that/those’ for those mentioned earlier. It is interesting to follow the demonstratives through the passage in (23). As noted above, the speaker had been describing the role of his grandfather Anias in the case. He then introduced Kwen’teshon with the topic shift construction. (The entire discussion was in Mohawk, but some of the context is provided here in just free translation.)

(23)  
‘My grandfather (Anias) didn’t go, because his wife was afraid that the boat would sink and my grandfather would be in it. Kwen’teshon was the translator. Now let me get to the point.’  
*Kwen’tè:shon ratewennakaratatskwêra: raowenhkénhen kí:ken, ne Anià:s.*  
‘Kwen’teshon was the translator for this Anias.

*Anias Korenté.*  
Our grandfather.

Then the lawyer said,’  
*“É:ren i:reht thi:ken,*  
“He should be removed, that one.

*enhahêtkenhê’ kí:ken ne case.*  
he’ll ruin this case.

*Kí:ken só:tsi rahnekakà:shâ.”  
*This guy drinks too much.*”

*Tanon’ kí:kén ne Kw. Ahkwesahshronón’ nahaiatò:ten.*  
‘And this Kwen’teshon was from Ahkwesahsne.

Reed he was called (in English).

*Tóka’ John Reed ronwàiatatskwê, kí:kén ne Kwen’tè:shon.*  
His name might have been John Reed, this Kwen’teshon.’
The fact that the demonstratives can co-occur with the article *ne* raises the question of whether they actually participate in exactly the same kind of Determiner Phrase construction as English demonstratives, or are simply coreferential with associated nominals. Their order with respect to an associated nominal is not fixed. They sometimes follow the nominal.

(24) ‘She went into his house and took all of his papers.’

Raohiatónhsera’ *ki:kén*

his paper this

*né:  takarò:roke’ ki:*

that one she collected this

‘She took his papers ….’

In fact they do not even necessarily appear adjacent to the nominal.

(25) Wilkinson *ki:ken seníhson kahiatónhsera’.*

name this you two have made paper

‘You and Wilkinson made this paper.’

The Mohawk demonstratives actually occur much more often on their own than with an associated demonstrative. They are frequently used as antitopics.

(26) A. M got this when T died.
   B. Mmmm.
   A. He used to come by the mountain.
   B. Ah, that was MJ
   A. Yes, MJ.

*Tekahwìstake rakenen’tonhkwaníhahkwe’ ki:ken …*

two dollars he used to charge me this one

‘He used to charge me two dollars, this guy …’

(27) A: ‘Then where are his children?
The family must be somewhere.’

B: *En: … Wèst
Um*

*ka’k nò:n:we nihoné:non thi:ken.*

somewhere there they have gone those

‘Um, they’re somewhere out West, those people.’

(Such demonstrative antitopic constructions are also very frequent in the English of Mohawk speakers).

Demonstratives play another pervasive role in shaping the presentation of information through discourse. If we were to look at the example seen earlier in (12) simply as a string of words in print, ‘I thought they used to say that in Europe they set the case aside’, we might see a prototypical complement construction.
The intonation shows a different constituency, however. The demonstrative thi:kén was grouped prosodically with the matrix rather than with the complement.

In fact this is a robust pattern in Mohawk. Both kí:ken ‘this’ and thi:kén ‘that’ are usually grouped prosodically with a preceding matrix clause rather than following a complement.

This construction is another manifestation of the general principle noted earlier whereby speakers introduce one new idea at a time in an intonation unit. A simple clause, usually just a verb perhaps accompanied by discourse particles, is followed in that same phrase by a demonstrative which serves as a cataphoric place holder, signaling that more information is to be filled in in successive phrases. The demonstrative may represent a person, object, location, etc. or a whole idea. In (29) what was spread was the idea that people were about to punish the speaker.

This pervasive structure could be missed entirely without documentation of spontaneous connected speech and the associated sound.

4. Illocutionary force

Prosody can of course convey information that does not show up in segmental structure at all. A well-known example is question formation.

Mohawk has clear formal constructions for content and polar questions. Content questions are formed with interrogative pronouns: ónhka’ ‘who’, oh nahö:ten’ ‘what’, ká’ nôn: ‘where’, kátke ‘when’, ka’ niká:ien’ ‘which’, etc. They generally show about
the same pitch patterns as statements. Polar questions are formed by inserting the interrogative particle *ken* after the first constituent of the sentence, the focus of the question (audio (30)).

(30) *Óhsera’ ken kahia:tón kátom iohn:naien’?*  

year Q it is written or it has a name  

‘Does it have a date or a name?’

(This was a simple yes/no question, not an alternative question.) These questions do not generally show the same rising pitch as their English counterparts, but they do not usually fall quite as steeply as statements.

![Figure 14. Polar question with ken](image)

A particle of the same shape *ken* is used for tag questions, but it often appears at the end of the statement (audio (31)).

(31) *Né: kati’ kwi’ it is then in fact isn’t it*  

‘It’s that they actually  

*ratiha:wáhkwe’ ne--*  

they used to have the  

*ne nikahiaohtserò:ten’*  

the aforementioned it is such a kind of paper  

such a paper  

*kén?*  

didn’t they?
It also shows different prosody, occurring in a separate intonation unit with length and a slight rise.

But not all questions are distinguished by overt markers. During the discussion of the translator Kwen‘teshon, a woman asked whether he was a Native person. Another speaker, a man, answered in the affirmative (audio (32)).

(32)  A. Onkwehón:we?
     ‘Indian?’

     B. Onkwehón:we.
     ‘Indian.’

The only difference between the question and the answer was the intonation. The question showed a partial fall, while the answer showed a full, terminal fall. (In each case the pitch at the end of the phrase can be compared with the pitch at the beginning.)

This pattern is not unusual cross-linguistically. But it would be easy to miss without access to intonation.
5. Structures across sentences

Corpora allow us to move beyond the sentence to larger structural patterns. Some larger constructions signal discontinuity, as when speakers move from one major episode to another in narrative, or from one general topic of discussion to another. Such major breaks are typically marked with a substantial pause and complete pitch reset, as well as various orienting particles. A number of other constructions link sentences in various ways.

5.1 Discourse particles

Some linking constructions that emerge only in multi-sentence stretches of speech involve discourse particles. Such particles are often below the conscious of speakers, conspicuously absent from elicited sentences and easy to miss, but they are pervasive in the speech of skilled Mohawk speakers, and they play important roles in structuring discourse. One example is *ki’*, translatable perhaps as ‘in fact’ or ‘actually’. This particle, which usually occurs in second position in the sentence, indicates that the current statement is relevant to the preceding discourse.

(33) A: ‘I thought they used to say that they set the case aside in Europe and that someone would have a chance to appeal.’

B: *Thó ki’ ní: tsí kahiá:ton kí:ken ne judgment.*

that in fact so how it is written this the

‘That is in fact what the judgment says.’

5.2 Demonstratives

The second sentence in (33) above provides an example of another construction that spans multiple sentences. In this construction, which is pervasive, a demonstrative *né:* ‘that’ or *thó* ‘there, that’ appears at the beginning of a sentence, standing in for a whole topic of discussion, either an individual, such as a person, object, place, etc, or a larger idea. Examples of both can be seen in (34). The first, *né:* ‘that’, refers to the whole fact that Native people used to cut splints for basketmaking, and that they were jailed for it. The second, *thó* ‘there, that’, refers to the six months during which Onahsakenra was in jail.

(34) ‘They used to arrest Native people if they cut anything.

They would cut their splints (black ash splints for baskets).

They would lock up the Native people.

*Né:* se’ aori:wa’ *ne:*

that indeed its reason it is
The aforementioned O six month numbers

That’s why O. was locked up for 6 months at St. Scholastic.

That’s when he translated our Mohawk Bible.’

The resumptive demonstratives in this construction are often pronounced with extra-high pitch.

5.3 Rhetorical style

As is clear from preceding sections, Mohawk offers speakers rich resources for managing the flow of information. Word order reflects the relative newsworthiness of constituents. Chunking stretches of speech into separate intonation units allows speakers to present their listeners with one new idea at a time. The demonstratives ki:ken ‘this/these’ and thi:ken ‘that/those’ at the ends of intonation units facilitate this packaging; they serve as cataphoric place holders, signaling that further information about their referents is to come. The demonstratives né: ‘that one’ and thó ‘that, there’ function at the beginning of sentences as anaphoric resumptive pronouns standing for larger ideas that have been built up in the preceding discussion. There are also several other related patterns that emerge only through the examination of larger stretches of speech.

One common pattern is the presentation of a basic idea in one clause or sentence, followed by elaboration in the next sentence. The second sentence may be essentially a repetition of the first, with added material. Often the prosody of the second mirrors that of the first, forming a kind of couplet. An example seen earlier in (19) and (20) shows this pattern.

(35) Reed ronwá:iatskwe’.
    NAME one called him.

    ‘His (English) name was Reed.

    Tóka’ ken John Reed ki:ken ronwá:iatskwe’ ne Kwen’teshon.
    perhaps TAG NAME this one one called him the NAME
    Perhaps his name was John Reed, this Kwen’teshon.’

A related pattern consists of pairs of sentences which serve to reinforce important points. They may not share lexical material, but they convey essentially the same idea. These, too, often show parallel prosody.
(36) Rowí: iāh tethawé:non.
Louis not did he come back here
‘Rowi: didn’t come.
Ja’tonkeniia’ti:ste’.
We two were alone.

5.4 Interaction

Corpora which include conversation allow us to investigate the interactive functions of constructions. As in other languages, vocabulary and prosody can converge in Mohawk to convey emotion in interaction. At one point in the conversation examined here, one speaker contributed an interjection (audio (37)).

(37) Thia’karihwakénnia’te’.
‘For goodness sake.’

This is a highly idiomatic expression which no longer makes sense literally, but it does begin with the Contrastive prefix *th-*, a signal of heightened affect. Not surprisingly, the prosody conveys affect as well. As seen at the outset, Mohawk words normally carry just one primary stress, and that stressed syllable is lengthened if it is open. The primary stress in (37) is on the syllable kén (where <en> represents a nasal caret [ʌ̨]), as would be expected. Normally the initial syllables of polysyllabic words are brief. But here each was punched out individually and lengthened.

![Waveform and Pitch](image)

**Figure 17.** Exclamation

Interlocutors also express their engagement in conversation through backchanneling, responding at appropriate breaks in the speech of conversational partners, sometimes with vocalizations of low prosodic salience, sometimes with responses of high prominence. The two exchanges below were between the same pair of individuals, a man and a woman. In the first, the man simply stated that he had in his possession the document under discussion. The woman confirmed unemotionally that she had heard his statement (audio (38)).

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(38) A: *Íkhawe’ ne* judgment.
   I have it the aforementioned judgment.
   ‘I have the judgment.’

   B: *Hmm.*

Figure 18. Basic response

In the second, the man recounted that his sister had warned him that he should run because the police were looking for him. This time his listener’s response was more emotional and more salient prosodically (audio (39)).

   they are looking for you police
   ‘The police are after you.’

   B. *láh!*
   ‘No!’

Figure 19. Emotional response
Some of the rhetorical constructions seen in the previous sections take on social meaning in interaction. The tag kén: solicits confirmation of a statement from a listener, sometimes because the speaker is uncertain, as in (31), sometimes because the speaker simply wishes to engage the listener in the discussion. The particle ki’‘in fact, actually’ can indicate that the speaker is relating his or her comment to that of another participant in the conversation.

(40)  A:  Ratitsihénhstəsi ronwário.
   ‘The priests killed him.’

   B:  Thó ki’ni:’i ni:ioht tsi wakaterièn:tare’.
   ‘That’s in fact the way I know it.’

Repetition of material across turns can create resonance among participants in a conversation. The statement by one speaker seen in (41) was followed by such repetitions.

(41)  A:  Thò:ne nè:ne,
   ‘That’s when
   onkwahiatonhsarokénhti’ thóhson.
   our holy writing then he has made
   he translated our Mohawk Bible.

   B:  Thò:ne na’tehowennaténion’.
   ‘That was when he translated it.

   A:  Thò:ne.
   ‘That was when.
   Thò:ne na’tehowennaténion’.
   That was when he translated it.’

The prosodic contour of ‘That was when he translated it’ by Speaker B, a woman, was echoed in the final response of Speaker A, a man.
Figure 20. Repetition across turns
6. Categorical distinctions versus clines

So far we have seen how syntactic and prosodic structures sometimes converge and other times diverge. The two differ in a fundamental way, however. Segmental structures are typically categorical, while prosodic structures can vary along a continuum. A pause may be very brief, very long, or anywhere in between. Pitch may be very high, very low, or similarly anywhere in between; it may rise or fall gradually or steeply.

The fluid nature of pauses is illustrated in (42). Two men were taking a census when they came upon a woman with a child on a cradleboard. Again each line of transcription represents an intonation unit. The last three can be heard in audio (42).

(42) Wahèn:ron' ne:--
    'He said,
    kì:ken n-Anenharishon,
    this Anenharishon,
    "Oh na'ia'tö:ten' kì:ken?"
    what so one is a kind of body this
    "What is the child's name?"
Ka'nisténhsera' wàë:ron',
    the mother she said
The mother answered
iáh kì' áre'kho teiakohsén:naien'.
    not in fact yet does she name have
    that she actually didn't have a name for him yet.
    "Hen' kì:ken wahèn:ron' "kì' enhihs:n:non'
    yes this he said in fact I will name give him
    "Yes" this guy responded, "I'll name him.
Shawátis Anenharishon'."
    John Anenharishon.”
    "Háo'.”
    "OK.”
Thó niìawèn:èn kì:ken tsi takakaratátie'.
    that so it happened this how it is told along to here
    This is the way it happened, according to the tradition.’

This passage consists of what could be identified as five syntactic sentences. There are three complement constructions with the matrix verb 'say', a brief answer, and a concluding statement.

It is interesting to compare the lengths of pauses between the intonation units. Most of the major pauses, given to the right of the free translations below, are at the ends of the syntactic sentences.
A’nenharishon said, “What is the child’s name?”

The mother said that she didn’t yet have a name.

He said, “I will name him John A’nenharishon.”

“OK.”

That’s how it happened, according to the tradition.

There are also pauses between clauses within the sentences, and between the matrix and the following complement. Most of these pauses are shorter than those between the sentences. The pause before the direct quote in (a) was longer than that before the indirect quote in (b).

A’nenharishon’ said, “What is the child’s name?”

The mother said she didn’t yet have a name for him.

He said the--

this guy A’nenharishon’, …

These pauses nicely reflect hierarchical syntactic constituent structure.

But the pauses do more. In the third sentence, ‘He said “Well I’ll name him John A’nenharishon”,’ there was no pause between the matrix verb and the direct quote. The syntactic structure here was similar to those of the two preceding sentences, but the information structure was different. The verb of saying was no longer a significant new idea on its own: the back-and-forth exchange between the census taker and the mother was established. Within the clause, there was a pause in (a) between the predicate ‘he said’ and the argument ‘A’nenharishon’, but none in (b) between ‘she said’ and ‘the mother’. Though sentences (a) and (b) are similar syntactically and semantically, they differ in the status of the information they convey. The first sentence (a) introduced the conversation in one intonation unit (‘he said’), then brought A’nenharishon’, an important character, into the foreground in another. The pause was apparently extended as the speaker searched for his name. The second sentence (b) briefly shifted the floor to the mother with a sentence-initial noun, but the act of saying was no surprise so not worthy of a separate prosodic phrase: the woman had just been asked a question.

The third sentence (c) contained a significant break within the complement clause inside the predicate, between the verb ‘I will name him’ and the name John A’nenharishon’. The pause here was much greater than those between ‘he said’ and A’nenharishon’ in (a), and between ‘the mother’ and ‘she said’ in (b). Furthermore, there was a full terminal fall after the predicate ‘I will name him, before the name John A’nenharishon’. The name began with a full pitch reset on the name. It actually had the prosody of an independent sentence on its own, with its pitch reset and a full terminal fall.
(46) c. “Yes” he said, “Actually I will name him.
John Anenharishon.”

Figure 21. Two prosodic sentences

The pitch contour and long pause do not reflect the expected syntactic constituent structure, but rather the information structure. The name was worthy of a separate statement of its own (audio (46)).

Pitch can be similarly fluid. It is interesting to compare the pitch contour of Shawátis A’nenharishon’ with the closing statement which followed: ‘That’s how it happened, according to how it’s been handed down to us.’ This statement constituted a full syntactic sentence on its own. It was separated from the census taker’s utterance by a long pause, then a response from the mother, and then another long pause. But the overall pitch of this final statement was lower and more compact. It did not present a new event, but rather a commentary on the preceding.

Figure 22. Pitch reduction

Pitch can vary along a continuum within syntactic sentences as well. A sentence seen earlier in (12) contained a complement construction.
(47) *Rotináktote’ ne ónhka’ taontaiekétsko’.
they have room the someone one could raise it again
‘They left room [for someone to appeal].’

The stressed syllable of the matrix is higher than the complement, a pattern consistent with the declination expected in a prosodic sentence (audio (47)).

![Figure 23. Complement construction](image)

The sentence just seen in (46), ‘He said “I will name him” could be analyzed as a complement construction as well, with matrix clause ‘he said’ and complement ‘I will name him’. This complex sentence showed a different intonation pattern, however (audio (48)).

(48)  *Wahèn:ron’,*
‘He said,

“*í: ki’ wahèn:ron’ enhihsén:non’.*
“I myself then” he said “I will name him.”

Here the matrix clause is lower in pitch than the following complement.

![Figure 24. Complement construction](image)
The pattern is not at all surprising. Direct quotations comprise a special kind of construction. The speaker often assumes a different voice, portraying the quoted speaker. It is common in such constructions to see the prosodic pattern of an independent sentence, beginning with a full pitch reset. The quotative verb often shows reduced pitch. A clearer example is in (49), where the verb of saying shows very low pitch, with final terminal fall, and significant pause before the quoted material (audio (49)).

(49)  
Wahèn:ron’.  
‘He said,  
“Iâh  ki:kén:  
not this  
“It was not  
orihi:ió  tè:ken … “  
good matter  not is it  
right (the way it was done).’

Gradations of pitch in complex sentences are not restricted to direct quotations, however. Another sentence seen earlier in (14) is repeated in (50) (audio 50)).

(50)  
To:skë  ðoni’  
true too  
‘It’s also true  
wahonwa’nhare’  nonhwentsaki:n nekwa:  
they lost the old country place side  
they lost in Europe.’
Figure 26. Complex sentence

The prosody matches the information structure rather than the syntactic structure. The point of this statement was that they lost, not that it was true. The matrix simply adds modality. This marker tó:ské actually shows segmental reduction as well. It apparently originated as a full verb based on the root ‘be certain’, but it no longer contains full inflection. (Further discussion of the relations among complex syntax, information structure, and prosody is in Mithun, 2006b and to appear.)

The intonation conveying affect, such as the back-channel responses seen in Section 5.4, of course also show gradience, not only in pitch, but also intensity and duration.

7. Conclusion

Corpora of extensive stretches of unscripted speech, complete with sound, are allowing us to move beyond what can be learned from sentences constructed in isolation and rendered only in print. As shown here, they bring in new data: constructions occur in longer stretches of spontaneous speech, in both monologue and conversation, which rarely appear in isolated sentences. They also help us to understand their functions by examining how they are used to shape the flow of information as the knowledge states of speakers evolve through time. The addition of the prosodic dimension reveals structures that can be invisible in print alone. Sometimes these prosodic structures coincide with syntactic structures, but other times they contribute information of their own.

The greater accessibility of tools for building and managing corpora are also enriching our understanding of the nature of linguistic diversity. We are still learning about ways languages can differ. Here we have examined spontaneous speech in a language which differs typologically in fundamental ways from those on which much work on information structure has been based. The polysynthetic nature of Mohawk
morphology has effects on the prosodic patterns of the language: much of what might be expressed in complex, multi-word phrases in other languages, consisting of constituents nested within constituents, can be rendered in a single word in Mohawk, with just one primary stress. The polysynthesis also has reverberations within the syntax: any single verb can constitute a complete sentence in itself, complete with its core arguments. Syntactic bonds between verbs and lexical arguments are in a sense weaker than in some other languages. Word order is not governed by grammatical relations, but is instead pragmatically based, reflecting the relative information status of constituents at each point in the discourse. Such differences raise intriguing questions about possible cross-linguistic differences in the devices speakers exploit to regulate the flow of information through time.

Despite the typological differences in basic phonological, morphological, and syntactic structures, Mohawk shows striking similarities in the kinds of tools speakers use to shape their messages. The same chunking of ideas into intonation units first noticed by Chafe in English governs spontaneous speech in Mohawk. Speakers tend to present one new idea at time. (Of course in all languages, individuals vary in the speed and fluency with which they speak.) Constructions for marking information structure, such as those described by Chafe for English (1994) and Lambrecht (1994) for French and Italian, as well as many others, have counterparts in Mohawk: those that signal a topic shift, highlight a focus of contrast, or reiterate a continuing topic. As in many other languages, polar questions can be signaled uniquely by intonation. Emotion can be conveyed by prosody. There are of course interesting differences in the precise constructions available to speakers, as well as the pragmatic markedness and frequencies of these constructions. At present, the growing availability of corpora of unscripted, interactive speech, complete with sound, is allowing us to discover not only differences among languages, but also some deeper commonalities.

References


