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# The role of information packaging in shaping linguistic structure

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It is generally agreed that intonation units tend to correspond to processing units (Chafe 1979, 1987, 1994, 2018; Inbar *et al.* 2023; and many others). As noted by other authors in this collection, the ONE NEW IDEA AT A TIME pattern shows up robustly across typologically quite different languages. It is seen, for example, in languages with complex nominal expressions (Louagie & Reinöhl 2022) and those with serial verb constructions (Pawley 1987, 2009; Givón 1991; Reinöhl *et al.* this volume). Similar prosodic packaging can also be seen in languages with very elaborate morphologies. It can, furthermore, account for the formation of some of their typological structure. Such effects are illustrated here with conversational data from Mohawk, a polysynthetic language indigenous to northeastern North America.

**Keywords:** accessible information, given information, intonation units, prosodic structure, polysynthesis

## 1. Introduction

In numerous works, Wallace Chafe proposed that prosody reflects cognition, specifically that "intonation units are limited to the expression of one new idea at a time, reflecting a fundamental temporal constraint on the mind's processing of information" (Chafe 1994: 6). Chafe's proposals have generated rich work exploring patterns in a variety of typologically different languages and at various levels of linguistic structure. Here the effect of the one new idea at a time principle is shown on the prosodic structuring of speech in a polysynthetic language, Mohawk, and, in turn, on the shaping of grammatical structure. In what follows, the basic sound system of Mohawk is described in Section 2, then the prosody of intonation units in Section 3, followed by the organization of ideas into intonation units in Section 4, a closer look at what might constitute a new idea in Section 5,

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the potential effect of prosodic structuring on morphological structure over time in Section 6, and finally the exploitation of alternative grammatical structures by modern speakers in speech in Section 7.

## 2. The language

Mohawk (Kanien'kéha', ISO code moh, Glottocode moha 1258) is a language of the Iroquoian family, indigenous to northeastern North America. There are six major Mohawk communities: Kahnawà:ke and Kanehsatà:ke in modern Quebec; Ahkwesáhsne, which covers land in Quebec, New York State, and Ontario; and Ohswé:ken (Six Nations), Thayendanegen, and Wáhta' in Ontario. The language is polysynthetic and head-marking. There are three lexical categories, defined according to their morphological structure: verbs, nouns, and particles. Verbs can be elaborate morphologically, with pronominal reference to their core arguments and often incorporated noun stems among other things. They can function as predicates, as referring expressions without further marking, and as clauses or sentences on their own. Nouns function only as referring expressions. Particles contain no internal morphological structure, but they may be compounded. They serve a variety of lexical, syntactic, and discourse functions. Perhaps not surprisingly, intonation units in this language often contain somewhat fewer words than those in many other languages, presumably due at least in part to the fact that individual words can potentially contain so much information. Grammatical sketches are in Mithun (1992, 1996, 2005).

An overview of the sound system is in (1). The sounds are represented in the conventional orthography and grouped according to their behavior.

(1) Consonants

| | |
|---|---|
| Stops and Affricates | *t ts k k*$^{w}$ |
| Fricatives | *s* |
| Resonants | *n r i w* |
| Laryngeals | *h ’* |
| Vowels | *i, e, a, o, en, on* |

Most symbols have their usual IPA values. The symbol <i> represents the palatal glide <j> before a vowel, and the apostrophe <’> a glottal stop [ʔ]. Nasalized vowels are spelled with digraphs: <en> = [ʌ̨] and <on> = [ų]).

Stress is basically penultimate, but not all vowels are counted for stress. An epenthetic *e*, inserted between certain consonant clusters, does not enter into the determination of stress: **ie'tron'* > *iè:teron'* 'she is home'. An epenthetic linker

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(stem joiner) *a* inserted between a consonant-final incorporated noun stem and consonant-initial verb root does not count in certain contexts: *sha'eká:**ra**ton*' 'when she told me a story' (*-kar-* 'story'). Loans from French typically have final stress: *tikok**ón:*** 'cucumber' from Fr. *des concombres*.

Stressed vowels in closed syllables carry high pitch, indicated with an acute accent: ***ón**hka*' 'someone, who'. Stressed vowels in open syllables are lengthened and carry rising pitch, indicated with an acute accent and colon: *sh**é:**kon* 'again, hello'. In stressed syllables originally ending in a laryngeal *h* or glottal stop coda, the laryngeal affected the pitch contour, so that it generally rises steeply then falls to below the baseline. The coda laryngeal then disappeared leaving vowel length. This is indicated with a grave accent and colon: **nónhwa*' > ***nòn:**wa*' 'now, today'. Stressed vowels in open syllables followed by a glottal stop onset show the same pitch contour and length, but the laryngeal remains: *eks**à:'**a* 'girl'. Certain modern instances of *h* function like consonant clusters, so stressed syllables before them are not lengthened: *rake'n**íh**a* 'my father'. Finally, in context, rising pitch on a penultimate open syllable may be continued into the ultimate syllable within intonation units.

This work is based on a corpus of approximately 70,000 words consisting of conversation and monologue in a variety of genres, transcribed in collaboration with the speakers. Examples here are drawn from a conversation between two speakers, Mina Tewateronhiakhwa Beauvais (MTB) and Warisose Josephine Gabriel (WJG), both now of Kanehsatà:ke, though Mrs. Gabriel is originally from Ahkwesáhsne.

## 3. The prosody of intonation units

Intonation units are defined here as consisting of a stretch of speech spoken over a single prosodic contour. They typically begin, sometimes after a pause, with a pitch reset on the first stressed syllable; they show general declination in pitch over their duration; and they finish with a non-terminal or terminal ending, usually a partial or complete fall in pitch. There may be a gradual reduction in speed over the course of the unit. This is in line with the features laid out in Himmelmann *et al.* (2018) and Himmelmann (2022) in their inter-rater agreement study. They found two basic features defining intonation unit boundaries.

i. An interruption of the rhythmic delivery by a pause, lengthening of the last segment at the end of a unit and/or increased speaking rate at the beginning of a new unit.

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ii. A disruption of the pitch contour/melody line: a pitch jump (up or down) between the end of oneunit and the beginning of the next.

Himmelmann (2022) also notes that:

> Strictly speaking, only the second, melodic criterion is essential, but this is often rather difficult to identify. The rhythmic criteria are optional, but when they are present, they significantly contribute to the strength and, concomitantly, the perceptual clearness of an IU boundary. Boundaries involving a pause are particularly easy to perceive, but boundary-marking pauses must be distinguished from IU-internal hesitation pauses. (Himmelmann 2022: 718)

Here examples are laid out according to their prosody, with separate intonation units displayed on separate lines, non-terminal endings indicated with a comma, and terminal endings with a period. (When an intonation unit is too long to fit on one line, it is continued on the next but indented.) Truncation is indicated by a dash —. Numbers to the right of the top line in each group indicate the length of the unit in milliseconds. Numbers in parentheses between lines indicate indicate the lengths of pauses.

Multiple intonation units may together make up a larger, prosodic sentence, which ends in a final, terminal contour. An example of a prosodic sentence from the conversation is presented in (2).

(2) *Iah tekè:iahre'* *ne:*, 1402 ms
iah te-k-ehiahr-e' ne:
not NEG-1SG.AGT-remember-ST that
'I don't remember' (574 ms)

*ne a:kanonhtonnión:ko'*. 1426 ms
ne aa-k-anonhton-nionko-'
ART IRR-1SG.AGT-think-DISTR-PFV
'thinking about it.' (WJG)

The wave form and pitch trace are presented in Figure 1. An initial pitch reset occurred on the first stressed syllable *kè:* of *te**kè:**iahre'* 'I do not remember'. This syllable carried the distinctive pitch contour indicated with a grave accent, a steep rise followed by a fall to below the baseline. This intonation unit ended with a non-terminal fall, transcribed with a comma. The next began after a brief pause, then showed a partial pitch reset on the stressed syllable *ión:* of *a:kanonhtoni**ión:**ko'* 'for me to think about it'. The final terminal fall is not visible because it was devoiced, but the fact that it continued can be seen in the wave form.

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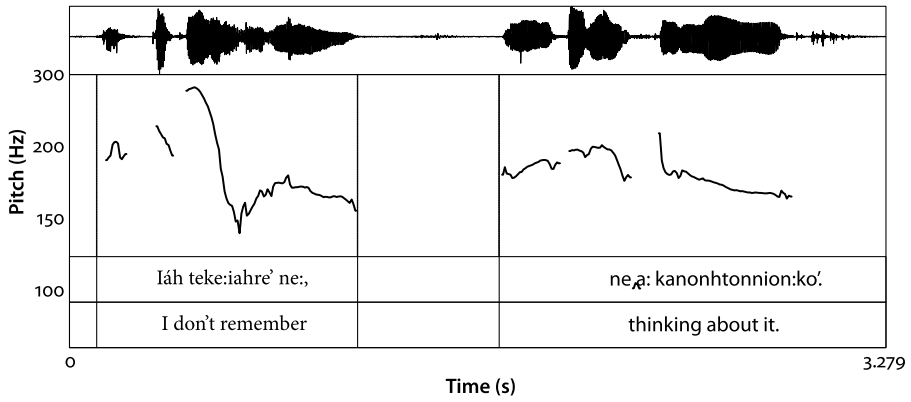



**Figure 1.** Sentential Intonation Unit

## 4. One new idea at a time

Mohawk speakers, like those of other languages, tend to speak in what Chafe (2018: 58, 59) called "spurts", or intonation units. Chafe distinguished three basic types: "Intonation units may be substantive in content, expressing a single focus of consciousness, or regulatory, functioning as guideposts to the flow of thought, or fragmentary, begun but not completed" (2018: 60). He characterized substantive intonation units as those "expressing foci of consciousness built on minimal thought units or ideas, which may be of events, states, or entities" (2018: 61).

This structure can be seen in the excerpt in (3). Mrs. Beauvais had asked Mrs. Gabriel who she regarded as big shots when she was growing up. Mrs. Gabriel responded that she guessed it was movie stars. Her response was organized into separate foci of attention, the introduction of herself as the source of the opinion, then of movies, then hearing names, then fuller specification of the movie stars.

(3) i. *A : nek ni : ne um*, 1882 ms
ah just myself it is

(1013 ms)

ii. *teióia'ks*, 1215 ms
te-io-ia'k-s
DV-N.PAT-CUT-HAB
'it flickers'

(370 ms)

iii. *khehsennahrónkha'*, 957 ms
khe-hsenn-ahronk-ha'
1SG>3PL-name-hear-HAB
'I would hear their names'

(594 ms)

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iv. *ónhka'-- teióia'ks ronón:nis.* 2062 ms
onhka' te-io-ia'k-s ron-onni-s
someone DV-N.PAT-cut-HAB M.PL.AGT-make-HAB
who it flickers they make

'I myself, um, movies, I would hear the names of movie stars.' (WJG)

Her next prosodic sentence consisted of separate intonation units specifying the frequency 'never', the thinking about the issue, and the time of her childhood.

(4) v. *Iah nowén:ton'*, 898 ms
not ever

(1015 ms)

vi. *né: tewakanonhtonniónhon ónhka'*, 1797 ms
ne'e te-wak-anonhton-nionh-on onhka'
that.is NEG-1SG.PAT-think-DISTR-SG anyone
that did I think of that anyone

(677 ms)

vii. *ne shikeksà:'a.* 1000 ms
ne shi-ke-ksa'=a
ART COIN-1SG.AGT-be.child=DIM
the when I was a child

'I never thought of that as a child.' (WJG)

The intonation units and pauses between them can be seen in the wave form in Figure 2. The pause between the two sentences (3) and (4) (intonation units iv and v) was 1600 ms, longer than any of the pauses within the sentences.

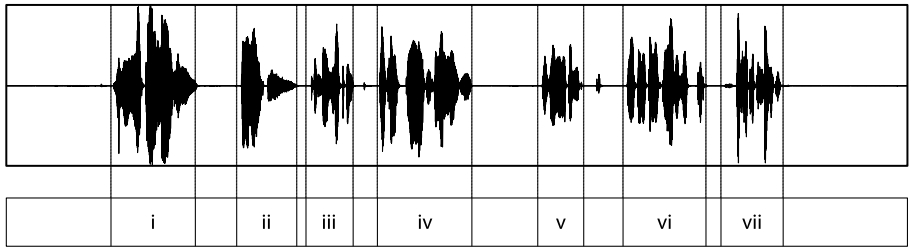



**Figure 2.** Two Sentences

Intonation units can be considerably longer when they incorporate information already active in the consciousness of interlocuters. This can be seen in the sequence of remarks in (5) through (8). Mrs. Beauvais had pointed out that they did not really have many people as role models apart from their parents. Mrs. Gabriel responded that she had never thought of it that way, perhaps because she

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was busy with other things growing up. She presented the two situations, being busy and growing up, in separate intonation units. The pause between the first and second intonation units (319 ms) was longer than that between the second and third (226 ms), as she was deciding how to formulate the second idea. She added that she did not remember thinking about that, with so much going on around her.

(5) *Sótsi' tewakeweienharà:'on tsi ne*, 2027 ms
sotsi' te-wake-weienhara'-on tsi ne
too DV-1SG.PAT-be.busy-ST as ART
too I was busy as the

(319 ms)

*tsi náhe'*, 480 ms
as while

(226 ms)

*wa'katehià:ronke'*. 862 ms
wa'-k-at-ehiahron-k-e'
FAC-1SG.AGT-MID-raise-CONT-PFV
I grew up

'I was too busy while I was growing up.' (WJG)

Mrs. Beauvais responded with (6). Here the idea of growing up, already active in their minds, was expressed in the same intonation unit as being different.

(6) *Ta' nòn:wa' tetiattíhen tsi* 2961 ms
towa' nonhwa' te-ki-at-tih-en tsi
maybe now DV-N-MID-be.diff-ST as
maybe now it is different as

*ní: tsi iontiatehià:ron.*
ni-io-ht tsi ionti-at-ehiahron
PRT-N.PAT-be.sost as 1DU.PAT-MID-raise.ST
so it is as we two grew up

'Maybe it was different how we two grew up.' (MTB)

Mrs. Gabriel followed with (7). Again, the growing up, an idea active in consciousness, was in the same intonation unit as the location.

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(7) *Tó:ske.* 419 ms
'It's true.'

(853 ms)

*Kana:takon* *ní:se'* *satehià:ron.* 1969 ms
ka-nat-akon ne=ise' sa-ate-hiahron
N-town-interior ART=2 2SG.PAT-MID-raise.ST
'You grew up in town.' (WJG)

(397 ms)

*Mmm.* (MTB) 335 ms

*Ó:nen nì:'i,.* 732 ms
now myself
'Now me,'

(56 ms)

*kahehtà:ke.* 1164 ms
ka-heht-a'ke
N-town-place
'on the farm.' (WJG)

She continued, saying that on the island (where the farm was) there was nothing, not a lot of people. The houses were far apart. Mrs. Beauvais responded with (8) with an intonation unit consisting of six words. There was just one new idea here, the fact that it made little difference. The town and growing up, already active in consciousness, were in the same intonation unit.

(8) *Nek* *tsi aronhátien' tsi* *kaná:takon* 2566 ms
ne=ok tsi aronhatien' tsi ka-nat-akon
ART=just as no.matter that N-town-interior

*wa'katehià:ron'.*
wa'-k-at-ehiahron-'
FAC-1SG.AGT-raise-PFV

'But it doesn't matter that I grew up in town.' (MTB)

## 5. What constitutes a new idea?

New ideas do not necessarily correspond to individual words or phrases. Mrs. Beauvais noted that she and her mother used to have a garden. That was followed by (9).

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(9) *Wahón:nise'* *shihonohwáktani'* 2296 ms
wa-h-onnis-e' shi-ho-nonhwakt-ani-'
FAC-N-be.long.time-ST COIN-M.SG.PAT-hurt-BEN-ST

*ne rake'níha.*
ne rake-'ni=ha
ART M.SG>2SG-be.father.to=DIM

'My father had been sick for a long time.' (MTB)

This sentence was spoken as a single intonation unit, though neither 'he was sick' nor 'my father' had been mentioned before. This was not an introduction of the father as a topic of conversation, then a predication about him. It was presenting an explanation for her subsequent comment that they were allowed to plant in a plot alloted to people in need. Ozerov (this volume) makes a similar observation for Trans-Himalayan languages.

While much earlier work on information structure distinguished just two categories of referents, GIVEN and NEW, Chafe distinguished at least three. These distinctions are pertinent to our understanding of what might constitute new ideas.

> According to whether some idea is in the focal, peripheral, or unconscious state, we can speak of it as active, semiactive, or inactive. Thought and language involve continual changes in these activation states. (Chafe 1994: 53)

He noted that three might not be sufficient and that boundaries are not necessarily sharp.

> It is likely that the semiactive–inactive distinction includes more than just that simple dichotomy … There are reasons, even linguistic ones, to suspect that inactive information may be stored at either a shallower or a deeper level, the passage from the former to the latter being influenced by sleep, time, and the relative salience of the information. (Chafe 1994: 55)

> We need to allow for the possibility that the three or more activation states are less categorical than they are depicted here — that they have fuzzy boundaries. However that may be, the effect of these states on language *is* categorical. (Chafe 1994: 56)

There were both new and given ideas in Example (3) above 'I would hear the names of movie stars'. This sentence occurred near the beginning of the discussion about role models, after the question 'As you were growing up who did you think were big shots?' In the answer, the idea of movie stars was brand new, inactive in consciousness. In the sentence which followed in (4), 'I never thought of that as

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a child', the idea 'as a child' was given, introduced as part of the question with 'as you were growing up'.

There are, however, pervasive occurrences of semi-active ideas in most speech, of varying degrees of semi-activation. Ideas may be semi-active for various reasons, among them earlier mention or a relationship to other previously mentioned ideas. Mrs. Beauvais asked Mrs. Gabriel what songs she had liked. Mrs. Gabriel responded with (10) in a single intonation unit. This was not an introduction of her mother; just a characteristic of the songs.

(10) *Oh nahò:ten' ne istèn:'a* 4757 ms
oh na-h-o'ten-' ne isten'=a
what PRT-N-be.a.kind.of-ST ART mother=DIM

*wakathón:te' iakoterén:note' um*
wak-athont-e' iako-ate-renn-ot-e'
1SG.PAT-hear-ST FI.SG.PAT-mid-stand-ST

*karihonwanahthà:ke.*
ka-rihw-onwan-aht-ha'=ke
N-matter-be.large-CAUS-HAB=place

'What I heard my mother play on the radio.' (WJG)

She did not follow (10) with a discussion of her mother. Instead, she continued that the songs were different at that time, more Western Swing, Glenn Miller, and Leonard Cohen, who was a singer then. The conversation continued (in Mohawk) with (11). Each line of transcription represents an intonation unit in the Mohawk.

(11) **MTB:** Ah. For me, it's those guys wearing big hats, their songs.
I very much enjoyed the songs.

**WJG:** Who are the big hats?

**MTB:** Those are the ones they call cowboys.

**WJG:** Oh.
Yes.
Is it ah,
what is it now,
they came from the West.

**MTB:** They rode horses
a long time ago.

**WJG:** Hmm.

**MTB:** You're thinking of Gene Autry.

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**WJG:** It's true. Yes.
Then for me ah,
Roy Rogers.

**WJG:** Then this …

**WJG:** Trigger and,
Dale,
his spouse was called.

**WJG:** He didn't use to sing, right?

**WJG:** A little bit.
Yes.
Gene Autry a lot.
That man who was called Slim Whitman, too.
I remember.

Mrs. Gabriel continued with (12), in five intonation units.

(12) *Tseià:ta* *ne* *khe'kèn:'a*, 1748 ms
ts-e-ia't-at ne khe-'ken'=a
REP-FI.SG-body-be.one ART 1SG>FI-have.as.younger.sibling=DIM
'One of my sisters'

(412 ms)

*nahóten'* *iontátiats*, 1400 ms
na-h-o'ten-' iontat-iat-s
PRT-N-be.a.kind.of-ST FI>FI-call-HAB
'what's her name [the woman in the song]'

(551 ms)

*en:* 369 ms
'ah,'

(529 ms)

*karén:na'* *enhèn:ron'* *ses*, 1573 ms
ka-renn-a' en-ha-ihron-' ses
N-song-NS FUT-M.SG.AGT-say-PFV formerly
'he used to sing,'

(680 ms)

*O Rose Marie*, 1504 ms

(425 ms)

*konwá:iats* *ki:* *karén:na'*. 1209 ms
konwa-iat-s kiken ka-renn-a'
FI>FZ.SG-call-HAB this N-song-NS
'they called her in this song.' (WJG)

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When her mother had another baby girl, her sister gave her her name: 'She said, "I would like her to be called Rose Marie like in the song." That's now today what she's called.'

After a silence of 3517 ms, Mrs. Beauvais commented that she used to like the way one man, the late George Jones, sang. Mrs. Gabriel replied that she herself did not like him so much. She then made the comment in (13).

(13) *Iáh teiontahónhsatatskwe'* *shò:tsi* 3918 ms
iah te-ie-at-ahonhs-atat-s-kwe' so'tsi'
not NEG-FI.AGT-ear-stand-HAB-PAST too.much

*ne nikarennò:ten's* *ne istèn:'a.*
ne ni-ka-renn-o'ten-'s ne isten'=a
ART PRT-N-song-be.a.kind.of-DISTR ART mother=DIM

'My mother didn't listen much to that kind of song.' (WSG)

The mother was not given information at this point, not a continuing topic. She would not have been identifiable from the pronominal prefix 'she' on the verb alone. But her identity was accessible, semi-active from earlier mentions. This example illustrates the fact that the way Mohawk speakers shape the flow of information through time is not limited to separation into intonation units. The order of constituents reflects their relative newsworthiness, essentially descending newsworthiness at that point (Mithun 1987, 1995). The semi-active mother was mentioned at the end of the clause.

Ideas may be semi-active not because of previous mention, but because of a relationship to other referents mentioned or the general discussion. In (7) above, Mrs. Gabriel had noted that Mrs. Beauvais had grown up in town, while she herself had grown up on a farm on the island, where there were not many people. She continued with (14).

(14) *Í:non teká:ron'* *kanonhsó:ton'*, 2804 ms
inon te-ka-ron' ka-nonhs-ot-on'
far DV-N-be.apart-ST N-house-stand-DISTR
'The houses were far apart,'
(4551 ms)
*thati'terón:ton'*. 4841 ms
t-hati-i'teront-on'
CSL-M.PL.AGT-reside-DISTR
'where people lived.' (WSG)

The houses had not been mentioned before, but they were accessible from the comparison of the two areas. They were mentioned after the predicate 'they were far apart', the point of the sentence.

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The same ordering by newsworthiness can be seen in multi-intonation unit sentences. In (4), above, 'I never thought of that, as a child', the last intonation unit 'as a child' reiterated part of the question it was answering: 'Who did you regard as a big shot as you were growing up?'. In (5), 'I was too busy, as I was growing up', the growing up, already part of the discussion, was again last. In (8), 'It doesn't matter that I grew up in town', again 'I grew up', mentioned in most of the preceding turns, was ordered last within intonation units.

## 6. A precursor to morphological structure

Prosodic information packaging has, over time, profoundly shaped Mohawk grammar. Highly frequent sequences have come to be routinized, processed as chunks and pronounced as single prosodic units. The boundaries between words in such sequences have faded, ultimately resulting in morphologically complex verbs. Such verbs, which are plentiful in the language, show the next step in the ONE NEW IDEA AT A TIME principle governing prosody. It appears that words which have occurred adjacent to each other within the same intonation units, the most often over time, have been the most susceptible to fusion. They show the result of routinization of frequently occurring expressions for single ideas. In fact, the language provides a rich record of the ways information has been packaged by speakers in daily speech, sometimes over thousands of years, as can be seen by comparisons with other languages in the family and thus be reconstructed for Proto-Iroquoian, their common ancestor.

After Mrs. Beauvais remarked that it did not matter that she had grown up in the village, she noted that she and her mother used to plant a garden near the church. She introduced the location in one sentence, then the planting in the next. The term for 'church' is morphologically complex, literally 'one lays down one's prayers with it', as is the verb stem for planting, 'cause to become lying'. Both are highly lexicalized, selected and understood as single chunks.

(15) *Né: she's thí:ken tsi nòn:wa' tsi* 3120 ms
ne: she's thiken tsi nonhwa' tsi
that formerly that at place at

*ionterennaientáhkhwa'*
ie-ate-renn-a-ient-ahkw-ha'
FI.AGT-MID-song-LK-lay-INS-HAB

'It used to be where the church'

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*wi'* *hall tió:ien'*. 1243 ms
wahe' hall t-io-ien-'
TAG CSL-N.PAT-lie-SG
'has a hall you know.' (MTB)
(369 ms)
*Hén:*. 329 ms
'Yes.' (WJG)
(397 ms)
*Thó* *nón:we thi:*, 1212 ms
tho nonwe thiken
there place that
'That is where'
(1038 ms)
*ia — iakeniienthóhthahkwe'*. 1664 ms
iakeni-ient-hw-ht-ha'-kwe'
1DU.AGT-lay-INCH-CAUS-HAB-PAST
'we used to plant.' (MTB) 3996 ms

At another point in the conversation, Mrs. Beauvais was describing the childhood of her mother and siblings. The children were already established referents, so the new idea in (16) was their age.

(16) *Árok* *tsá:ta sha'teionohseriià:kon* *ne* 3283 ms
are'ok tsata sha'-te-ion-ohseri-ia'k-on ne
not.yet seven COIN-DV-FI.DP.PAT-winter-cross-ST the
not.yet seven when they have winter crossed the

*tkenikowá:nen.*
t-keni-kowan-en
CSL-F.DU.AGT-be.big-ST
they two are oldest

'They weren't yet seven, they two are oldest' (MTB)

The sentence that followed, again a single intonation unit, consisted of two syntactic clauses, both new: 'they would send them there' and 'they would go get wood'. But together they described a single event, appropriate for one new idea, sending after wood. The second verb itself included multiple ideas: mention of wood, getting, and going. But these were packaged together morphologically within a single word as a lexicalized concept, going after wood.

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(17) *Sok ki'* *ienkonwanató:ri'*
sok ki' i-en-konwan-atori-'
so in.fact TRL-FUT-M.DP>M.DP-send-PFV

*a:keniientakóha'*. 2640 ms
aa-keni-ient-a-ko-ha-'
IRR-F.DU.AGT-wood-LK-get-PURP-PFV

'So then in fact they would send the two of them to pick up wood.' (MTB)

The prosodic sentence which followed also contained a complex verb stem, 'have shoes'. It is no surprise that 'have' and 'shoes' would be packaged together tightly: the light verb 'have' contributes little extra information of its own, simply situating a referent on the scene or, in this case, noting its absence.

(18) *Tánon' shewatié:ren* *iáh* 2097 ms
tanon' she-w-at-ier-en iah
and COIN-N.AGT-MID-do-ST not

*teionahtáhkwaien'*.
te-ion-aht-ahkw-a-ien-'
NEG-F.DP.PAT-be.shod-INS -LK-have-ST

'And sometimes they didn't have shoes.' (MTB)

The existential verb 'have' is what Chafe (1994: 110) termed a "low-content" verb, a word which fails to carry a full load of activation cost.

## 7. Shaping information

The same kind of packaging seen with organization into intonation units, whereby each intonation unit conveys a single new idea, characterizes alternations between sequences of words and single, morphologically complex words in ongoing speech.

In English and many other languages, unstressed pronouns are used for given participants, those active in the minds of speakers at that point in time. For first and second persons, the speaker and the listeners, simply being part of the conversation is enough to give them active status. For third persons, the referent has usually been identified at some point by a lexical nominal. Since unstressed pronouns do not generally convey a significant brand-new idea on their own, they are typically pronounced as part of a larger intonation unit. In Mohawk, the prosody has become even tighter: given participants are identified by pronominal prefixes within verbs. Such prefixes can be seen in all of the examples here. But if reference

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to a given participant is the main point of a new idea, it is expressed in a separate, independent pronoun. After Mrs. Beauvais made the remark in (6), 'Maybe we two grew up differently', Mrs. Gabriel agreed. She then contrasted the two of them with independent pronouns, as seen earlier in Example (7), repeated here in (19). The new point was the contrast.

(19) *Kaná:takon* ***ní:se'*** *satehià:ron.* 1976 ms
ka-nat-akon **ne=ise'** sa-at-ehiaron
N-town-interior **ART=2** 2SG.PAT-MID-rais
'**You** grew up in town.'

*Ó:nen* ***nì:'i***,. 732 ms
now **myself**
'Now **me**,'

(56 ms)

*kahehtà:ke.* 1164 ms
ka-heht-a'ke
N-town-place
'on the farm.' (WJG)

Prosodic alternatives are also available for specifying location. Again the difference depends on information structure. One alternative is with full lexical nominals like 'town' and 'farm' in (19). Another is with the particle *tho* 'there' as in (15) above. There Mrs. Beauvais had established a location in one sentence, 'It used to be where the church had a hall', then picked it up with the particle *thó* 'there' in the next. A third is with a translocative or cislocative verb prefix. During the discussion of gardening, Mrs. Gabriel established a location, the Community Garden, in one sentence. Once it was active in the consciousness of the interlocutors, she simply picked it up with a translocative prefix *i-* on the verb 'you can plant there' in (20).

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(20) *Ó:nen nòn:wa'*, 760 ms
now today
'Now'

(117 ms)

*wenhniseraténion'*, 960 ms
w-enhniser-a-te-nion
N-day-LK-exist-DISTR
'these days' (40 ms)

*rotiién:ton'* *tsik* *nòn:wa'* *ne..* 4065 ms
roti-ient-on' tsi=k nonhwa' ne
M.PL.PAT-have-DISTR as=only now ART

***Community Garden*** *ratina'tónhkhwa'*.
rati-na'ton-hkkw-ha'
M.PL.AGT-call-INS-HAB

'they call any place **Community Gardens**.' (WSG)

*En:* 747 ms
'Yes' (MTB)

(381 ms)

*Enwá:ton'* *thó* ***i****enhsiéntho'* 1505 ms
en-w-aton-' tho **i**-en-hs-ientho-'
FUT-N-be.possible-PFV there **TRL**-FUT-2SG.AGT-plant-PFV
'You can plant **there**'

*arenhákien' tsi iáh í:se'*, 1295 ms
arenhatien' tsi iah ise'
though that not 2
'even though it's not your,'

(394 ms)

*tesahóntien'*. 828 ms
te-sa-hont-ien-'
NEG-2SG.PAT-land-have-ST
'not your land.' (WSG)

Alternation in the prosodic and conceptual integration and separation of elements according to information structure can be seen pervasively with noun incorporation (Mithun 1984). When a significant referent is first introduced, it is typically named in a separate word. Once it has been activated, it may be represented simply by an incorporated noun, integrated into the predicate. Such alternation can be seen in the conversation here with the noun root *-renn-* 'song'. When Mrs. Beauvais asked about favorite songs, she first introduced the topic of songs with

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a separate noun. She then incorporated the noun root *-renn-* 'song' into the verb 'like', as shown in (21).

(21) *Kati' ne' ní:io* 1758 ms
kati' ne'e ni-io-ht
so that.is PRT-N.PAT-be.so.ST

*ka**renn**a'shòn:'a*,
ka-**renn**-a'=shon'a
N-**song**-NOUN.SUFFIX=DISTR

'So what about **songs**,'

*oh ne' nahò:ten' se**renn**anòn:we's?* 1863 ms
oh ne'e naho'ten' se-**renn**-a-nonhwe'-s
what that.is what 2SG.AGT-**song**-LK-like-HAB
'which ones do you (**song**) like?' (MTB)

Mrs. Gabriel responded with the sentence seen earlier in (10) and repeated here in (22), again incorporating the noun root 'song' into the verb.

(22) *Oh nahò:ten' ne istèn:'a wakathón:te'* 4818 ms
oh what ART my mother I hear
'Oh, what I heard my mother'

*iakote**rén:n**ote'-- karihonwanahthà:ke.*
iako-ate-**renn**-ot-e' ka-rihw-onwan-aht-ha'=ke
FI.SG.PAT-MID-**song**-stand-ST N.AGT-matter-be.big-CAUS-HAB=place
she **song** stands for herself it makes the matter big place

'(**song**) playing on the radio.' (WJG)

Similar alternations in prosodic integration can be seen in the discussion about gardens. Mrs. Gabriel introduced the topic with the sentence in (23).

(23) *Kiótkon ki: nì:'i*, 1295 ms
tiotkon kiken ne=i'i
always this ART=1
'Always we,'

*tsi wakatehià:ron'*, 1120 ms
tsi wak-at-ehiahron-'
as 1SG.PAT-MID-raise-ST
'as I was growing up'

(643 ms)

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*kiótkon iakwaiénthos.* 1308 ms
kiotkon iakwa-ientho-s
always 1EXC.PL.AGT-plant-HAB
'we always planted.' (WJG)

She then mentioned that her father's gardens were big in a single intonation unit. There had not been a previous mention of gardens in an independent noun, but the idea of gardens was accessible at this point from its association with planting, semi-active in consciousness, so it was incorporated, as shown in (24).

(24) *Rake'níha* *ne:s* 3030 ms
rake-'ni=ha ne'e shes
M.SG>1.SG-be.father.to=DIM that.is formerly

*ne* *ro**heht**owá:nen's.*
ne'e ro-**heht**-owan-en-'s
that.is M.SG.PAT-**garden**-be.big-ST-DISTR

'My father used to have big **gardens**.' (WJG)

She continued, saying that her father would plant a lot of potatoes. And raspberries, always big strawberries. And lots of vegetables. And cucumbers, introduced in a separate intonation unit. His planting, already accessible from earlier mention and the context of the general discussion of gardening and not the main point of the sentence, was ordered after the cucumbers.

(25) *Sewakié:ren* *ne* *thi:* ***tikokón:***, 1659 ms
se-w-at-ier-en ne thiken **tikokon:**
REP-N-MID-do-ST ART that **cucumber**
'And sometimes those **cucumbers**'

(287 ms)

*wahaiéntho'*. 834 ms
wa-ha-ienthho-'
FAC-M.SG.AGT-plant-PFV
'he would plant.' (WJG)

There would be a lot of cucumbers. People would salt them to make pickles. The verb stem 'to salt' is lexicalized, 'salt put on', as is the noun 'dill pickles, salted squash'. The independent noun for 'cucumber', *tikokón:*, is a French loan (*des concombres*) and is not normally incorporated, either for forming new lexical items or managing the flow of information. In its place the more generic native noun stem *-non'ser-* used for all squash-like vegetables is incorporated. Both uses can be seen in (24), in the lexicalized term for 'dill pickles', and for information structuring purposes in 'he would squash give to people'.

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(26) *Nonkwehshòn:'a* 1016 ms
ne=onweh=shon'a
ART=person=DISTR
'People,'
(760 ms)
*ten—*, 348 ms
(551 ms)
*teniehio'tsistáhrho'*. 1656 ms
t-en-hio'tsist-arho-'
DV-FUT-FI.AGT-salt-be.on-CAUS-PFV
'would salt them.'
(1034 ms)
*Teio**non'ser**ahiò:tsis eniakón:ni'*. 2342 ms
te-io-**non'ser**-a-hio'tsis en-iak-onni-'
DV-N-**squash**-LK-salt FUT-FI.AGT-make-PFV
'They would make dill pickles.' (WJG)
(64 ms)
*O:*. 471 ms
'Oh.' (MTB)
(154 ms)
*Sok enhshako**non'onser**anontónnion'*. 1964 ms
sok en-hshako-**non'onser**-a-nont-onniion-'
then FUT-M.SG>3PL-**squash**-LK-feed-DISTR-PFV
'Then he would (**squash**) give them away to people.' (WJG)

## 8. Conclusion

As described by Chafe and others since, speakers tend to speak in spurts or intonation units, uttering no more than one new idea at a time. Not surprisingly, principles similar to those governing the prosody of intonation units govern Mohawk speech. But in this language, this propensity has had further effects on grammatical structure. Over a long period of time, boundaries have weakened between certain recurring sequences of words pronounced particularly frequently as single prosodic units and processed as single ideas. The result is a rich verb morphology, complete with pronominal prefixes apparently descended from unstressed pronouns, locative and directional prefixes, noun incorporation, and more. These can form lexical items for recurring concepts. But the prosodically integrated morphological structures also still alternate with sequences of separate words in ways similar to the alternation between prosodically integrated intonation units and separate prosodic phrases. They reflect the flow of information, whereby new

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ideas are introduced in separate words, while given and accessible information may be integrated into words.

## Abbreviations

| | |
|---|---|
| AGT | grammatical agent |
| ART | article |
| BEN | benefactive applicative |
| CAUS | causative |
| CSL | cislocative |
| COIN | coincident |
| CONT | continuative |
| DIM | diminutive |
| DISTR | distributive |
| DP | duo-plural |
| DU | dual |
| DV | duplicative |
| F | feminine |
| FAC | factual |
| FI | feminine indefinite |
| HAB | habitual aspect |
| INCH | inchoative |
| INS | instrumental applicative |
| IRR | irrealis |
| LK | linker |
| M | masculine |
| MID | middle |
| N | neuter |
| NS | noun suffix |
| PAT | grammatical patient |
| PFV | perfective aspect |
| PRT | partitive |
| REP | repetitive |
| SG | singular |
| ST | stative aspect |
| TRL | translocative |
| 1 | first person |
| 2 | second person |
| 3 | third person |

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