In a number of languages, interrogative and relative pronouns show the same forms: *Who came?; I saw the man [who came].* The similarity raises intriguing questions about the relationship between the two: perhaps some shared fundamental semantic feature, or some recurring diachronic pathway by which one develops into the other. Haspelmath (2001), Heine and Kuteva (2006), and others point out, however, that the pattern is not distributed evenly around the globe: it is highly concentrated in Europe.

The pattern is not entirely nonexistent elsewhere. It occurs in some indigenous languages of the Americas. It has been observed, for example, in South America in Tariana, an Arawakan language of Brazil (Aikhenvald 2002). It has been noted in Mesoamerica in Nahuatl and Pipil, Uto-Aztecan languages (Karttunen 1976, Hill and Hill 1986, Campbell 1987). It also occurs in North America in Iroquoian languages. The examples below are from Tuscarora, a Northern Iroquoian language spoken in the 16th century in what is now North Carolina.

(1) Tuscarora *káhne‘* ‘who’ question: Elton Greene, speaker

Káhne‘ weθatkáhriθ?
who one told you
‘Who told you?’

(2) Tuscarora *káhne‘* ‘who’ relative: Elton Greene, speaker

Thwé:‘n wa‘kayɛ‘ ha‘nit‘úthahs ha‘ káhne‘ kayɛ‘nɛ‘nɛnhyar.
all he put them to sleep the who they are guarding him
‘He put to sleep all those who were guarding him.’

Matches also appear in other Iroquoian languages. The examples in (3) and (4) are from Mohawk, spoken in the 16th century in what is now eastern New York State.

(3) Mohawk *nahö:ten‘* ‘what’ question: Sha‘tekenhátie Marian Phillips, speaker

Nahö:ten‘ sá:ton?
what you are saying
‘What are you saying?’

(4) Mohawk *nahö:ten‘* ‘what’ relative: Harry Miller, speaker

liquid-serve me then this water what you are talking about
‘Then give me this water that you’re talking about.’

The Iroquoian languages differ strikingly in their morphological, syntactic, and discourse structures from those of the European languages famous for interrogative/relative pronoun matches, but they actually have much to contribute to our understanding of the pattern. Here we look more closely at what we can learn from them, with a focus on Tuscarora.
1. The Iroquoian languages

The genetic relationships among the modern Iroquoian languages for which we have documentation of connected speech are sketched in Figure 1.

![Figure 1: Genetic Relationships among the Modern Iroquoian Languages](image)

We do not know when the various branches split, but estimates have placed the separation of Southern and Northern Iroquoian at three and a half to four millennia, and that of Tuscarora from the other Northern Iroquoian languages at about two to two and a half (Lounsbury 1961).

The only known representative of the Southern branch is Cherokee. In the 16th century the Cherokee inhabited a wide area of the Southeast, covering parts of what are now Tennessee, North Carolina, Virginia, South Carolina, Georgia, and Alabama. In 1838 most Cherokee were forced to march to Oklahoma, where their descendants live today, though some managed to remain in western North Carolina. The Cherokee language does not show the interrogative/relative match. Relative constructions are formed instead with a subordinating prefix *ji-* and/or a special tonal pattern on the verb marking subordination. There are no relative pronouns.


\[
\begin{align*}
Káako & \quad \text{uítlṿka} ? \\
\text{who} & \quad 3 \text{ is sick} \\
\text{Who is sick?}
\end{align*}
\]

(6) Cherokee *ji-* relative: Montgomery-Anderson 2008:132

\[
\begin{align*}
\text{Haatvlv na? achūūja ji-tvvsúūhwisi} & \quad \text{aàsoóyṿ}. \\
\text{REL-he.will.paint.SUBORDINATE fence} & \quad \text{REL-That boy REL-he.will.paint.SUBORDINATE fence}
\end{align*}
\]

‘Where’s that boy who will paint the fence?’

(7) Cherokee *kato* ‘what’ question: Montgomery-Anderson 2008:481

\[
\begin{align*}
Kato & \quad \text{uùẉáakhthi} ? \\
\text{what} & \quad \text{it means} \\
\text{What does it mean?}
\end{align*}
\]

(8) Cherokee *ji-* relative: Montgomery-Anderson 2008:132

\[
\begin{align*}
\text{Ahnawo ji-skínéehny” jiheeska.} \\
\text{REL-you.gave.me.flexible.SUBORDINATE I.am.ironing}
\end{align*}
\]

‘I am ironing the shirt that you gave me.’
Without an interrogative/relative match in Southern Iroquoian there is no evidence that the pattern was present in Proto-Iroquoian. The fact that there are matches between Tuscarora and other Northern languages might at first suggest that the pattern was established by the time of Proto-Northern-Iroquoian. But in most of the languages, only some interrogative and relative pronoun categories match (of the possible human ‘who’, non-human ‘what’, place ‘where’, time ‘when’, etc.), and the matching categories are not the same from one language to the next. Furthermore, the individual pronouns are not cognate across all of the languages. It is of course possible that all indefinite and relative pronoun categories showed perfect matches in Proto-Northern-Iroquoian, but that various pronouns have been replaced in individual languages. It is more likely that the matches developed more recently in the individual languages.

2. The transfer of grammar

It is becoming ever clearer that speakers can transfer grammatical patterns from one language to another without actual morphological or lexical substance. Bilinguals can perceive a pattern in one of their languages and replicate it in the other, using only native material. Such a process apparently occurred in Tariana (Aikhenvald 2002:183, Heine and Kuteva 2005:3, 2006:213). Relative clauses were originally formed in Tariana by means of a prefix ka-

(9) Tariana traditional relative clause: Aikhenvald 2002:183
\[
\text{ka-yeka-kanihi } \text{kayu-na } \text{na-sape}.
\]
REL-know-DEM.ANIM thus-REM.P.Vis 3PL-speak
‘Those who knew used to talk like this.’

Younger Tariana speakers, bilingual in Brazilian Portuguese, observed that Portuguese relative clauses contain pronouns that match those in questions. The relative pronoun quem ‘who’, for example, has the same shape as the interrogative pronoun ‘who?’.

(10) Portuguese: Aikhenvald 2002:183
\[
\text{Quem sabia, falava assim.}
\]
who knew spoke thus
‘Those who knew spoke like this.’

Younger speakers are now producing the Tariana pattern in (11), simply adding Tariana interrogative pronouns like kwana ‘who?’ to the existing Tariana relative clause structure.

(11) Tariana innovated relative clause: Aikhenvald 2002:183
\[
\text{kwana } \text{ka-yeka-kanihi } \text{kayu-na } \text{na-sape}.
\]
who REL-know-DEM.ANIM thus-REM.P.Vis 3PL-speak
‘Those who knew used to talk like this.’

But the transfer of grammatical patterns can be more complex. Through careful examination of the literature on the development of relative pronouns, Heine and Kuteva (2006) hypothesize that an interrogative/relative pronoun match can develop gradually through a sequence of steps, paraphrased in (12).
Heine and Kuteva Stages of Grammaticalization: 2006:209

Stage 1  The marker begins in lexical gap questions.  
*Who came?*

Stage 2  The marker is extended to introducing indefinite subordinate clauses.  
*I don’t know who came.*

Stage 3  The marker is extended further to definite subordinate clauses.  
*You also know who came.*  
These structures may be interpreted as headless relative clauses.  
*You know the one who came.*

Stage 4  The marker is extended still further to headed relative clauses.  
*Do you know the woman who came?*

Each of these developments could happen spontaneously within a single language. Contact, however, could stimulate progress along this path. Speakers might extend the use of a marker in one of their languages to contexts of the next stage, on the model of its counterpart in their other language. As shown by Haspelmath (2001), Heine and Kuteva (2006), and others, interrogative/relative pronoun matches in Europe are in fact not restricted to Indo-European languages. Matches also appear in genetically unrelated languages in the area, among them Basque, Hungarian, Balkan Turkish, and Georgian. Heine and Kuteva discuss a number of individual shifts in specific European languages that were apparently triggered by contact.

Few if any languages indigenous to the Americas are represented by philological records comparable to those for many Romance, Slavic, and Germanic languages. There is, however, some very pertinent Tuscarora material. At the beginning of the 18th century, most Tuscarora people began leaving North Carolina for the north, eventually settling in western New York State near Niagara Falls, and in southern Ontario on the Grand River Reserve. In 1858 a man named Jonathan Napoleon Brinton Hewitt was born on the Tuscarora reservation in New York to a Tuscarora mother. He learned English as his first language, but acquired Tuscarora from school friends at around age 11. In 1880 he was hired by the Bureau of Ethnology to assist in the documentation of Tuscarora and other Iroquoian languages. Between 1888 and 1897, with the assistance of Lucinda Thompson, a first-language Tuscarora speaker, he collected 36 texts in Tuscarora. The texts have been edited and published in a volume by Blair Rudes and Dorothy Crouse (1987). It is a significant collection, running 621 pages exclusive of appendices. There is also a second body of texts, collected from the mid-20th century to the present, primarily from speakers born near the end of the 19th century. It includes material from speaker David Hewitt collected by A.F.C. Wallace and W. Reyburn in 1948 and 1950; from Nellie Gansworth by Wallace in 1948 and 1949 and by F. G. Lounsbury in 1952 and 1954; from Edith Jonathan in 1950 by Lounsbury; and from Elton Greene through the early 1970’s by M. Mithun. More recent material has been provided by speaker Howard Hill to F. Patterson, B. Bissell, and M. Mithun. All of these speakers learned Tuscarora as a first language, then later became fluent in English. Not all of the speakers recorded by Hewitt are identified by name, but for those that are, it has been possible to ascertain their dates of birth through cemetery records and with the help of Wendy Rae Bissell, Tuscarora genealogist. The known speakers represented in the two sets of texts, along with their dates of birth, are listed in (13).
(13) Identified Tuscarora speakers

19\textsuperscript{th} century texts
- Joseph Williams  born 1817
- Joseph Henry  born 1840
- Lucinda Thompson  born 1850

20\textsuperscript{th} century texts
- Nellie Gansworth  born 1884
- Edith Jonathan  born 1886
- Elton Greene  born 1889
- David Hewitt  born 1894
- Howard Hill  born 1923

The relatively short period of documentation available for Tuscarora, little more than a century, provides compelling evidence for exactly the scenario proposed by Heine and Kuteva. Significantly, this period coincides with the spread of bilingualism in English. After spending the summers of 1948 and 1949 at the Tuscarora reservation in New York State, Anthony F.C. Wallace described the transition from Tuscarora to English.

The next 80 years—roughly from 1865 to 1948—saw the consolidation of the economic adjustment so successfully made. Further social integration with the surrounding Whites has been necessary. This has accelerated the decline of the native language and its progressive replacement by English; … the Tuscarora language is now spoken by preference only by the older people, and scarcely at all by the youngsters. (Wallace 1952:16).

The language shift described by Wallace began after the first group of speakers had reached adulthood, but before those in the second were born.

Heine and Kuteva point out that all of the indefinite pronominal markers in a language need not evolve in lockstep; ‘each can exhibit a different grammaticalization behavior’ (2006:210). Indeed, Tuscarora shows the independent development of individual markers. The next sections examine the evolution of each of the Tuscarora interrogative pronouns: inanimate té’ or tavé:te ‘what?’, human kähne’ ‘who?’, space hē:we ‘where?’, and time kahně’kye ‘when?’. (Manner, quantity, and attributive questions are based on the Inanimate té’ ‘what?’.)

3. Tuscarora té’ ‘what’

The Tuscarora interrogative pronoun ‘what?’ was used in questions in the 19\textsuperscript{th} century essentially as it is today. (Material from earlier sources is presented here in the modern orthography to facilitate comparison. The abbreviation RC stands for the 19\textsuperscript{th} century Hewitt and Thompson material published in Rudes and Crouse 1987.)

(14) 19\textsuperscript{th} century té’ ‘what?’ question: 1888 ms 432, RC 1987:590

\begin{verbatim}
  Té’ sè:ri?
  what you want
‘What do you want?’
\end{verbatim}
(15) 20\textsuperscript{th} century té’ ‘what?’ question: Elton Greene, speaker, p.c. 1971

\begin{verbatim}
Té’  rá:’né?
\end{verbatim}

what he is saying

‘What is he saying?’

The particle té’ ‘what?’ sometimes appears in the 19\textsuperscript{th} century texts in combination with the word awé:te ‘thing(s)’, based on the verb root -ęte ‘be a certain one’. Sometimes Hewitt wrote the combination as two words te’ awé:te, sometimes as té’awé:te and sometimes as ta’awé:te.

(16) 19\textsuperscript{th} century té’ awé:te ‘what thing?’ question: 1888 ms 422, RC 1987:429

\begin{verbatim}
Te’  awé:te  kâha’w?
\end{verbatim}

what thing it takes

‘What did she take with her?’

(17) 19\textsuperscript{th} century ‘what?’ question: 1888 ms 432, RC 1987:12-13

\begin{verbatim}
Te’awé:te  ọdáchú:ri?
\end{verbatim}

what you have eaten

‘What have you eaten?’

In the modern language, the form tawé:te is pervasive, a longer alternate of té’ for ‘what?’.

(18) 20\textsuperscript{th} century tawé:te ‘what?’ question: Elton Greene, speaker p.c. 1971

\begin{verbatim}
Tawé:te  weθatákáhri’θ?
\end{verbatim}

what he told you all

‘What did he tell you?’

The use of te’/tawé:te in questions corresponds to Heine and Kuteva’s Stage 1, the point of departure.

The 19\textsuperscript{th} century texts also show the use of both té’ and tawé:te ‘what’ introducing complements of verbs of speech, cognition, and perception, where the speakers, thinkers, and perceivers do not know the identity of the referents of the complement clauses. These constructions are termed indefinite complements by Heine and Kuteva.

(19) 19\textsuperscript{th} century indefinite complement of speech: Thompson 1888 ms 432: RC 1987:579

\begin{verbatim}
Ha’  kaye’na’né:’nyu:t  kwéhs  akayewe’né:rik  te’  her ḣé’ru’  uhtá’ké’.
\end{verbatim}

the they invited them not could the know what also until behind

‘The invitees were unaware of what had transpired previously.’

(20) 19\textsuperscript{th} century indefinite comp of cognition: Joseph Williams, speaker 1897 ms 411: RC 1987:357

\begin{verbatim}
\end{verbatim}

it is not known what it causes it it died Q

‘They would be unable to determine what had brought about the person’s death.’

(21) 19\textsuperscript{th} century indefinite complement of perception: 1888 ms 432: RC 1987:189

\begin{verbatim}
É:kké’  te’  awé:te  ḡkáhews.
\end{verbatim}

I will see what thing it brings back

‘I’ll see what she brought back.’
These uses have persisted through the 20th century into the modern language.

(22) 20th century indefinite complement of speech: Nellie Gansworth 1948, to Wallace

\[ \text{Wa'kayé'nahrù:ye'} \quad \text{té'} \quad \text{tihra'nyérhakh}. \]

they asked what he was doing

‘They asked him what he had been doing.’

(23) 20th century indefinite complement of cognition: Elton Greene, speaker p.c. 1972

\[ \text{Šyę'nè:ri héh tawé:te wa'neha'tha'}. \]

you know what it causes it

‘Do you know what causes it?’

(24) 20th century indefinite complement of perception: Elton Greene, speaker p.c. 1972

\[ \text{Wa'nyę'tke'ðhre'} \quad \text{tawé:te} \quad \text{heni:kę:}. \]

they went to investigate what that

‘They went to see what it was.’

Prosodically these constructions constitute a single sentence, with a coherent, descending pitch contour, visible in Figure 2. (The first pitch peak is the stressed syllable \( ðh \) of the first verb ‘they went to see’.)

![Figure 2: ‘They went to see what it was.’](image)

These examples correspond to Heine and Kuteva’s Stage 2 of development. Various mechanisms can be imagined for the shifts from Stage 1 to 2, most involving sequences of independent sentences as a starting point: ‘They asked him. “What was wrong?”’; ‘Do you know? What causes it?’ With frequent use, such sequences could become integrated into single constructions.

The marker \( \text{té’} \) does not appear in definite complements in the 19th century texts, where the speakers, thinkers, or perceivers can identify the referent of the complement. This use is frequent in the 20th century, however.

(25) 20th century definite complement of speech: Nellie Gansworth 1948, speaker, to Wallace

\[ \text{Wahratkährye'} \quad \text{te'} \quad \text{thwahrá:'nye're}. \]

he told what he did

‘He told them what he had done.’
(26) 20\textsuperscript{th} century definite complement of cognition: Elton Greene speaker p.c. 1972

\textit{Kyę'né:ri: tə' rayá:θę.}

I know what he is named

‘I know what his name is.’

(27) 20\textsuperscript{th} century complement of cognition: Elton Greene, speaker p.c. 1972:421

\textit{Kyę'né:ri: tə' ti:wa'θ ruhwístayę'.}

I know what so it amounts he money has

‘I know how much money he has.’

These constructions are examples of Heine and Kuteva’s Stage 3 of development.

Some sentences with definite complements are potentially ambiguous in a subtle way. The sentence ‘I saw what she brought back’ could mean either ‘I discovered the answer to the question “What did she bring back?”’, or ‘I saw the object she brought back’. The ‘what’ clause could be interpreted either as a kind of embedded question or as a headless relative designating a specific referent. Such ambiguity provides a bridge for the extension of the construction to contexts in which it is interpretable only as a headless relative. There is no evidence of the use of tə’ ‘what’ in headless relatives in the 19\textsuperscript{th} century, but we do see it in the modern language.

(28) 20\textsuperscript{th} century headless relative ‘what’: Elton Greene, speaker p.c. 1972:256

\textit{Wa'nętíhęhs tawé:te ęwenhęhkę.}

it stores what it will live on

‘It is storing what it will live on.’

As referring expressions, the headless relatives can be preceded by the article ha’.

(29) 20\textsuperscript{th} century headless relative with article: Elton Greene, speaker p.c. 1972:326

\textit{Ékyekwarihé:tyę’ kyení:kę: kayetá:kre’,}

I will teach you this they dwell

‘I will teach you, this tribe,

\textit{ha’ tawé:te neywətəhwęčúhę kyení:kę: ęθwa’yę’né:ri: k.}

the what it is necessary this you all will know

that which it is necessary for you to know.’

(30) 20\textsuperscript{th} century headless relative with article: Elton Greene, speaker p.c. 1972:186

\textit{Nyékwa’ tıkęhrųuyhθe ha’ tawé:te, kakurihwıhs’ę.}

it is pleasing to us the what they have promised

‘We are pleased with what they promised.’

(31) 20\textsuperscript{th} century headless relative with article: Elton Greene, speaker p.c. 1971:131

\textit{Čhę’ kwą:nę wakyeørhá:r’ę ha’ tawé:te tık’a nyę:rhę’.}

just much it keeps me busy the what I do here and there

‘The things I do keep me very busy.’

Further extension of the pronoun tę’ ‘what’ into headed relative clauses, Heine and Kuteva’s Stage 4, has not taken place in Tuscarora. The somewhat rare example below might at first glance be taken as a headed relative clause.
(32) Tuscarora headed relative?: Elton Greene, speaker p.c. 1972:186

\[ Ha’ ekayetehninëhek hé’thu ha’.. q; \]

They will be selling there the uh

‘They’ll be selling there the

tawé:te kayakyeti:yahs u’tikste tawé:te hé’thu.
what they make beadwork what there

beadwork they make.’

The prosody of this sentence, visible in Figure 3, indicates that the second line is actually composed of a series of appositives: ‘what they make, beadwork, whatever’. There is a pause after ‘they make’ and a pitch reset on the following noun ‘beadwork’.

![Waveform](image)

Figure 3: ‘They’ll be selling the beadwork they make.’

4. Tuscarora káhne’ ‘who’

The interrogative use of the pronoun káhne’ ‘who?’ has remained unchanged over the past century.

(33) 19th century ‘who?’ question: Thompson 1888 ms 422, RC 1987:233

\[ Káhne’ eawsëθhara’ kyé:në: i:kë: raká:θ’a? \]

Who one will care for this it is boy

‘Who will care for this boy?’

(34) 20th century ‘who?’ question: Elton Greene, speaker, p.c. 1971

\[ Kahne’ weθatkhári’θ? \]

Who one told you

‘Who told you?’

(35) 20th century ‘who?’ question: Elton Greene, speaker, p.c., 1971

\[ Kahne’ wa’na’natkhári’θ? \]

Who one told one

‘Who did he tell?’

The same pronoun appears in indefinite complements in the 19th century texts, where the speaker, knower, or perceiver does not have a specific referent in mind, but it is rare.
(36) 19th century indefinite ‘who’ complement: Hewitt, RC 1987:50
I: 'ękę’ tikę’ha’ kāhne’ę thiy.k
I will decide for you the who you two will marry
‘I will decide for you who you shall marry.’

In the modern language, the pronoun appears robustly in indefinite complements.

The’ a:kę’ nę:ri:k kahne’ wa’na’ri:yu’
not I know who one killed one
‘I don’t know who killed him.’

(38) 20th century ‘who’ indefinite complement: Elton Greene, speaker p.c. 1972:182
Iskah wa’kayę:kę’ kāhne’ hé’hu’ ihre’θ.
not they saw one who there he is walking around
‘They didn’t see who was walking there in the crowd.’

they will choose who the she will throw her body down there falls
‘They will choose who will go over the falls.’

These constructions correspond to Heine and Kuteva’s Stage 2 of development.


(40) 20th century ‘who’ definite complement: Elton Greene, speaker p.c. 1972: 412
Kę’ne:ri: kąhne’ wahanęhsá:tya’t.
I know who he house bought
‘I know who bought the house.’

This construction corresponds to Heine and Kuteva’s Stage 3.

The 19th century material also shows no headless relatives containing kąhne’. They do, however, appear in the modern language.

(41) 20th century headless ‘who’ relative: Elton Greene, speaker p.c. 1972:183
Wa’kayę: na’nit’uhlthahs ha’ kąhne’ kayę:ne:nyar.
he caused them to sleep the who they are guarding him
‘He put to sleep those who were guarding him.’

There is no evidence of extension of kąhne’ ‘who’ to Heine and Kuteva’s Stage 4, in headed relative clause constructions.
5. Tuscarora \textit{hë:we} ‘where’

The use of the interrogative pronoun \textit{hë:weh} ‘where?’ in questions shows little change over the past century. (The initial \textit{h} had disappeared from the speech of Elton Greene, but it remains in that of Howard Hill.)

(42) 19\textsuperscript{th} century \textit{hë:we} ‘where?’ question: 1888 ms 422, RC 1987:437
\[Hë:we \ ha’\ e:kwe\ tyahwâ’ê:t?\]
\[
\begin{array}{c}
\text{where} \\
\text{the} \\
\text{person} \\
\text{there} \\
\text{one} \\
\text{went}
\end{array}
\]
‘Where did the people go?’

(43) 20\textsuperscript{th} century \textit{è:we} ‘where?’ question: Elton Greene, speaker, p.c. 1971
\[È:we\ nyê:kye:t?\]
\[
\begin{array}{c}
\text{where} \\
\text{there} \\
\text{I} \\
\text{shall} \\
\text{go}
\end{array}
\]
‘Where shall I go?’

The same marker appears in indefinite complement clauses throughout the record.

(44) 19\textsuperscript{th} century indefinite ‘where’ complement: Thompson 1889 ms 411, RC 1987:494
\[Ehlahrù:ye’ \ hë:we\ tikê’rê’\ ukê’\ ti’:wa’\theta\ \thuh\]
\[
\begin{array}{c}
\text{you} \\
\text{will} \\
\text{ask} \\
\text{where} \\
\text{it} \\
\text{sits} \\
\text{or} \\
\text{it} \\
\text{is} \\
\text{so} \\
\text{much} \\
\text{there}
\end{array}
\]
‘Ask it to locate for you the place \textit{where} can be found the greatest numbers of

\textit{ste’awé:te\ ha’\ \thetaa’\neθwê:ki}.
\[
\begin{array}{c}
\text{something} \\
\text{the} \\
\text{you} \\
\text{want} \\
\text{whatever} \\
\text{kind} \\
\text{of} \\
\text{game} \\
\text{you} \\
\text{want}
\end{array}
\]’

(45) 20\textsuperscript{th} century indefinite ‘where’ complement: David Hewitt, speaker, 1951:47 to Wallace
\[Û:ne\ hêsne:\ \na’\hayenawa’\tiyê:tha’\ \hë:we\ \tikakuhyâ’kê.\]
\[
\begin{array}{c}
\text{now} \\
\text{then} \\
\text{they} \\
\text{went} \\
\text{to} \\
\text{find} \\
\text{where} \\
\text{so} \\
\text{they} \\
\text{have} \\
\text{crossed}
\end{array}
\]
‘They went back to find \textit{where} they had come across.’

(46) 20\textsuperscript{th} century indefinite ‘where’ complement: Elton Greene, speaker p.c. 1973:479
\[Thé’\ \akye’\né:ri:k\ \e:we\ \tyahwáhse:t.\]
\[
\begin{array}{c}
\text{not} \\
\text{would} \\
\text{I} \\
\text{know} \\
\text{where} \\
\text{you} \\
\text{went} \\
\text{to}
\end{array}
\]
‘I don’t know \textit{where} you went.’

These constructions correspond to Heine and Kuteva’s Stage 2 of development.

This particle does not introduce definite complement clauses in the 19\textsuperscript{th} century material, but it does in the 20\textsuperscript{th} century.

(47) 20\textsuperscript{th} century definite ‘where’ complement: Elton Greene, speaker p.c. 1972:183
\[Wahrá:kê’\ e:we\ \tihrá:ta’ê.\]
\[
\begin{array}{c}
\text{he} \\
\text{saw} \\
\text{where} \\
\text{there} \\
\text{he} \\
\text{is} \\
\text{lying}
\end{array}
\]
‘He saw \textit{where} he was lying.’
(48) 20<sup>th</sup> century definite ‘where’ complement: Elton Greene, speaker p.c. 1972:435

*Kyę’né:ri: ę:we ńêkheya čirá: ’nihr.
I know where I will sting him
‘I know where I’ll sting him.’

(49) 20<sup>th</sup> century definite ‘where’ complement: Howard Hill, speaker to Francene Patterson 2000

*Thwę: ’n ha’ ę:kwe, kayeyę’né:ri ę:we.
all the person they know where
‘All the people know where

*ękayekúhe’ anêhsnači’.
they will get dark seed
to get sassafras.’

These constructions correspond to Heine and Kuteva’s Stage 3 of development.
The modern language shows further extension of this marker to headless relatives
designating places: (h)ę:we ‘the place where’. These constructions can function either as arguments or, more commonly, as locative adverbial clauses.

(50) 20<sup>th</sup> century headless ‘where’ relative: Elton Greene, speaker p.c. 1972:412

*Ę:we tihru’n:ę:q’ weyūhre: ą:thu’.
where there he lives it is amazing cold
‘Where he lives it’s cold.’

(51) 20<sup>th</sup> century headless ‘where’ relative: Edith Jonathan, speaker to Lounsby, 1950:528

*Ū:nę wá’ę’w hé’i’ ę:we tik’ač.
then it came I where I was lying
‘Then it came over to where I was lying.’

(52) 20<sup>th</sup> century headless ‘where’ relative: Elton Greene, speaker p.c. 1972:335

*Hé’thu yękéhá:wi: ę:we kyenikę:, unęhráhse.
there I will take you there where this milk
‘I’ll take you there where there’s milk [that I drink].’

6. Tuscarora kahné’kye ‘when’
The time interrogative is káhnę or kahné’kye ‘when?’. (-ę’kye is a place nominalizer.)

(53) 19<sup>th</sup> century ‘when’ question: Hewitt ms 2895:125

*Káhnę tičıtahékwę?
when you have gone back
‘When did you go home?’

(54) 20<sup>th</sup> century ‘when’ question: Elton Greene, speaker p.c. 1972:269

*Kahné’kye nečhárkų?
when so you will go back
‘When are you going home?’
The 19th century texts show no other uses of this marker. It is used in the modern language, however, to introduce complements.

(55) 20th century ‘when’ complement: Elton Greene, speaker p.c. 1972:413

\[
\text{Kye'né:ri: kahné'kve twahrayé:thu'.}
\]

I know when so he planted

‘I know when he planted.’

This construction corresponds to Heine and Kuteva’s Stage 3 of development.

The same marker also appears in the modern language in headless relatives, ‘the time when’. These usually function syntactically as temporal adverbial clauses.

(56) 20th century ‘when’ adverbial clause: Elton Greene, speaker p.c. 1972:434

\[
\text{Ha' uth ně kahné'kve  ... ha'čki'rwéhtö', thehyáhra:k ęθwa'né'ku'.}
\]

the now when the I will tail drop you all remember you all will run away

‘Now when I drop my tail, remember to run away.’

(57) 20th century ‘when’ adverbial clause: Howard Hill, speaker to Francen Patterson 2000

\[
\text{Kahné'kve ahsku'čhe'ni', thwé:'n ęhsne'rawíhsi'.}
\]

when you would find it all you will root un give

‘When you find it, pull out the whole root.’

7. Progression through the stages

This single century of Tuscarora documentation shows development of each of the indefinite pronouns along the path predicted by Heine and Kuteva. The coincidence of this progress with increasing bilingualism in English suggests stimulation by contact. The pronouns have not progressed in unison, however. Figure 4 provides a summary of the uses of each in the 19th and 20th centuries. (Heine and Kuteva’s Stage 3 has been split into two stages here, iii and iv.)

<table>
<thead>
<tr>
<th></th>
<th>‘what’</th>
<th>‘who’</th>
<th>‘where’</th>
<th>‘when’</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>Simple questions</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>ii</td>
<td>Indefinite complements</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>iii</td>
<td>Definite complements</td>
<td>x</td>
<td>x</td>
<td>--</td>
</tr>
<tr>
<td>iv</td>
<td>Headless relatives</td>
<td>--</td>
<td>x</td>
<td>--</td>
</tr>
<tr>
<td>v</td>
<td>Headed relatives</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Figure 4: Development of Tuscarora Indefinite Pronouns

The Tuscarora patterns raise some interesting questions. In the 19th century, the pronouns ‘what’, ‘who’, ‘where’, and ‘when’ differed in their extensions to new contexts. The indefinite ‘what’ was already used not only in questions, but also in indefinite and definite complements (i, ii, ii). Human ‘who’ and locative ‘where’ were used only in questions and indefinite complements (i, ii). Temporal ‘when’ was used only in questions (i). By the late 20th century, all had expanded through all steps to headless relatives (i, ii, iii, iv), but none has yet moved into headed relatives (v).
One issue taken up by Heine and Kuteva (2006:226-229) is directionality. Citing Lehmann 1984, Thomason and Kaufman 1988:320, Schafroth 1993, Matras 1996:64, Kortmann 1998:554, Le Goffic 2001, and Heine and Kuteva 2002, they write, ‘That the polysemy between question and subordination markers that we are concerned with here is the result of a unidirectional process from the former to the latter has been claimed independently by a number of authors’ (2006:226). The Tuscarora situation summarized in Figure 4 provides especially strong evidence for this directionality. All have Stage i as a point of departure (questions), and at each point in time, each pronoun shows only contiguous stages of development.

The fact that the individual Tuscarora pronouns had reached different stages of development by the 19th century raises the question of how universal the order of development among the various indefinite pronouns might be cross-linguistically. Comparisons with sequences discussed by Heine and Kuteva indicate that the order varies.

<table>
<thead>
<tr>
<th>High German</th>
<th>Stage of development</th>
</tr>
</thead>
<tbody>
<tr>
<td>what, who, when (was, wer, wann)</td>
<td>3</td>
</tr>
<tr>
<td>where (wo)</td>
<td>3-4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>English</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>what</td>
<td>3</td>
</tr>
<tr>
<td>who, when, where, which</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tuscarora 19th century</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>when (kahnê’kye)</td>
<td>1</td>
</tr>
<tr>
<td>where, who (hê:we, kânhhe’)</td>
<td>2</td>
</tr>
<tr>
<td>what (te’)</td>
<td>3</td>
</tr>
</tbody>
</table>

Figure 5: Comparative stages of development

High German was ‘what’, wer ‘who’, and wann ‘when’ have progressed into headless relatives, while wo ‘where’ has expanded one step further into headed relatives but only for some speakers. Thus the German inanimate, human, and time markers are still solidly at Stage 3, and the space marker is somewhere between their 3 and 4 (2006:210-211). English, who, where, when and which have completed the path, all now appearing in headed relative clauses, but what still has not taken that final step. ‘What’ expanded first in Tuscarora but last in English.

The differences in rates of development of individual markers within languages, and in the order of development of categories across languages, raise questions about what factors might retard or hasten expansion along this pathway. A well-known frustration is that though we can sometimes point to motivations behind a change once it has happened, we cannot predict whether or not a change will take place when the motivations are present. We can, however, begin to assemble hypotheses about factors that may affect rates of change. The hypotheses can of course be evaluated only in light of substantial information about many more languages. One inviting direction of inquiry concerns the system in which the innovation takes place, whether the expansion of a marker consists in the simple substitution of one marker for another in an existing structure, or creates a brand new grammatical construction where there was none.
8. Innovations in light of existing structure

Expansion of the more advanced Tuscarora markers ‘what’ and ‘who’ created more specific constructions than those that had existed before. Both form complement clauses. The less advanced markers ‘where’ and ‘when’ replaced demonstratives in established constructions. These usually serve as adverbial clauses.

8.1. *Té’* ‘what’

As shown earlier, the 20th century saw an extension of the indefinite pronoun *té’* ‘what’ into headless relative clause constructions.

<table>
<thead>
<tr>
<th></th>
<th>19th century</th>
<th>20th century</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple questions</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Indefinite complements</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Definite complements</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Headless relatives</td>
<td>--</td>
<td>x</td>
</tr>
<tr>
<td>Headed relatives</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Figure 6: Development of *te’* ‘what’

In the 19th century, speakers communicated such ideas with two other constructions.

The most common was simply a juxtaposed finite clause. (Clauses can consist of just a verb, or a verb plus additional material.) The clause is typically preceded by the article *ha’,* which signals both identifiability and the dependent status of the following clause.

(58) 19th century clausal nominal: Joseph Williams, speaker 1888, Hewitt in RC 382

\[
\text{Há:ne:’ nęká:ye:’r ha’ týrįhú ’nę:’}
\]

that it will happen the it is customary

‘What is customary must take place.’

(59) 19th century clausal nominal: 1888 ms 432, RC 160

\[
\text{Wahrakyéh’re’ ha’ ḥhrahà:wi’}
\]

he put up the he carries back

‘He set out what he had brought back.’

This construction continues in the modern language, though it is less frequent. Many of the verbs now used in this way are lexicalized as referring expressions.

(60) 20th century lexicalized clause: Elton Greene, speaker p.c. 1972:329

\[
\text{Wahrá:kę’ kę́hésne: ką’ṭre’}
\]

he saw then it drags

‘Then he saw a wagon.’

The 19th century juxtaposed clause, even with an article and prosody that probably linked it to an adjacent clause, was more general in its grammatical function, indicating dependency but not specifying a particular semantic or grammatical role.

In the 19th century, such clauses sometimes occurred in apposition to the word *awé:te* ‘thing(s)’.
Wa’thrathnyaré:tya’ t ha’ awé:te wahrá:kę’.
he news spread the thing he saw
‘He reported what he had seen.’

Ú:nę wa’ na’ natakáhri’θ ha’ awé:te katihu’θ yétkwakęw . . .
now she told her the things it exists her stomach interior
‘She told her what was living in her stomach, [many hundreds of snakes].’

By the 20th century, the word awé:te ‘thing(s)’ had generally been replaced by the indefinite pronoun tawé:te ‘what’ in the headless relative constructions seen earlier.

Nyękwa’tikehiriyúhθe ha’ tawé:te, kakuruíwihs’ę.
it is pleasing to us the what they have promised
‘We are pleased with what they promised.’

In the modern language, headless relatives based on tawé:te ‘what’ are now the majority pattern.

The innovated ‘what’ headless relative construction ‘what they promised’ in (30) could be viewed as the result of adding tawé:te ‘what’ to existing clausal constructions like that in (58) ‘what is customary’. It could also be viewed as the replacement of the nominal awé:te ‘thing(s)’ with the new indefinite pronoun tawé:te ‘what’ and expansion to a majority pattern.

In German and English, interrogative pronouns have replaced demonstrative pronouns in complement and relative constructions. A few Tuscarora examples might suggest that the similar subordinate constructions existed in Tuscarora, such as that below.

she she was telling us the where so we reside that so it happened to her
‘She was telling us at home where it happened to her.’

When we examine further data we see that this is actually a different kind of construction. Demonstrative pronouns kyení:kę ‘this one, these’ and hení:kę: ‘that one, those’ are frequent in Tuscarora speech. They occur especially often at the ends of simple sentences, as below. We can see from the pitch trace and waveform in Figure 7 that both demonstratives hení:kę: ‘that one, those’ were grouped prosodically with the preceding clause. Both showed a final fall in pitch, followed by a pause, then a pitch reset on the following clause.

Wahękhéhsyę’ hení:kę:.
I heard that
‘I heard that.’

Nahrakwa’ nętı:ye:t hé: snę:, ękåhnę’t hení:kę:.
he sent me here hence I will destroy those
‘He sent me to destroy them, those things.’
Sound recordings are not available for the sentence in (63), but we do have recordings of similar constructions. The prosody indicates that these consist of a sequence of referring expressions in apposition, rather than a single relative clause.

(65) Demonstrative construction with prosody: Elton Greene, speaker p.c. 1972: 258

\[ \text{Wa’tkaháhihθ } \text{hení:kę:}, \text{ ruya’kwáher.} \]

\[ \text{it met it } \text{that one } \text{he body carries} \]

‘It met it, that one, a dinosaur.’

The headless relative constructions such as ‘what they promised’ and ‘what happened to her’ did not develop as in German and English, through the substitution an interrogative pronoun for a demonstrative in an existing relative construction. There was no relative construction, rather only a general dependent clause structure. The extension of té’ produced a more specific construction.

8.2. Káhne’ ‘who’

The 19th century material shows no uses of káhne’ in definite complements or headless relatives.
Ideas translated with English definite complements were conveyed with a simple Tuscarora finite clause, without overt nominalization, an indefinite pronoun, or complementizer. The clause was usually preceded by the article *ha’*, which also served to mark its dependent status.

(66) 19\(^{th}\) century absence of ‘who’ in definite complement: 1888 ms 432, RC 1987:193

\[Ru'ë'nè:rih \ ha’ \ ranë:'në \ tihsné’ \ runésne’.
\]

*It knew [who he was and loved him for having fed it].’*  

Ideas translated with headless relatives were also conveyed by simple clauses without an indefinite pronoun, also usually with the article *ha’*. This was a major construction in the 19\(^{th}\) century, occurring pervasively in the texts.

(67) 19\(^{th}\) century headless relative: Hewitt ms 433, RC 1987:40-41

\[Ha’\ hé’thu \ kayetá:kre’ \ kwéhs \ akayaiheyéθęk.
\]

*They who dwelt there did not die.*

(68) 19\(^{th}\) century headless relative: Joseph Williams to Hewitt 1888 ms 438, RC 412

\[Ru'rihe:t \ rahéwúhahs \ ranweθtıhθa’ \ ha’\ vera’navé’:’nye’.
\]

*His business was to sink boats and to drown those who were in them.*

This construction persists today, somewhat more robustly than its ‘what’ counterpart.

(69) 20\(^{th}\) century headless relative: Elton Greene, speaker p.c. 1972: 326

\[Néθwa’nëre'hkwhek \ ha’\ nethwa'ntyákhe’.
\]

*Love one another, you who are married couples.*

(70) Tuscarora headless relative: Howard Hill, speaker, to Francene Patterson 2000

\[Há:ne:’ \ ha’\ kakuneha'ké:ha’ne’ \ kayé:'në.
\]

*That is what the old people say.*

In German and English, as noted in the previous section, interrogative pronouns have been replacing demonstratives in subordinate constructions. In the 19\(^{th}\) century Tuscarora material, headless relatives designating animates also occur in apposition to demonstratives.

(71) 19\(^{th}\) century apposition to demonstrative: 1888 ms 432, RC 157

\[Kwéhs \ akakwéni’ \ ãθë’né’ku’
\]

*It was not fast enough to escape*

\[ha’ \ áhkwir \ ha’ \ há:ne:’ \ θë’né’ku’.
\]

*The fawn’s mother [who had returned in the interim].’*
This pattern continues in the modern language.

(72) 20th century apposition to demonstrative: Edith Jonathan, speaker, to Lounsbury 1950:528

We’teyu’kŋę’ henį:kę: kayetá:rye’ kayekętį:θ’a.

she went to them those they are lying down they are small

‘She went over to those lying down, the children.’

(73) 20th century apposition to demonstrative: Elton Greene, speaker p.c. 1972:180

Ekwèhe’we, kyení:kę: kayetá:re’ skarū:řę’.

real persons these they live here Tuscarora

‘The Indians living here were Tuscarora.’

A typical use of demonstratives is below. Without consideration of prosody, this could be interpreted as a relative clause structure: ‘the one that was named Obadiah went there.’

(74) 20th century demonstrative structure: Elton Greene, speaker p.c. 1972:183

Yahwahrárku’ kyení:kę’ Čá:ks rayá:θę.

he went there this one Obadiah he is named

The actual structure is clearer when intonation is brought into the picture. Each line of transcription below represents a separate prosodic phrase.

(75) 20th century passage with demonstrative: Elton Greene, speaker p.c. 1972:183

Yahwahrárku’ kyení:kę’ . . .

he went there this one

Čá:ks rayá:θę.

Obadiah he is named

Yahwahrárku’ kyení:kę’ . . ., ęčęnaktahskúhči’.

he went there this one he will release him

The demonstratives were grouped prosodically with the preceding clause in each case. (The sounds between phrases 2 and 3, and between 3 and 4, are breaths.)

Figure 10: Managing the Flow of Information
The development of the Tuscarora animate definite complements and headless relatives in the 20th century thus does not parallel those in German or English. The pronoun káhne’ ‘who’ was added to clauses rather than substituted for a demonstrative in existing complement or relative constructions. Constructions like that in (74) could of course evolve into relative clauses. Even today, not all sequences of clauses containing demonstratives are separated prosodically by such marked pauses and pitch resets.

Although té’/tawé:te ‘what’ and káhne’ ‘who’ show the same profile in the modern language, both appearing in questions, indefinite complements, definite complements, and headless relatives, they do not show precisely the same degree of development. The té’/tawé:te ‘what’ complements and headless relative constructions have essentially replaced simple juxtaposed clauses serving comparable functions, but the káhne’ ‘who’ complements and headless relatives are relatively rare in the 19th century, and in the modern language, they still coexist with the earlier, less grammaticalized alternatives.

8.3. Hè:we ‘where’

In the 19th century, hè:we ‘where’ had just begun to be extended to indefinite complements.

<table>
<thead>
<tr>
<th></th>
<th>19th century</th>
<th>20th century</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple questions</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Indefinite complements</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Definite complements</td>
<td>--</td>
<td>x</td>
</tr>
<tr>
<td>Headless relatives</td>
<td>--</td>
<td>x</td>
</tr>
<tr>
<td>Headed relatives</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Figure 11: Development of hè:we ‘when’

The marker was in competition with a much more robust particle ke’. Ke’ appears in both indefinite and definite complements.

(76) 19th century ke’ indefinite complement: Thompson 1888 ms 432, RC 1987:579

Þ:ne ha’ ke’ weȟkata’riheh wa’kayenñhyàrè’.  
now the where it puts head back on they examined

‘They sought to find out where the head had been taken to.’

(77) 19th century ke’ definite complement: 1888 ms 422, RC 1987:438-9

Þ:ne wahrà:ke’ ke’ newêhrye’.  
now he saw where they two enter dirt

‘He was able to see where the children had escaped through the ground.’

Ke’ also appears pervasively in the 19th century in headless relative constructions, meaning ‘the place where’.

(78) 19th century ke’ headless relative: 1888 ms 432, RC 1987:192-3

Hé’thu yawáhe:t ke’ ru’nihsúhe’.  
there it went there where he has hidden

‘It went over to where the hunter was hiding.’
It occurs in numerous lexical items in the manuscript dictionary compiled by Erminnie Smith and Hewitt (BAE ms 2850), such as ści’ yetakwthr̲áhkwa’ ‘where one-bed-puts.up-with’ = ‘bed chamber’ and ści’ yehyat̲ehstavę’yńákhwa’ ‘where one-paper-lays-with’ = ‘bookcase, desk’ (Rudes 1999:298-9).

The particle ści’ continues in modern Tuscarora, but it is much less frequent and has a narrower sense: ‘right where’. It does appear in headless relatives meaning ‘exactly the place where’, usually functioning as a locative adverbial clause marker.


\[
\begin{align*}
\text{É:či } & \text{ hęšné: ha’ } \text{ učisneh } \text{ yahwahé: }’nĩ’ u’čéhsnakwōt \\
\text{one } & \text{ then } \text{ the } \text{ live coal } \text{ she threw } \text{ behind}
\end{align*}
\]

‘She threw one coal back behind her,

\[
\begin{align*}
\text{ha’ } & \text{ ści’ } thru’nà’níhręh. \\
\text{the } & \text{ right where } \text{ so he was standing}
\end{align*}
\]

right where he was standing.’

The sentence below is from a traditional ceremony which takes place when a chief dies and his wampum is passed on to his successor.

(80) 20th century ści’ headless relative: Elton Greene, speaker p.c. 1972:444

\[
\begin{align*}
\text{Kyení:kę: } & \text{ čuhtíčhe:θ } \text{ yę:θwe: }t \text{ ha’ } \text{ ści’ } \text{ sęr’ęhsayę’.}
\end{align*}
\]

this wampum it will go back there the where you clan have

‘This wampum will go right back to your own clan.’

The particle persists in certain lexicalized constructions, such as terms for ‘home’.

(81) 20th century lexicalized ści’: Edith Jonathan, speaker to F.G. Lounsbury 1950: MM487

\[
\begin{align*}
\text{Ù:nę } & \text{ kyení:kę: } \text{ wakwa’ruhcr̲é }’nę’ \text{ ści’ } \text{ nyękwa’nenę:tyę’.}
\end{align*}
\]

now this we gathered ourselves where so we reside here and there

‘Then we held meetings right in our houses.’

(82) 20th century lexicalized ści’ construction: Elton Greene, speaker p.c. 1971:17

\[
\begin{align*}
\text{θá:ku’ } & \text{ ha’ } \text{ ści’ } \text{ wak’nę:nę’.}
\end{align*}
\]

I went back the where I live

‘I went back home.’

ści’ is an old demonstrative adverb, ‘right here’. An entry in Hewitt’s notebook reads: Kę’ sá’ ‘Look here!’ (Rudes 1999:298). Cognates persist in other Northern Iroquoian languages with this function: Oneida ką’ ‘here (close to speaker)’, Mohawk kę’n’en or kę’n: ‘right here’, as in Kę:n: sátięn ‘Sit right here’.

The interrogative hę:we thus developed into a subordinator by replacing a demonstrative adverb in existing overt subordinate constructions. It has not completely displaced the demonstrative, but it has narrowed its meaning.
8.4. Kahné:’kye ‘when’

In the 19th century, the pronoun kahné:’kye ‘when’ had not expanded into contexts beyond direct questions. Within just a century, it has been extended to indefinite complements, definite complements, and headless relatives, which function as temporal adverbial clauses.

<table>
<thead>
<tr>
<th></th>
<th>19th century</th>
<th>20th century</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple questions</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Indefinite complements</td>
<td>--</td>
<td>x</td>
</tr>
<tr>
<td>Definite complements</td>
<td>--</td>
<td>x</td>
</tr>
<tr>
<td>Headless relatives</td>
<td>--</td>
<td>x</td>
</tr>
<tr>
<td>Headed relatives</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Figure 12: Development of kahné:’kye ‘when’

In the 19th century, these subordinating functions were filled by several constructions, all of which persist in the modern language. One was a simple clause preceded by the article ha’.

(83) 19th century adverbial clause: Joseph Williams, speaker 1888 ms 438, RC 1987:376

Kę:θ ha’ wa’ẻktányę’θ wa’nyakyá’tnę’.

customarily the one village enters for me we two play ball

‘When anyone visits me, he and I play a game of ball.’

A number of overt temporal subordinators were also already established in the 19th century, particularly ü:nę ‘at the time, now, then, when’, áθę’ ‘when, finally’, and kanyú’ ‘as soon as’.

(84) 19th century ü:nę ‘when’ clause: Thompson 1889 ms 441, RC 1987:486

Ù:nę ú’nę’θáhra’w wa’ętkáhrye’ha’ wé’θhahk.

now as well he came back she told the it was walking around

‘When he returned, she told him it had been there.’

(85) 19th century áθę’ ‘when’ clause: Joseph Williams, speaker 1888 ms 438, RC 1987:412

Áθę’ ranyatarı:re’ wa’nakę’tę’.

when he lake crosses one met another

‘While he was wading in the lake he met him.’

(86) 19th century kanyú’ ‘as soon as’ clause: Thompson 1890 ms 445, RC 1987:122

Kanyu’ hésnę: θayuhθá:tu’ na’ ḋ:čę’w

as soon as then it got dark again much she will return

‘When she returned in the evening

ü:nę hé’θu yahwá’nyę:t ke’ nyuta’čuhkwa’nıhrę.

then there they two went there where there it heap stood

they two went over to the heap.’

All persist robustly in the modern language.
(87) 20th century ńę, kanyú’ ‘when’ clauses: Elton Greene, speaker p.c. 1972:184

Ha’ ńę
ę’nwa’thːwúha’
the when it will sail
‘When it sails,

kanyú’ ęθka’rát’a’,
as soon as I will ride again
as soon as I go back,

ńəθkayětkánhę’w ha’ ťú:tar.
they will wake back up the solders
the soliders will wake up again.’

The new subordinator kahné’kye tends to be used in irrealis contexts: ‘when in the future, ‘whenever’. Speakers report that it is usually possible to substitute the more general ńę or ha’ ńę ‘when’ for kahné’kye.

The temporal kahné’kye ‘when’ has just begun to reach Heine and Kuteva’s Stage 3, but it is still a minority pattern with a specialized sense. It is replacing a temporal demonstrative in an established adverbial clause construction. Discussing the replacement of demonstratives by interrogative pronouns ancestral to who, which, etc. in Middle English, Romaine notes that ‘The transition from interrogative to relative pronoun began in types of indirect questions where the interrogative character of the pronoun became weakened, and the pronouns so used were generalizing relatives’ [‘whoever’, ‘whatever’, ‘whichever’ etc.] (Romaine 1984:449, cited in Heine and Kuteva 2006:220). The contexts in which the temporal kahné’kye ‘when’ occurs in modern Tuscarora suggest that at least this marker went through such a stage.

8.5. The variation

The interrogative pronouns ‘what’, ‘who’, ‘where’, and ‘when’ have now all reached the second step of Heine and Kuteva’s Stage 3 of development, but apparently at different rates. At the end of the 19th century, ‘what’ was at the initial step of Stage 3, ‘who’ and ‘where’ at Stage 2, and ‘when’ just at Stage 1. All have now been extended to the second step of Stage 3, but with varying degrees of robustness. Tawě:te ‘what’ is now the usual basis for headless relatives. Káhne’ ‘who’ does appear in headless relatives, but these constructions are still in competition with basic finite clauses containing no indefinite pronoun. Hē:we ‘where’ appears in headless relatives functioning as locative adverbials, but the marker it is replacing, ke’, persists with a specialized meaning ‘right where’. Finally, kahné’kye ‘when’ can appear in headless relatives, but it is still a minority pattern with a specialized irrealis meaning.

<table>
<thead>
<tr>
<th>19th</th>
<th>20th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple questions</td>
<td>x</td>
</tr>
<tr>
<td>Indefinite complements</td>
<td>x</td>
</tr>
<tr>
<td>Headless relatives</td>
<td>--</td>
</tr>
<tr>
<td>Headed relatives</td>
<td>--</td>
</tr>
<tr>
<td>‘what’</td>
<td>‘who’</td>
</tr>
<tr>
<td>19th</td>
<td>20th</td>
</tr>
<tr>
<td>-- x</td>
<td>-- x</td>
</tr>
<tr>
<td>-- x</td>
<td>-- x</td>
</tr>
<tr>
<td>-- x</td>
<td>-- x</td>
</tr>
<tr>
<td>-- x</td>
<td>-- x</td>
</tr>
<tr>
<td>-- x</td>
<td>-- x</td>
</tr>
<tr>
<td>-- x</td>
<td>-- x</td>
</tr>
<tr>
<td>-- x</td>
<td>-- x</td>
</tr>
<tr>
<td>-- x</td>
<td>-- x</td>
</tr>
</tbody>
</table>

Figure 13: Varied Rates of Development
It is of course not possible to determine with certainty why the pronouns developed in the order they did. One variable might be worthy of attention. The two interrogative pronouns that were the most advanced in the 19th century and still are today, ‘what’ and ‘who’, created new structures. They did not simply replace other markers in existing constructions. The two interrogative pronouns that were less advanced in the 19th century and are still competing with other constructions, ‘where’ and ‘when’, are replacing demonstrative adverbs in well-established adverbial clause constructions. How this fact might have affected developments can only be a matter of conjecture. Bilingualism could have brought an awareness of distinctions the language had left unspecified up to that point, those accomplished by ‘what’ and ‘who’ subordinate clauses in English. The awareness might have prompted bilingual speakers to fill the newly-perceived lack with constructions based on native ‘what’ and ‘who’ pronouns. Place and time constructions were already established, so there was less motivation for expanding the functions of the indefinite ‘where’ and ‘when’ pronouns.

Such a hypothesis of course pushes the question back one step. Why did place and time constructions develop first? In both the 19th and 20th century material (as well as in all related languages), constructions persist that would provide likely sources for their development. A very common pattern of expression in Northern Iroquoian languages involves a sequence of clauses or sentences, the second of which begins with ‘there’, sometimes translated ‘that’s where’.

(88) 19th century ‘there’: Joseph Williams, speaker 1888, ms 438, RC:401
\[ Wahrá:kę’ neyu’niyháknę yuyenę’ę karatkwár’u’y. \]
- he saw it is creek between it is dead tree fallen large elm
- ‘He saw a large elm tree lying across a small stream of water.

\[ Hé’thu kwè:ni’ wahrá:kę’ yẹtkéhnač uyẹkwì:re \]
- there simply he saw one burden carries wood
- Near by this fallen tree he beheld a diminutive old woman

\[ tiwathwaritá’θ’a kahskwari’a. \]
- it is backpack small it is feeble small
- loading up her forehead strap with fagots and pieces of wood.’

(89) 20th century ‘there’ construction: Elton Greene, speaker p.c. 1972:181
\[ Yahwahrárku’ kyeni:kę kayeyë:ki:rya’ks \]
- he went away this one they are chopping wood
- ‘He went away, this one, to a chopping bee

\[ hé’thu yahwáhre:t. \]
- there he went there
- that’s where he went.’

Similarly, a demonstrative adverb \( ù:nę \) or \( áθe’ \) ‘at that time, then’ often occurs at the beginning of a sentence, situating it temporally with respect to the preceding sentence.

(90) 20th century \( ù:nę \) ‘then’ sentence: Elton Greene, speaker p.c. 1972:220

‘Now then, the one that was slow, it caught him.

It carried it back and threw his body somewhere.’
These same demonstrative adverbs now also function as part of conventionalized adverbial clauses, which form a prosodic unit with the preceding, now main clause. These adverbial clauses can now occur either before or after the main clauses they modify.


Yahwakwé:wru’ ha’ ų:nę yahé:cyęht.

it covered her the when she went down.

‘It [the mist] covered her when she went down.’

9. Conclusion

The proposal by Heine and Kuteva (2006), that interrogative pronouns can expand their range of uses along a pathway from simple questions to indefinite complements to definite complements to headless relatives to headed relatives, helps us make sense of the patterns we find in a number of languages, among them Tuscarora. The recurring matches we find between interrogative and relative pronouns are no accident: they can result from recurring pathways of development. Such developments are made possible by a fundamental semantic feature of the markers themselves: all are indefinite pronouns. The proposal by Heine and Kuteva that progress along the pathway can be stimulated by language contact allows us to account for the apparently accelerated development of the Tuscarora pronouns within less than a century.

In turn, Tuscarora provides especially robust support for the Heine and Kuteva proposals. Within this language alone, it is possible to document the development of all of the major interrogative pronouns words along the same trajectory, step by step. The perfect coincidence of these Tuscarora developments with bilingualism in English adds evidence of the potential effect of contact in stimulating such evolution.

The recognition of this recurring pathway of development provides some explanations, but it also raises some intriguing new questions. We now know, for example, that individual pronouns do not all evolve at the same rate within individual languages, and that they do not evolve in the same order cross-linguistically. One future challenge could be to discover what kinds of factors are necessary for such developments to take place, and, once they are present, what additional factors might accelerate or retard them.
References


