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CHAPTER 3

Deconstructing teleology

The place of synchronic usage patterns among processes of diachronic development

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A central issue in typology is the role of implicational hierarchies in shaping individual languages. One view is that the hierarchies guide language change, or at least constrain it: "Since a hierarchy constrains what is a possible language, it is also a constraint on language change, because languages move from one possible state to another" (Corbett 2011). Other approaches take a different perspective: "Hierarchies simply capture the outputs of independent diachronic processes" (Cristofaro & Zúñiga this volume). Here the relationship between typology and diachrony is examined with respect to the most frequently-cited hierarchies, the cluster of Referential/Topicality/Animacy/Empathy hierarchies. While such hierarchies might appear to drive diachronic development in some single-step changes, multi-step developments are a different matter.

1. The hierarchies

The most frequently-cited implicational hierarchies in typological work involve variations on sets of referring expressions like those in (1). The expression types are arranged along a continuum according to their propensity to be selected as topics in speech, their animacy, or the degree to which speakers empathize with their referents, all related notions. Those expression types at the left end of the hierarchy exhibit the strongest propensities, and those on the right the weakest.

(1) Referential/Topicality/Animacy/Empathy Hierarchy
1, 2 pronouns > 3 pronouns > kinterms > proper names
> human nouns > other large animates > small animates
> inanimate count nouns > inanimate masses

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Croft (1990: 127) points out that such hierarchies actually involve at least three features:

a. Noun Phrase type: pronoun > proper name > common noun
b. Animacy: human > animate > inanimate
c. Definiteness: definite > referential > non-referential

For the most part, the three features produce similar values; first and second person pronouns are the strongest on all counts: all are pronominal, human, and definite.

The hierarchy in (1) and variations on it have been cited in work on a number of areas of language structure. Early on, Smith-Stark (1974) invoked it in a cross-linguistic study of number marking. Moravcsik (1974) discussed it in work on pronominal reference and agreement within the verb. Silverstein (1976) cited it in work on splits within languages between nominative/accusative and ergative/absolutive patterning. Since these landmark studies, such hierarchies have become one of the principal tools of linguistic typology. Here the nature of their relationship to patterns which emerge from cross-linguistic comparisons is explored. The three major domains in which they have been invoked are examined in turn: (1) number, (2) reference within the verb, and (3) alignment patterns.

2. Number

Observing that in many languages number is not distinguished on all referring expressions, Smith-Stark (1974) proposed that splits in number marking systems can be described in terms of the hierarchy below.

> 1st person pronouns > 2nd person pronouns > 3rd person pronouns > kin terms > human nouns > animate nouns > inanimate nouns

If plurality is distinguished on members of one category, it will be distinguished on members of all categories to its left on the hierarchy. Many languages show number distinctions only in pronouns, for example. Many distinguish number only on pronouns and other terms referring to human beings (kinship terms, human nouns).

Earlier Greenberg (1963: 94) had proposed another implicational hierarchy pertaining to number distinctions, his Universal 34.

> singular > plural > dual > trial/paucal

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No language has a trial or paucal number unless it also has a dual. No language has a dual unless it has a plural. This observation is borne out in language after language.

Both hierarchies can be observed in the development of number distinctions within individual languages over time, often working together.

2.1 Number developments in Iroquoian

Languages of the Iroquoian family were spoken at the time of first contact with Europeans in eastern North America. The family consists of two main branches: Southern Iroquoian, (represented only by Cherokee) and Northern Iroquoian. Sometime after the separation of these two main groups several thousand years ago, Northern Iroquoian underwent further divisions. The first group to split off developed into modern Tuscarora and Nottoway. The second developed into Wendat (Huron) and Wyandot. The remaining became the Five Nations Iroquois, now represented by Seneca, Cayuga, Onondaga, Oneida, and Mohawk. Relations among the languages for which we have substantial documentation are sketched in Figure 1. (Several other Iroquoian languages are known to have existed, but documentation of them is more limited.)

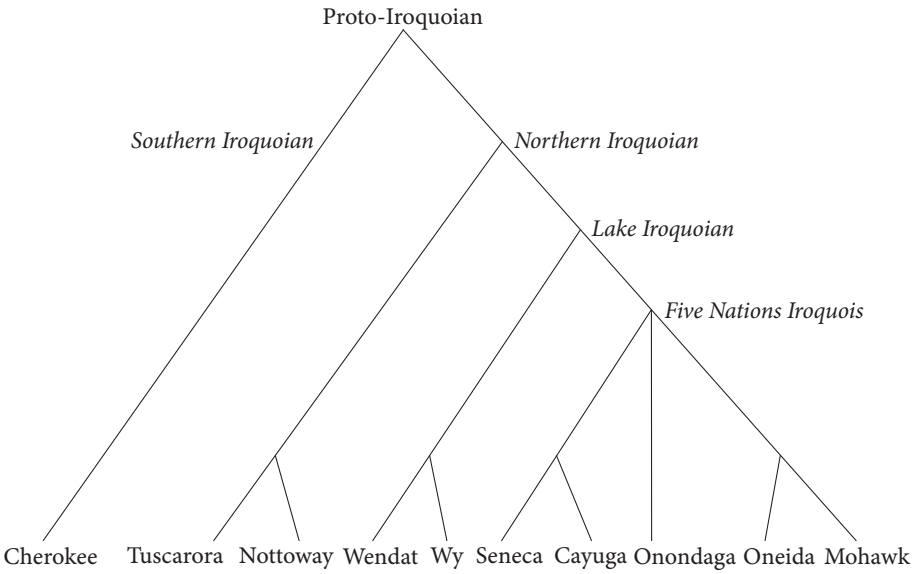


Figure 1. The Iroquoian Languages

All of the modern Iroquoian languages contain pronominal prefixes in their verbs identifying their core arguments: one argument for intransitives and two for transitives. Some examples are in (2).

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(2) Sample Iroquoian pronominal prefixes

Cherokee	***k**-aaʔi*	'**I** am walking'
Tuscarora	*i:**k**-yeʾθ*	'**I** am walking around'
Wyandot	*he-**y**-eh*	'**I** am going away'
Mohawk	*í-**k**-eʾs*	'**I** am walking around'
Cherokee	***kvv**-kohwthiha*	'**I** see **you**'
Tuscarora	***kę́**:kęhs*	'**I** see **you**'
Wyandot	***yǫ**-mą̀ʾtihšáih*	'**I** have looked for **you**'
Mohawk	***kón**:kenhs*	'**I** see **you**.'

(Cherokee forms are from Montgomery-Anderson 2008: 171, 193.) The languages generally contain 50–60 different pronominal prefixes. Many of the transitive prefixes have fused so much that individual components are no longer identifiable, as here. Nouns do not generally distinguish number.

A dual marker **-ni-*: can be reconstructed within the Proto-Iroquoian pronominal prefix system, but only for first and second persons. This is still the situation in the only modern representative of the Southern branch of the family, Cherokee, and it can be reconstructed for Proto-Northern-Iroquoian. Sometime after the first split in Northern Iroquoian branch, however, both subgroups, Tuscarora-Nottoway and Lake Iroquoian, developed dual distinctions for third person animates, but they did so independently of each other, using different strategies.

In Tuscarora-Nottoway, a prepronominal prefix which was already in place in Proto-Iroquoian was co-opted to distinguish dual number in third persons. This is the duplicative **t-*: which serves a range of functions in all Northern Iroquoian languages. It appears in some verbs describing a change of position or change of state, such as 'stand up', though its occurrence is not predictable. It occurs in some verbs with an element of 'two-ness', such as 'be side by side'. It also occurs with a verb root meaning 'be multiple' to form a verb meaning 'be two in number'. While the inherited dual number marker of first and second person pronominal prefixes follows the person marker, the duplicative prefix precedes the third person pronominals.

(3) Tuscarora innovated third person dual number

a. *waʾ-ká-:tkaht*
FACTUAL-ZOIC-chase.PFV
'it (an animal) chased it'

b. *waʾ-**t**-ká-:tkaht*
FACTUAL-**DUPLICATIVE**-ZOIC-chase.PFV
'they (**two** animals) chased it'

A dual number distinction was also created for third person animates in the other branch of Northern Iroquoian, Lake Iroquoian, but by a different route.

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The inherited dual number marker *-*ni*-: of first and second persons was simply extended to animate third persons. Examples can be seen in Mohawk in (4).

(4) Lake Iroquoian third person dual number: Mohawk

a. Inherited dual *-ni-

k-ká:wehs	'I paddle'
*iake**ni**-ká:wehs*	'we **two** (exclusive) paddle'
*te**ni**-ká:wehs*	'we **two** (inclusive) paddle'
s-ká:wehs	'you paddle'
*se**ni**-ká:wehs*	'you **two** paddle'

b. Extended dual

ka-ká:wehs	'it/she paddles'
*ke**ni**-ká:wehs*	'they **two** (animals, women) paddle'
ra-ká:wehs	'he paddles'
***ni**-ká:wehs*	'they **two** (males) paddle'

Effects of the same strategy can be seen in the other Lake languages: Wendat, Wyandot, Seneca, Cayuga, Onondaga, and Oneida.

Both branches of Northern Iroquoian thus innovated a dual distinction for third person animates, but via different pathways. The innovations parallel the two implicational hierarchies proposed by Greenberg and Smith-Stark exactly.

singular > plural ≥ dual > paucal/trial
1, 2 ≥ animates > inanimates

The converging developments suggest that perhaps implicational hierarchies might indeed shape language change, reflecting a receptivity to the addition of a particular distinction.

2.2 Stimulus

The stimulus for the addition of distinctions can come from various directions. An important one is language contact. The languages indigenous to California show substantial genealogical diversity: 22 distinct families and isolates are represented. The area shows an interesting distribution of dual number distinctions, as can be seen in Figure 2. Dual pronouns are found in Wintun, Yanan, Maidun, Washo, Miwok, Uto-Aztecan, Yokutsan, and Chumashan languages. All of the systems are in keeping with the Greenberg and Smith-Stark hierarchies: inflectional duals appear only where there are also inflectional plurals, and in pronouns but not nouns, or in first and second persons but not third.

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Figure 2. Dual number in California pronouns (based on Heizer, Robert 1978. Handbook of North American Indians 8: California. Washington: Smithsonian)

The distribution of duals crosses family boundaries. It even crosses the deepest superstock hypotheses once proposed for California languages (hypotheses which have not generally been borne out). But it also splits these proposed groupings.

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Among putative "Hokan" languages a dual distinction appears in Yana and Washo, but not in Shasta, Karuk, Chimariko, Palaihnihan, Pomoan, Salinan, or Yuman. Among putative "Penutian" languages it appears in Wintun, Maidun, and Yokuts, as well as Coos and Siuslaw in Oregon, but not in Klamath or Takelma in Oregon. It even splits families. It appears in some languages of the Miwok branch of the Utian family in California, but not in the Costanoan branch. The Uto-Aztecan family covers a wide area extending from Wyoming through California and down into Mexico. Dual number on pronouns appears in the Central Numic branch of the family, as well as the neighboring Tubatulabal and Hopi (not as closely related genealogically), but it is only rudimentary in the more closely related Western and Southern Numic languages: there the distinction appears only in first person pronouns, and the markers are not cognate with those in the Central Numic languages (McLaughlin 2013). Dual pronouns do not appear in other Uto-Aztecan languages outside of the area and are not reconstructed for Proto-Uto-Aztecan (Langacker 1977).

A dual number distinction thus appears in pronouns throughout languages in the geographic center of California (though the forms are not similar), but it is generally absent around the edges. Furthermore, the sources of some of the dual markers are still identifiable in languages at the outer boundaries, for example in Maidun where it apparently comes from 'both' and Tumpisa (Uto-Aztecan) where it comes from 'two' (McLaughlin 2013). The modern systems are in line with the proposed hierarchies, but the addition of the dual distinction was apparently stimulated by contact. The hierarchies may reflect a receptiveness to the addition of a particular distinction at certain stage of development, but more factors are involved. If they were not, all languages with the same initial systems would have developed duals.

3. Head marking

In a cross-linguistic investigation of referent marking in verbal morphology, Moravscik (1974: 54) noticed patterns corresponding to the referential hierarchy: "If the referent of some form on the hierarchy is marked on the verb by pronominal or agreement affixes, so too will all forms to its left on the hierarchy".

> Differential head marking
> 1, 2 > humans > animates > inanimates

This is a familiar phenomenon. Siouan languages generally contain pronominal prefixes for first and second persons but not third.

> 1, 2 ≥ humans > animates > inanimates

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(5) Lakota (Siouan) pronominal prefixes

wa-*núwe*	'**I** swam, bathed'		
ya-*núwe*	'**you** swam'		
nuwé	'(he/she/it) swam'		
wa-*kʰúte*	'**I** shot (him/her/it)	***ma***-*kʰúte*	'(s/he) shot **me**'
ya-*kʰúte*	'**you** shot (him/her/it)	***ni***-*kʰúte*	'(s/he) shot **you**'
kʰuté	'(s/he) shot (him/her/it)	*kʰuté*	'(s/he) shot (3)'
ma-***yá***-*kʰute*	'**you** shot me'	***ma***-*yá*-*kʰute*	'you shot **me**'

Northern Iroquoian verbs contain pronominal prefixes referring to core arguments for first, second, third person animates, and third person inanimates of intransitives. If any other argument is present, inanimates are not overtly marked.

1, 2 < HUMANS < ANIMATES < INTR INANIMATES ≤ TR INANIMATES

(6) Mohawk (Iroquoian) pronominal prefixes

k-*ká:wehs*	'**I** paddle'		
s-*ká:wehs*	'**you** paddle'	***kón***-*kenhs*	'I see **you**'
ie-*ká:wehs*	'**she** paddles'	***khé:***-*kenhs*	'I see **her**'
ra-*ká:wehs*	'**he** paddles'	***rí:***-*kenhs*	'I see **him**'
ka-*ká:wehs*	'**it** paddles'	***iónk***-*kenhs*	'**she** sees **me**'
teni-*ká:wehs*	'**we two** paddle'	***iesá:***-*kenhs*	'**she** sees **you**'
iakeni-*ká:wehs*	'**we two** paddle'	***konwá:***-*kenhs*	'**she** s. **it** (AN)'
	etc.		
But			
í-*k*-*kenhs*	'I see **(it)**'	*wák*-*kenhs*	'**(it)** sees me'

Both the Lakota and the Mohawk systems reflect the hierarchy, but just how would the hierarchy produce these effects? Let us look more closely at the mechanisms involved in their development.

As is now well known, corpora of spontaneous speech reveal general propensities on the part of speakers for topic choice, for the point of departure for their message. These propensities can be captured in a topicality hierarchy like that below.

1st, 2nd person pronouns > 3rd person pronouns
> proper names > human nouns
> larger animate nouns > smaller animate nouns
< countable inanimates < inanimate masses

All else being equal, speech act participants (first and second persons) tend to be preferred as topics cross-linguistically. If neither speaker nor hearer is involved, humans are preferred over animals, etc.

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It is also well known that speakers tend to stick with a particular topic over stretches of speech, rather than switching with every clause. The tendency toward topic continuity results in the fact that topical hierarchies also reflect the likelihood of referents being given, that is, already active within the consciousness of interlocutors. Given referents are typically identified by pronouns rather than nouns or noun phrases. Topical hierarchies thus also reflect the likelihood of pronominal representation.

Frequency of expression can of course shape the development of grammar. Given referents are not only normally identified by unstressed pronouns, they are also most often expressed by pronouns within the nuclear clause rather than in pragmatically-marked positions typical of presentatives, topic shifts, contrastive focus, etc. A high frequency of unstressed pronouns immediately adjacent to the verb can, over time, result in fusion with the verb, ultimately producing pronominal affixes and agreement. Such a series of steps appears to underlie the Mohawk pronominal prefix system. All core arguments are represented in verbs by pronominal prefixes *except* inanimates when another argument is present. These very inanimates are least likely to be topics, so least likely to be given, so least frequently represented pronominally, and so least likely to fuse with the verb and be reduced phonologically to prefixes.

Many languages lack third person pronouns altogether: third persons are represented by full determiner phrases, demonstratives or, when reference is clear one way or another, by nothing at all. Grammaticalization of unstressed pronouns in such situations would produce the Lakota pattern above: first and second person pronominal affixes, but no third.

Can we conclude from this that topicality hierarchies are directly teleological? No. Topic choices do not produce bound markers directly. The markers are the result of series of steps over time, each with its own motivation(s).

4. Alignment splits

Inspired by case-marking patterns in Australian languages, Silverstein (1976) proposed that pattern splits can be captured with a referential hierarchy. If members of a category show nominative/accusative patterning, so will all categories to its left on the hierarchy; if members of a category show ergative/absolutive patterning, so will all categories to its right.

ACCUSATIVE				ERGATIVE
1st person, 2nd person pronouns	> 3rd person pronouns	> humans	> animates	> inanimates

But exactly how would such a hierarchy shape grammatical development? In fact accusative/ergative splits can develop through a number of different pathways. Just two will be traced here.

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4.1 Reanalysis of instruments

In a large number of languages with ergative case marking, the form of the ergative case matches that of the instrumental case. This is no accident. Certain languages permit us to see how this situation might come about.

The Coosan languages Hanis and Miluk are indigenous to the Oregon Coast of North American. They are no longer spoken, but thanks to the work of Frachtenberg (1913; 1914; 1922a) and Jacobs (1939; 1940), there is valuable documentation and description of them, especially Hanis. Further analysis is in Mithun 2005. The languages show ergative case marking on lexical nominals.

(7) Hanis Coos ergative case: Frachtenberg (1913: 80.19, 64.13, 80.20)

a. *Emí:hel lə **hu:mɨk-ša***
blind **the** **old.woman**-endearment
'**The old woman** (ABS) was blind.'

b. *A:yu ɨł sɨsí:nt lə **wɨnqas** **hú:mɨk.***
indeed they visit **the** **spider** **old.woman**
'Indeed, they went to see **Spider Old Woman** (ABS).'

c. *Sqats hə wálwal **lə = x̣** **hu:mɨk-ša.***
seize.TR the knife the = ERG **old.woman**-endearment
'**The old woman** (ERG) seized the knife.'

Pronouns, however, show nominative/accusative patterning. The verbs in (8) show that the proclitics do indeed represent subjects rather than absolutives, ergatives, agents, or patients.

(8) Hanis Coos subject proclitics: Frachtenberg (1913; 1922a)

n = *wɬat* '**I** am looking around'
n = *qaína* '**I** am cold'
n = *qaínts* '**I** cool it'

n = *tó:hɬts* '**I** hit (him/her/it)'
eʔ = *tó:hɬts* '**you** hit (him/her/it)'
tó:hɬts '(s/he) hit (him/her/it)'

Third persons are not identified overtly by clitics. They may be identified by nouns or larger phrases, but they are not mentioned at all if given.

The language contains an oblique clitic *x̣*, which attaches to lexical nominals.

(9) Hanis Coos oblique x̣ Frachtenberg (1913: 22.16, 1922a: 323)

a. *k'wɨn-t **x̣** = mɨl:aq = ətš*
shoot-TR **OBL** = arrow = with
'He shot at him **with** an arrow.'

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b. *ẋ = kwɬléƛe:i = tš* *o = dji:*
OBL = sweathouse = in I = came
'I came **from** the sweathouse.'

The precise semantic roles of oblique phrases are typically further specified by enclitics like the instrumental and directional here. The order in which they were grammaticalized is not clear.

It appears that reanalysis of instrumental constructions has resulted in an ergative construction.

(10) Hanis Coos reanalysis: Frachtenberg (1913: 168.20)
Tə = ẋ *mɬlaq = ətš* *tó:h-ɬtš* *lə* *tse:ɬ* *kwí:yo:s.*
that = **OBL** arrow = with hit-TR the little dog
'With that arrow (he) hit the little dog.'
Reanalysis →
Tə = ẋ *mɬlaq = ətš* *tó:h-ɬtš* *lə* *tse:ɬ* *kwí:yo:s.*
that = **ERG** arrow = with hit-TR the little dog
'That arrow hit the little dog.'

The result matches the hierarchy perfectly.

ACCUSATIVE				**ERGATIVE**
PRONOUNS				NOUNS
1st person pronouns, 2nd person pronouns	> 3rd person pronouns	> humans	> animates	> inanimates

But did the hierarchy create, shape, or constrain the system? Let us examine the mechanisms underlying the development more closely. This system is the result of a series of steps.

Reanalysis of zero 3rd person Agent as no argument
Reanalysis of Instrument as Agent
Reanalysis of marked Oblique as marked Ergative

A pathway of development like that seen above, involving multiple steps, each with its own motivation, is not uncommon cross-linguistically. A similar scenario is described by Garrett (1990) for the Gorokan languages of Papua New Guinea, for example. The Gorokan languages constitute one branch of the Eastern Highlands family; the other is the Kainantu branch. All of the languages in the family show nominative/accusative patterning in pronominal affixes on verbs. Only Gorokan languages show ergative case on nouns. The source of the ergative marker can be traced to an instrumental, the only function seen in cognates in both branches of the family. Significantly, Garrett points out that "In general, ergative case-marking is said to be obligatory or nearly obligatory in Gorokan for inanimates, and facultative for animates" (1990: 281).

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The cross-linguistic concentration of ergative marking toward the right of the hierarchy now makes sense in terms of the source of the marker: instruments are typically inanimate, though they may be masses like water or wind. Subsequent extension leftward along the hierarchy may of course be affected by additional factors, such as the status of pronouns as clitics or affixes, but they are not the original motivators.

4.2 Reanalysis of passives

Results of another common pathway of development for accusative/ergative splits can be seen in another language indigenous to the Oregon Coast of North America, Siuslaw. Like the Coosan languages, Siuslaw is no longer spoken, but Frachtenberg has left important documentation and description (1914; 1922b). Like Hanis, Siuslaw shows ergative marking on nouns, with an apparently old ablaut pattern. Compare the absolutive *hi:tš* with the ergative *hyátš* in (11).

(11) Siuslaw ablauted ergatives: Frachtenberg (1914: 15.2–3)
a. *Myáƙa* ***hyátš*** *łt'áyu:n.*
bad **person** devoured.him.
'A bad **person** (ERG) was devouring the people.'
b. *Swa:ł łt'áyu:n* ***hi:tš*** *ƙ'á wá:nwɬts.*
Grizzly devoured **person** many long.ago
'Grizzly Bear was devouring the **people** (ABS) long ago.'
c. ***Hi:tš*** *páƙn qatšná, ł s'às ƙ'xmaí:yu:s.*
person to.hunt goes then he would.kill.him
'Whenever **a person** (ABS) would go out to hunt, he'd kill him.'

Pronouns, by contrast, show nominative/accusative patterning. Subject clitics follow the first word of the clause.

(12) Siuslaw subject clitic: Frachtenberg (1914: 23.8)
Yá:xa = ***nxan*** *hu:tšui:*
much = **1 + 3PL.SUBJECT** play-will
'**We** shall play a great deal.'

Object suffixes are attached to the verb.

(13) Siuslaw object suffix: Frachtenberg (1914: 68.8)
Ya'k^{w}s = *ɨn tša:qáqa-**u:n**.*
seal = 1SG.SUBJECT spear.RDP-**3OBJECT**
'I was spearing a seal.'

Again we have a perfect reflection of the hierarchy.

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ACCUSATIVE	ERGATIVE
PRONOUNS	NOUNS
1st person pronouns, > 3rd person pronouns ≥ humans > animates > inanimates	
2nd person pronouns	

But just how did this pattern come about? Language-internal evidence provides a clue.

Siuslaw connected speech shows extensive use of passivization for the maintenance of topic continuity. The passage in (14) was about tools and equipment. The tools were first introduced in a transitive clause, but then subsequently cast as the only argument of intransitives through the use of passivization.

(14) Siuslaw topic continuity with passivization: Frachtenberg (1914: 78.5–7)
Qi:u:nəmái ƛ'áai pəkú:ya ẋa:ƛ'aí ƛ'áai. K'i:x təhq
winter.in many shinny.stick make people every what
*ẋa:ƛ'áy-**ù:nə** ya:áxa. Tsí:ƛ'i: ƛ'áai uł ẋa:ƛ'áy-**u:tnə**.*
make-**PASSIVE** much arrow many and make-**PASSIVE**
'In the wintertime people make many shinny sticks. All kinds of things **are made** in great quantities. Many arrows **are made**.'

Siuslaw passives are also used extensively to maintain a particular perspective, such as that of the speaker in (15).

(15) Siuslaw passive for perspective: Frachtenberg (1914: 17.9)
*Tẋu = **n** ƛ'o:náy-**u:tnə** səatsítš, k'aháy-**ú:n** = **ɨn**.*
just = **I** tell-**PASSIVE** thus invite-**PASSIVE** = **I**
'**I** was simply told that **I** am invited.'

An earlier tendency to cast speech-act participants (speaker and hearer) as subjects through passivization apparently crystallized into a requirement.

(16) Siuslaw subject choice

'I invited him.'	fine	1/3
'You invited her.'	fine	2/3
'He invited me.'	avoid	*3/1
'She invited you.'	avoid	*3/2

In order to manage the requirements for subject choice, speakers used passives whenever third persons acted on first or second. Given third persons were not mentioned. At a certain point, passives became the only way to express such transitive events, so they were reinterpreted as basic transitive constructions.

(17) Siuslaw reanalysis of passive

*k'aháy-**ù:n** = **ɨn**.*	→	*k'aháy-**ù:nɨn**.*
invite-**PASSIVE-1.SUBJECT**		invite-**me**
'**I** was invited.'		
'(X) invited **me**.'		

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The modern Siuslaw object suffixes consist of an old passive suffix followed by an old subject suffix. Modern transitives are old passives.

We are now in a better position to understand the mechanisms underlying the split system. It was not formed by a single development controlled directly by the hierarchy. It was rather the result of a series of developments, each with its own motivations.

Discourse propensity for topic selection: 1, 2
Gradual increase in use of passivization
Crystallization of passives as the only option for 3 acting on 1 or 2
Reanalysis of erstwhile passives as transitives
Reanalysis of oblique agents as ergatives
Reanalysis of passive + subject pronouns as object pronouns

Developments from passive to ergative constructions have been described for other, unrelated languages as well, among them Indo-Aryan languages discussed in Verbeke and De Cuypere (2009) and Verbeke (2013).

A number of other diachronic pathways to ergative patterning have been described which show that hierarchies do not guide grammatical developments (Gildea 1998; Creissels 2008; McGregor 2006; Cristofaro 2013).

5. Hierarchies as constraints on change?

It could be that even if hierarchies do not drive language change, they constrain it. To pursue this proposal, we return to number marking in Iroquoian languages. As described in Section 2, Smith-Stark (1974) observed that splits in number marking follow an implicational hierarchy:

1st person pronouns > 2nd person pronouns > 3rd person pronouns > kin terms > humans > animates > inanimates

In addition to the pronominal prefixes on verbs, Northern Iroquoian languages, like many others, contain independent pronouns for signaling contrastive focus, topic shift, antitopics, and several other things (Mithun 2013). What is interesting about these independent pronouns for our purposes is that they violate the hierarchy. They show no number distinctions in first and second persons, but singular/plural distinctions in third.

(18) Mohawk independent pronouns

i:'i	'I/me/my/we/us/our'	SG/DU/PL
í:se'	'you/your'	SG/DU/PL
raónha	'he'	SG
raonónha	'they' (M)	DU/PL
akaónha	'she'	SG
konónha	'they'(F)	DU/PL

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The hierarchy failed to constrain the development of this system.

When we look more deeply into their history, it makes sense. The first and second person forms are older, as would be expected. The third person forms are more recent additions, reconstructible only to Proto-Lake-Iroquoian. The Tuscarora counterparts are not cognate. Their internal structure is clear: they are inflected forms of a verb 'be alone', containing initial pronominal prefixes, ancient forms which do distinguish number.

An anonymous reviewer points out another case of the failure of the hierarchies to constrain change: the loss of a number distinction in English second persons.

6. Conclusion

The most frequently-cited set of implicational hierarchies in linguistic typology, known variously as Referential, Topicality, Animacy, or Empathy hierarchies, characterize a number of recurring cross-linguistic patterns. Such hierarchies can aid in the organization of complex sets of data, a preliminary step in the search for explanations of the patterns. In most cases, however, they are not an explanation in themselves.

Language change that consists of a single step, like the development of a number category, might be teleological in the sense that it can reflect frequent speaker choices. It is easy to imagine that speakers would specify the number of persons more often than rocks. But changes that involve multiple steps are rarely directly teleological: each step is motivated on its own. The development of ergative patterns in Hanis Coos could not be said to be teleological: speakers were not aiming at an ergative pattern or even a split pattern when they reanalyzed clause structures. The reanalysis of instruments as agents and of unmarked third persons as no argument at all did result in a system in line with the hierarchies.

NOM/ACC		ERG/ABS
1st person > 3rd person >	animates >	inanimates
2nd person		

But the hierarchies did not create the system. The ergative patterning entered the system at the right end of the hierarchy because it was instruments that were reanalyzed as ergatives, and instruments are more often inanimates than animates, humans, or speech act participants. This pathway of development is not uncommon, as evidenced by the frequent homophony of ergative and instrumental case markers cross-linguistically.

Splits can develop from a variety of sources, from a variety of motivations and sequences of steps. The pathway illustrated with Siuslaw shows another of these. It apparently began with an increasing use of passivization to privilege speech-act

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participants. The increasing frequency ultimately led to routinization, so that when third persons acted on first or second, passivization was the only option. The passives were then reanalyzed as basic transitives, and marked oblique agents as marked ergatives. Topicality preferences set the change in motion, but they did not motivate each step in the process. In the case of these Oregon languages, contact may have played a role as well, facilitating reanalysis in one or both. There are many additional routes to accusative/ergative splits in which the hierarchies play no discernible role, such as those with different patterns in independent and dependent clauses, or in different tenses or aspects.

Ultimately, hierarchies can be useful in organizing data as a first step toward understanding the kinds of processes that recur cross-linguistically. They may reflect predispositions for the development of new distinctions. Close examination of individual systems, however, indicates that the hierarchies do not determine the development of grammatical patterns. An exception to the hierarchies was seen here in Mohawk pronouns; others, pertaining to all parts of the hierarchies, are discussed in Filimonova 2005 and elsewhere. Based on a survey of split alignment systems in typological databases, Bickel concludes that though many are in line with the hierarchies, "the total number of relevant cases is so small as to provide only marginal statistical evidence" (2010: 191). Ultimately, the forces behind the development of grammatical patterns are often complex. Multi-step developments are not teleological: each step is motivated on its own, sometimes by multiple factors. With this understanding "exceptions" to typological hierarchies are no longer a problem.

Abbreviations

ABS	absolutive
DU	dual
ERG	ergative
OBL	oblique
PL	plural
PFV	perfective
RDP	reduplication
SG	singular
TR	transitive

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