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INVARINANCE IN ARGUMENT REALIZATION: THE CASE OF IROQUOIAN

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The relevance of the concepts of local syntactic selection and constraints on locally selected dependents in modeling how arguments are syntactically realized has been virtually unchallenged and is assumed to be universal. In this article, we examine more closely these assumptions and ask whether there is anything invariant in the realization of arguments. We argue that the facts of Oneida, and Iroquoian in general, suggest the answer to this question is No. There is no use in Oneida for local selection of phrases realizing semantic arguments (and lexical records of this selection), and words are, as a result, functionally complete. We also argue that there is no use for a level of argument structure or any analogous notion in Oneida. The kinds of processes that justify positing such a level are systematically absent. The facts of Oneida suggest that there is less universality in the syntax/semantics interface (particularly when it comes to the realization of semantic arguments) than is typically assumed and that languages may vary widely in the way semantics is mapped onto syntax. We end with a formal model of the relevant fragment of Oneida within HEAD-DRIVEN PHRASE STRUCTURE GRAMMAR (HPSG).

Keywords: argument structure, Iroquoian, syntactic selection, Oneida, argument realization, universals, head-driven phrase structure grammar (HPSG)

1. INTRODUCTION. Models of the interface between the syntax and semantics of basic clauses typically involve, first, local selection by heads of dependents realizing their semantic arguments and, second, constraints that heads impose on those selected dependents. For example, understanding the sentence in (1) requires (i) knowing that both noun phrases are required, since the verb see is an obligatory transitive verb (at least outside of particular contexts), and (ii) determining that the person being seen is expressed by the postverbal noun phrase and the person who is seeing is expressed by the preverbal noun phrase. The concept of local selection is meant to model the need for see to combine with two expressions; the concept of constraints on selected dependents is meant to model, among other things, the fact that the seer argument is preverbal and the seen argument postverbal.

(1) I see you!

The question that this article tries to address is whether these two concepts are universally relevant to models of the syntax-semantics interface of basic clauses. In other words, are local selection and constraints on selected dependents critical concepts in modeling the syntactic realization of semantic arguments in all natural languages?

Over the last quarter century, since the work of Hale 1983, nonconfigurational and polysynthetic languages have played an important role in testing how invariant the syn-
tactic selection of phrases realizing semantic arguments really is (see Jelinek 1984, Van Valin 1985, Mithun 1986, Baker 1991, and many others). To illustrate why these languages may challenge how invariant syntactic argument realization is, consider the sentence in 2 from Oneida, a polysynthetic language that, along with Mohawk, Onondaga, Cayuga, Seneca, Tuscarora, and Huron/Wendat, belongs to the Northern branch of the Iroquoian language family (Cherokee is the only Southern Iroquoian language; see Lounsbury 1978 or Mithun 1999 for an overview of Iroquoian languages). 1 Whereas the arguments of verbs are referenced morphologically via prefixes in Oneida (e.g. lon- in the verb form lonuʔwéskwaniheʔ?), they are realized as independent words in English.

(2) Néʔ=swíʔntshiwahu·níse lonuʔwéskwaniheʔ?
s.o.it’s a.long.time.ago 3.M.dp.p-enjoy-hab
da’-hati-yat-a-kóʔn-aʔ ká’,
opt-3.m.pla-a-wood-jn-go.somewhere.to.harvest-pnc see
thánuʔ=s kwíʔ kwahotokáʔu tsiʔ wa-hu-nakla kóʔ
and=habitually.just.for.real that fact-3.m.pla-a-move.away:pnc there
y-a-hu-náklat-eʔ tsiʔ núʔ ye-hoti-yoʔá-st-aʔ.
trl-fact-3.m.pla-a-settle-pnc where trl-3.m.dp.p-work-caus-hab

(3) ‘A long time ago they used to like to go cut wood, and so they would move away and they would settle over there, where they were working.’

(Mercy Doxtator, ‘Some woodcutters get a visitor’, recorded 1996)

The question that occupies us here is whether the surface difference between the Oneida sentence in 2 and its English translation in 3 corresponds to deeper differences. The provocative answer we give is Yes. There is a fundamental difference between Oneida and English in the way in which heads combine with phrases that provides information about their semantic arguments, and this difference permeates the syntax of the two languages. Whereas in English heads select and constrain dependents that real-


Oneida does not have a voicing distinction. ʌ is a low-mid central unrounded nasalized vowel, and ə is a high (or for some speakers, close to mid) back mildly rounded nasalized vowel. A raised period indicates vowel length. Note that an underlying # or ` is replaced by vowel length in accented syllables. All of the recorded material has been transcribed recognizing intonational phenomena. A period delimits what in recorded material has been transcribed recognizing intonational phenomena. A period delimits what in recorded material has been transcribed recognizing intonational phenomena. A period delimits what in recorded material has been transcribed recognizing intonational phenomena. A period delimits what in recorded material has been transcribed recognizing intonational phenomena. A period delimits what in recorded material has been transcribed recognizing intonational phenomena.
ize their semantic arguments, selection (and, a fortiori, constraints on what heads select) does not seem to play a role in Oneida. If our conclusions are correct, it suggests that the concept of syntactic selection and the array of conceptual tools that goes with it may be but one overwhelmingly frequent form of syntax and that the simplest model of the Oneida data may involve another form of syntax.

Before proceeding, we place our analysis of Oneida within the spectrum of analyses of nonconfigurational or polysynthetic languages, so that readers can better grasp where the originality of our analysis of Oneida lies. We give the following answers to the questions in 4, which are often raised in discussions of the syntax of nonconfigurational or polysynthetic languages. Our answers are compared with various competing models of nonconfigurational or polysynthetic languages in Table 1.

b. Do pronominal affixes realize arguments? No, they merely reference properties of semantic arguments, like agreement markers do.
c. If external phrases do not realize arguments, are they adjoined (i.e. not selected by verbal heads)? Yes.

<table>
<thead>
<tr>
<th></th>
<th>J/M</th>
<th>VV</th>
<th>B</th>
<th>A&amp;B/L</th>
<th>K&amp;M</th>
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</thead>
<tbody>
<tr>
<td>Overt phrases realize arguments</td>
<td>no</td>
<td>no</td>
<td>sometimes</td>
<td>yes</td>
<td>no</td>
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<tr>
<td>Affixes realize arguments</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
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<td>(Null) pros realize arguments</td>
<td>no</td>
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<td>sometimes</td>
<td>sometimes</td>
<td>no</td>
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<tr>
<td>External NPs are adjoined (not selected by heads)</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

Table 1. Answers to the questions in 4 in various models of nonconfigurationality.

The goals of our article are: (i) to describe the distribution of the obligatory pronominal prefixes in Oneida and draw attention to the relevance of some of the complexities of the distribution for how arguments are realized in Oneida and other Iroquoian languages, (ii) to argue that concepts of local selection of and constraints on dependents expressing semantic arguments are irrelevant when modeling Oneida or other Iroquoian languages, and (iii) to provide a formal description of the distribution as one instantiation of our analysis. Our contribution will thus be two-fold, we hope: empirical (presenting a particularly complex set of morphological and syntactic facts, not all of which have been part of the basis of discussions of the syntactic selection of phrases realizing semantic arguments in Iroquoian and nonconfigurational or polysynthetic languages, in general) and theoretical (arguing that the notion of local selection and constraints on se-

2 The discussion of syntactic differences between nonconfigurational/polysynthetic languages and configurational languages often centers on the issue of whether arguments are realized by prefixes, and Table 1 reflects the typical context for that discussion. But the larger question, the one we focus on in this article, is whether phrases or affixes realizing arguments are selected by verbal heads.

3 J/M refers to Jelinek 1984 and Mithun 1986, respectively. VV refers to Van Valin 1985. B refers to Baker 1991 and 1996. A&B/L refers to Austin & Bresnan 1996 and Legate 2002, respectively. K&M refers to our article here. Most proposals summarized in Table 1 were intended to cover all nonconfigurational languages. Recently, following the work of Pensalfini (2004), and particularly Legate (2002) on microparameters, it has become clear that there are many types of nonconfigurality (and/or polysynthesis) (see also Adger et al. 2009 and de Reuse 2009). Our article attempts to model one language family, Iroquoian. Our data comes from only one Northern Iroquoian language, Oneida; but Michelson has some familiarity with Mohawk, and discussions with Iroquoianist colleagues, as well as some spot-checking of relevant data points in Mohawk, indicate that our observations hold for other Northern Iroquoian languages as well. We do not claim that our analysis applies to all nonconfigurational languages. Note also that Table 1 necessarily glosses over important differences. Its main intent is to place our analysis of nonconfigurality within the range of analyses that have been proposed in general or for particular language families.
lected dependents are not universally relevant to models of the syntax-semantics interface. More generally, our theoretical goal is to show that not all natural language syntax is selectional—that is, based on the selection by heads of local dependents that realize their semantic arguments—and that the syntax of some languages, like Oneida, is direct—that is, not mediated by the selection by heads of dependents realizing their semantic arguments.

The article is organized as follows. We first discuss the pronominal prefix system of Oneida (§1). We show that only animate arguments of predicates associated with verbs are marked by pronominal prefixes. As a result, verbs with two (or three) semantic arguments but with only one animate semantic argument behave inflectionally like verbs with only one semantic argument.4 Next, we show that if (animate) semantic arguments must be referenced morphologically in Oneida (as in other Iroquoian languages), as Iroquoianists believe, no external phrase ever realizes semantic arguments in Oneida (§2). In §3 we show that there is no evidence for syntactic selection of dependents and constraints on syntactic dependents in Oneida. A formal analysis of Oneida that conforms to the conclusions we draw in §§2 and 3 is then presented in §4, followed by a conclusion (§5).

2. Pronominal prefixes in oneida. As is evident from the sentence in 2, noun phrases that correspond to semantic arguments of verbs do not often occur in natural Oneida discourse, but every verb (or noun, the other major lexical category in Oneida) has pronominal prefixes that reference properties of its semantic arguments. Because of their relevance to the issue of syntactic selection and the syntactic realization of semantic arguments, we begin with a rather detailed description of the distribution of pronominal affixes in Oneida, focusing on their relevance for the issue of the syntactic selection of phrases realizing semantic arguments.

2.1. Non-aspectually restricted verb roots. Transitive and intransitive prefixes. All nouns and verbs in Oneida have a pronominal prefix. Like other Iroquoian languages, Oneida has three categories of pronominal prefixes that occur with verbs: transitive, Agent, and Patient. Transitive prefixes occur with verbs that have two semantic arguments (hereafter, dyadic verbs) and encode properties of both the proto-agent and proto-patient semantic arguments. An example of a dyadic verb with a transitive prefix is given in 5. So-called Agent and Patient prefixes typically occur with verbs that denote one-place predicates (hereafter, monadic verbs) as in 6 and 7, respectively.5 In this section, we describe the distribution of Agent and Patient prefixes with verbs that can occur in all three aspects (habitual, punctual, and

4 For the purposes of this article, we assume that the list of argument positions in the predicates traditionally associated with verbs or nouns constitutes the list of semantic arguments. Koenig et al. 2003 discusses in detail criteria distinguishing semantic arguments from semantic adjuncts, and Koenig et al. 2008 provides a particularly detailed discussion of the argument or adjunct status of instruments. But nothing critical hinges on their theory of semantic arguments: the traditional list of argument positions in the semantic predicates associated with nouns and verbs is all that need be assumed.

5 For expository convenience we use the term proto-agent(patient) to refer to the semantic argument that bears more proto-agent(patient) properties in the sense of Dowty 1991. Although we use the traditional term pronominal prefix, our use of this term is not meant to imply that we view these forms as truly pronominal, as Mithun (1986, 2003) argues, or that they differ in critical ways from pronouns, as Evans (2002) argues (see also the discussion of Seneca pronominal prefixes in Chafe 1994:146–52). Similarly, our use of the traditional terms with capitalized initials Agent prefix and Patient prefix is not meant to imply that natural semantic categories of participant roles always correspond to these prefixes, as we detail in the text. (See Mithun 1991 for discussion.)
These are designated v.a. (for ‘active verb’) in Michelson & Doxtator 2002 or verb in Abbott et al. 1996 and the online Oneida dictionary (available at http://www.uwgb.edu/Oneida/Dictionary.html).

(5) wa-hiy-até·kw-a-h-t-e?
   FACT-1SG→3.M.SG·flee·IN·CAUS-PNC
   ‘I chased him away’
(6) waʔ-te-k-núnyahkw-eʔ?
   FACT-DL-1SG.A·dance-PNC
   ‘I danced’
(7) waʔ-t-wak-wísko-ʔ?
   FACT-DL-1SG.P·slip-PNC
   ‘I slipped’

As mentioned just above, monadic verbs select either Agent or Patient prefixes. The selection of Agent or Patient prefixes is often semantically motivated, as exemplified by the verb stems in 6 and 7 (see Mithun 1991 for Mohawk, Michelson 1991 or relevant appendices in Michelson & Doxtator 2002 for Oneida). Dancing involves more proto-agent properties, whereas slipping involves more proto-patient properties. However, the selection of Agent versus Patient prefixes cannot always be predicted from the semantic role of the verb’s corresponding semantic argument (see also Mithun 1991, 2000). For example, the stem for ‘cry’ selects Agent prefixes, as in 8, while the stem for ‘holler, yell’ selects Patient prefixes, as in 9, and this distribution is unlikely to be predicted from the stems’ meanings.

(8) waʔ-t-k-asháʔho-ʔ?
   FACT-DL-1SG.A·cry-PNC
   ‘I cried’
(9) waʔ-t-wak-ha·léht-eʔ?
   FACT-DL-1SG.P·holler-PNC
   ‘I hollered, yelled’

The morphology of weather verbs provides perhaps a better illustration of the fact that the selection of Agent versus Patient prefixes is not always reducible to semantic considerations, but must in some cases be stipulated in the lexical entries of verb stems. For example, the verbs in 10–11 both take expletive subjects under most analyses of weather verbs, or at the very least they do not take an argument that bears a semantic role in the event described by the verb. Yet the verb in 10 requires a Patient prefix, while that in 11 requires an Agent prefix. We see in the very next subsection that lexical selection of Agent versus Patient prefixes is true for certain dyadic verbs as well.

(10) waʔ-o·ka·nól-eʔ?
    FACT-3.FZ.SG.P·rain-PNC
    ‘it rained, it started to rain’
(11) waʔ-ka·nye·yáʔ?
    FACT-3.FZ.SG.A·snow·PNC
    ‘it snowed (so that there is snow on the ground)’

6 In informal discussions, we adopt, for ease of exposition, Dowty’s 1991 approach to the mapping of semantic arguments onto syntactic positions, grammatical functions, or inflectional prefixes, where the numbers of proto-agent and proto-patient properties are compared. Our formal model of a fragment of Oneida, however, uses another approach that eschews numerical comparisons of proto-properties and their pitfalls. See Davis & Koenig 2000, Davis 2001, and Koenig & Davis 2001, 2003 for the approach our formal model assumes. Nothing substantial hinges on this choice.
(NON)REFERENCING OF INANIMATE ARGUMENTS. Dyadic verbs typically require transitive pronominal prefixes. But not always. Transitive pronominal prefixes occur with a dyadic verb stem when both of its semantic arguments are animate, as in 12 and 14, but Agent or Patient prefixes occur with a dyadic or triadic verb stem when only one of its semantic arguments is animate (see discussion in Lounsbury 1953:66 and Koenig & Michelson 2010a for Oneida; Bonvillain 1973:142 or Mithun 2000 for Mohawk; Chafe 1996:562 for Seneca). (From now on, we use the term polyadic to cover both dyadic and triadic verbs.) Thus, whereas the forms in 12 and 14 select transitive prefixes because both semantic arguments are animate, those in 13 and 15 select Agent or Patient prefixes because only one argument is animate. In 13 the prefix references the proto-agent argument of the verb *-nuhweʔ/-nuhweh-‘like’, since it is the proto-patient that is inanimate; in 15, the prefix references the proto-patient argument of *-atetshahnihta-‘frighten’, since it is the proto-agent argument that is inanimate. Whether a polyadic verb with only one animate argument selects Agent or Patient prefixes can often be predicted from the proto-properties of that argument, just as the selection of Agent versus Patient prefixes by monadic verb stems can often be predicted from the proto-properties of their animate arguments (cf. the examples in 6 versus 7 above). So the stem in 13 selects an Agent intransitive prefix, since the animate argument bears more proto-agent properties (e.g. having a representation of another participant (in Dowty 1991) or being in control (in Mithun 1991)), and the stem in 15 selects a Patient prefix, since the animate argument bears more proto-patient properties (e.g. undergoing a change of state).

(12) khe-nú·weh-seʔ
  1SG>3-like-HAB
  ‘I like her or them’
(13) k-nú·weh-seʔ
  1SG.A-like-HAB
  ‘I like it’
(14) waʔ-khey-ate-tshahni-ht-aʔ?
  FACT-1SG>3-srf-afraid.of-CAUS-BEN-PNC
  ‘I scared her or them’
(15) waʔ-ukw-ate-tshahni-ht-aʔ?
  FACT-1PL.-srf-afraid.of-CAUS-BEN-PNC
  ‘it scared us’

Overall, as a result of the semantic considerations just mentioned (i.e. the proto-properties of the animate argument), the overwhelming majority of polyadic verbs with only one semantically animate argument select Agent prefixes (in the punctual and habitual aspects, as explicaded below), as the habitual aspect form in 13 illustrates, and some (a minority) select a Patient prefix, as the punctual aspect form in 15 illustrates. But a handful also lexically select Patient prefixes despite the fact that it is the proto-agent argument that is animate. An example is the dyadic stem *-aty/-uty/-ati/-uti-‘drop in, throw, add’ in 16.

(16) aʔé· nikuwwwó· y-aʔ-ukni-hnek-uʔtí· thika thóʔná,
great huge.amount TRL-FACT-1DU.P.-water-drop.in:PNC that and then
kháleʔ oná porridge núwaʔ y-aʔ-uky-aʔtí·,
and now porridge this.time TRL-FACT-1DU.P.-drop.in:PNC
‘we poured in a large amount of water, and then we added the porridge,’
(Clifford Cornelius, ‘A lifetime working’, recorded 1994)
Thus, polyadic verbs with only one animate semantic argument behave like monadic verbs with respect to pronominal inflection. They take intransitive Agent or Patient prefixes rather than transitive prefixes, and, like monadic verbs, they can lexically select Agent or Patient prefixes.

Examples such as 10 and 11 above may be taken as counterexamples to our claim that only animate semantic arguments are morphologically referenced by prefixes, since despite the fact that weather verbs are traditionally analyzed as zero-place predicates (or medadic verbs; see Quine 1936, borrowing from Charles Peirce), -kanol- ‘rain’ and -nyeya- ‘snow’ bear pronominal prefixes, that is, third-person feminine-zoic singular. But there are reasons to believe that the forms in 10 and 11 involve a default third-person feminine-zoic prefix used when none of a verb’s semantic arguments is animate. First, a feminine-zoic singular intransitive prefix references a semantically feminine or zoic participant except when there is no animate participant in the described event. This is entirely expected if the feminine-zoic singular serves as a default inflection in these cases, but would result in an odd exponence rule for the feminine-zoic singular if it were analyzed as referencing inanimate arguments in this case: a feminine-zoic singular prefix would reference feminine or zoic arguments except if the situation includes no animate argument, in which case it would reference an inanimate argument. Second, the feminine-zoic singular is used for verbs that have, on most accounts, no semantic argument, that is, weather verbs (see Ruwet 1991 for arguments that weather verbs have expletive subjects despite claims to the contrary), or for which the semantic argument is typically analyzed as an expletive (the subject of so-called raising verbs, as illustrated in example 104 in §4.4). Third, and most importantly, the feminine-zoic singular is used when the verb has only inanimate arguments even if these arguments are semantically plural. Consider examples 17 and 18 below. Although the speaker is talking about two houses in sentence 17, as indicated by the dualic prefix on the counting verb -ke, the feminine-zoic prefixes on both the counting verb and the main verb are singular. Similarly, although the speaker is talking about three loaves of bread in sentence 18, the feminine-zoic prefixes on both the counting verb and the main verb are singular. In all other cases where a prefix references an argument, the prefix records the number of participants in the described situation, but not in this case. This is easily explained if the feminine-zoic singular prefix is a default inflection that is used when there is no argument to be referenced (because only animate arguments are referenced): since the prefix does not reference an argument, we do not expect its number to vary with the number of the verb’s semantic arguments.

(17) Te-ka-núhs-a-ke ka-núhs-o·t-áhkwe?
    nók tsiʔ yah teʔ-wak-anuhteʔ?  kátshaʔ yaw-e·-nú.
    but NEG NEG-1SG.P-know-STV where 3.FZ.SG.P-walk-STV

   ‘There were two houses there but I don’t know what happened to them.’
   (lit. ‘where it went’) (spoken by Mercy Doxtator, 1991)

(18) Áhsa ni-ka-naʔtal-a-ké wak-naʔtal-a-hniʔ nú.
    three PART-3.FZ.SG.A-bread-jn-amount.to[STV] 1SG.P-bread-jn-buy:STV


7 Although we use the label raising verb to describe the main verb in 104, it should be borne in mind that there are no raising verbs proper in Oneida, because there are no sentences in which the subject of the argument clause ‘raises’ either metaphorically or literally to become the subject of a raising verb.
Aspectually conditioned agent/patient prefix alternation. The previous subsection showed that inanimate arguments are not phonologically marked on verb stems. There is additional evidence that suggests that inanimate arguments are not referenced morphologically and that polyadic verbs with only one animate semantic argument behave like monadic verbs with respect to the morphological distribution of pronouns. A minority of monadic verbs select Patient prefixes in all three aspects—habitual, punctual, and stative. But crucially, all monadic verbs that can occur in all three aspects and that lexically select Agent prefixes (unergatives as well as unaccusatives) take Agent prefixes in the habitual and punctual aspects only; in the stative aspect they require Patient prefixes, as shown in examples 19 and 20, respectively (for Mohawk see, for example, Cuq 1866:98, Deering & Delisle 1976:372, or Mithun 1991:533; for Onondaga see Chafe 1970:16; and for Seneca see Chafe 1996:562).

(19) wa-h-atuˈkóht-e?
  'he passed by, he passed on, he died'

(20) lo-tukóht-u
  'he has gone by, he has passed on, he has died'

Polyadic verbs with only one animate argument take Agent or Patient prefixes, just like monadic verbs, as shown above with examples in 13, 15, and 16. Polyadic verbs with only one animate argument also undergo the same prefix alternation as monadic verbs, as examples 21–27 illustrate. Examples 21–23 show that the dyadic stem -hlek- ‘push’ takes transitive, Agent, or Patient prefixes, depending on the animacy of its proto-patient argument and the verb’s aspect. Thus a transitive prefix occurs in 21 because the proto-patient argument is animate, an Agent prefix occurs in 22 because the proto-patient argument is inanimate and the verb is in the punctual aspect, and a Patient prefix occurs in 23 because the proto-patient argument is inanimate and the verb is in the stative aspect. Similarly, the verbs for ‘boil, steam’ and for ‘use’ take Agent prefixes in the punctual and habitual aspects in 24 and 26, but Patient prefixes in the stative aspect in 25 and 27. Examples 24 through 27 show, additionally, that morphologically unreferenced inanimate arguments can still be further specified via external phrases.

(21) y-aʔ-khé-ˈlek-e?
  'I pushed her or them away'

(22) y-a-há-ˈlek-e?
  'he pushed it away'

(23) ye-ho-ˈlek-ú
  'he has pushed it away'

(24) né- kwíː thiká yoʔkaláshá kwíː a-ts-yakw-atekhuˈníː,
  ‘so it’s that evening fut-Rep-1Pl.Excl.a-eat.a.meal:pnc
  osahéˈta? kwíː waʔ-kni-naʔts-ihaˈl-ʌ’,
  bean fact-3.Fz.Du.a-kettle-hang-pnc
  ‘so for our supper, the two of them boiled [lit. ‘hung a kettle’] beans [for soup],’  
  (Norma Kennedy, ‘Worms in the soup’, recorded 2009)

(25) tsiʔ niyawɛʔtowaná oşaħéˈtaʔ yoti-naʔts-ihal-ɛʔ.
  ‘it was a large amount of beans they were boiling.’
  (Norma Kennedy, ‘Worms in the soup’, recorded 2009)
No verb can have three distinct animate semantic arguments. We have shown that only animate semantic arguments are referenced morphologically in Oneida. Inanimate arguments are invisible phonologically and inflectionally. But there is also evidence that inanimate arguments are invisible to morphological derivation. We start with a final observation about referencing animate participants, relevant for our account of the distribution of pronominal prefixes and external NPs: namely, that there are no Oneida verbs that describe a situation with more than two animate participants (henceforth, the three-arguments constraint). As noted by Woodbury (1975:26) for Onondaga and by Baker (1996) for Mohawk, the distribution of verbs denoting three-place predicates (triadic verbs), such as ~u- ‘give’, is restricted in Iroquoian languages in that at least one of the semantic arguments of triadic verbs must be inanimate. There are also no verbs that correspond to English verbs like introduce, and there is no direct Oneida equivalent for the English sentence John introduced Bill to Mary, that is, no sentence with a verb that has three animate arguments.

This restriction is not due to some accidental gap in the Oneida lexicon, and it affects the range of possible uses of derived stems. When a triadic verb is derived (e.g. via a benefactive suffix), one of the two arguments of the base must be inanimate in the derived stem. Thus, the root -ahset- ‘hide’ can mean either ‘hide something’ or ‘hide someone’ (in the latter case, the noun root -yaʔt- ‘body’ is obligatorily incorporated). But when the benefactive suffix -ʌ/-ʌni- is added, the derived stem -ahseht-ʌ(ʌni)- can only mean ‘hide something from someone’, never ‘hide someone from someone’.

The claim that the restriction is a constraint on words is buttressed by the way in which the benefactive suffix interacts with the reflexive/reciprocal prefix. Dyadic stems to which the reflexive marker has been prefixed select intransitive pronominal prefixes rather than transitive prefixes, as the contrast between 30 and 31 illustrates and the shift from Agent to Patient prefixes when the verb is in the stative aspect (see 32) confirms.


(27) Tahnú:, aʔé: kwí· ni-ka-ná’tsy-aʔ, thiká yon-átst-u
3.FZ.DP.P-srf-soup-make[STV]
‘And, it was a great big kettle that they used to make soup.’
(Norma Kennedy, ‘Worms in the soup’, recorded 2009)
Example 31 shows that pronominal prefixes mark only distinct animate semantic arguments, and, as a consequence, dyadic verb stems onto which the reflexive/reciprocal is prefixed reference only one semantic argument. The benefactive is therefore free to be added to such stems, since the argument it adds will not result in a triadic verb, as far as the grammar is concerned: there will not be more than two distinct animate semantic arguments. So, there is an equivalent to the English verb *introduce* after all, provided the verb includes the reflexive/reciprocal suffix.

    fact-dl-1sg>3-refl-know-ben-pnc David and Susan
    ‘I introduced David and Susan to each other.’

Interestingly, there is a small class of nouns that seem to invalidate the generalization that verbs can only have two distinct animate semantic arguments. This class includes -yaʔtaseʔtsl- ‘girlfriend’, -wil- ‘baby, child, offspring’, -naskw-/-tshena- ‘domesticated animal, pet, slave’, and a few other nouns. Thus, the following example is perfectly natural and, as the translation suggests, seems to involve three distinct animate participants in the event.

(34) wa-huwati-wil-á-khwa-ʔ?
    fact-3>3.m.dp-child-jn-take.away.from-pnc
    ‘they took [their] children away from them’

But there are reasons to think that such examples are not true exceptions to the three-arguments constraint. Two kinds of cases must be distinguished. First, there are some nouns—such as -wil- ‘baby, child, offspring’, -naskw-/-tshena- ‘domesticated animal, pet, slave’, and -nhaʔ-tsl- ‘hire-nom, hired person, worker’—that may be considered as having low animacy. The low animacy of these nouns’ denotations explains the fact that they are incorporated into verbs (usually into verbs of acquiring, claiming, exchanging, or owning something) without being referenced via the pronominal prefixes and occur in nominal possessive constructions, a property typical of nouns denoting inanimate entities.

Second, there are a few verbs in our corpus, a handful having to do with looking for a mate, or finding or taking away from someone a mate, that have a meaning that can suggest a depersonification of their referents, and in this case the referent of the external noun is not referenced by the pronominal prefix; examples are given with -yaʔtaseʔtsl- ‘girlfriend’ in 35, as well as an animate noun like *yakukwé* ‘person’ in 36. In these cases, the speaker’s explanation suggests that a contextual semantic effect accompanies the absence of referencing by the pronominal prefix: the participant is (partially) dehumanized. Overall, we interpret the few apparent exceptions to the three-arguments constraint as in fact providing further evidence for the generality of that constraint: apparent exceptions only arise for nouns that denote categories of entities with low animacy or verbs whose meaning in context results in a dehumanization of the relevant event participants.

(35) Wilford wa-ho-yaʔt-á-khwa-ʔ?
    Wilford fact-3.m.sg>3.m.sg-body-jn-take.away.from-pnc
    lao-yaʔtaseʔtsel-iʔ?
    3.m.sg.poss-girlfriend-nsf
    ‘Wilford took his girlfriend away from him.’

We extend our thanks to Hanni Woodbury for discussion of data bearing on the discussion of animate arguments.
To recapitulate, we have the following situation.

(i) All distinct animate semantic arguments must be referenced by inflectional morphology.

(ii) Inflectional morphology can mark at most two distinct semantic arguments.

(iii) Derivational processes that add or reduce the number of semantic arguments interact with the inflectional constraint we just stated to block possible interpretations of derived stems or, on the contrary, to make possible some interpretations.

It is interesting to ponder the nature of the constraint on the number of animate arguments. Baker (1996) argues that polysynthetic languages require arguments to be morphologically visible. This view is on the right track for Oneida, we believe. It is as if inflectional morphology requires arguments to be marked, but is limited (only two arguments can be marked via pronominal prefixes), and, as a result, there are restrictions on the kind of stems (base or derived) that can ‘surface’ as verb forms (see the notion of morphosyntactically licensed argument position in Gerds 1993).9

2.2. Aspectually restricted verb roots. So far we have described how pronominal prefix selection works for verbs that can occur in all three aspects: habitual, punctual, and stative. Verbs that occur in all three aspects are most relevant for our analysis, but for completeness, we mention also verbs that occur only in the stative aspect, which are designated v.s. (for ‘stative verb’) in Michelson & Doxtator 2002 or state in Abbott et al. 1996 and the online version of the dictionary (available at http://www.uwgb.edu/Oneida/Dictionary.html). Verbs that occur only in the stative aspect also occur with either Agent or Patient prefixes, depending on the particular verb. Sometimes the distribution is predictable from semantic factors (see Mithun 1991 for example), in particular whether the state described by the verb is permanent or temporary (compare example 37 with an Agent prefix and 38 with a Patient prefix), but sometimes the selection must be stipulated, as seen by the verb stems in 39 through 42.

(37) la-hná-yés
   3.M.SG.A-tall[STV]
   ‘he is tall’

(38) lo-taʔkaliːtėː
   3.M.SG.P-well:STV
   ‘he is well, healthy’

9 We differ from Baker’s morphological visibility condition (MVC; see 50 below) in two respects. First, inanimate arguments are not marked via phonological zeros, as shown by the fact that dyadic verbs with only one animate argument undergo the shift to Patient prefixes in the stative aspect. The MVC therefore pertains only to animate arguments. Second, Baker assumes that noun incorporation is an alternative way of making morphologically ‘visible’ an argument. This is incorrect, as noun incorporation has no effect on the number of arguments that must be morphologically referenced. It only seems so because most incorporated nouns are inanimate, and inanimate arguments are not morphologically referenced. Baker has no account for the fact that noun stems whose referent is animate can be incorporated into monadic verbs, such as -iyo–‘good’, with animate prefixes, as in the form yak-ukweʔt-iyó ‘she is a good person’, with the third-person feminine-indefinite agent prefix yak- and the incorporated noun -ukweʔt- ‘person’.
Finally, even verbs that occur only in the stative aspect and select Agent prefixes take a Patient prefix instead if the verb form also includes an incorporated noun that designates an alienably possessed noun. (Agent prefixes are retained when the incorporated noun is inalienably possessed.) So, for example, the verb form in 43 has an incorporated noun that is not possessed, and the verb has a feminine-zoic Agent prefix. The verb form in 44 also has an Agent prefix, in this case because the incorporated noun is inalienably possessed, but the verb form in 45 has a Patient prefix since the incorporated noun is alienably possessed (see also Lounsbury 1953:95 for Oneida, Chafe 1970:90 for Onondaga). (Some stative verbs take Patient prefixes regardless of the alienability of the incorporated noun, just as some active verbs take Patient prefixes in all three aspects.) Note that, critically, the pronominal prefix does not reference the same argument as the incorporated noun: in 44 and 45, for example, the pronominal prefixes reference the animate ‘possessors’ of the tail and the house, respectively, not the tail and the house themselves. And in example 46 the prefix references the beaver, not the tooth, even though it is the tooth that is categorized as nice. Sentences such as 46 can be literally paraphrased as ‘because it’s incredible how the beaver is nice in the tooth’.

(43) ni-ka-kal-ó·t
    PART-3.FZ.SG.A-story-kind.of[STV]
    ‘the kind of story it is’

(44) ni-ha-tahs-ó·t
    PART-3.M.SG.A-tail-kind.of[STV]
    ‘the kind of tail he has’

(45) ni-ho-nuhs-ó·t
    PART-3.M.SG.P-house-kind.of[STV]
    ‘the kind of house he has’

(46) nē’ wi’ tsiʔ tsoniʔ tuʔ yaʔ kwí’ teʔwé’ne tsiʔ
    because beaver it’s.incredible that
    naʔ-te-ha-nawil-i’yó’-seʔ ká’,
    PART-DL-3.M.SG.A-tooth-nice[STV]-DISTR y’know
    ‘because it’s incredible what nice teeth the beaver has’
    (Mercy Doxtator, ‘Trading teeth with the beaver’, recorded 2000)

3. Local dependencies in oneida. The data we presented in the previous section supports the following generalizations about the distribution of pronominal prefixes in Oneida.

* Generalization 1: All verbs must have a pronominal prefix, which, by default, is a third-person feminine-zoic prefix.
• **Generalization 2:** All and only (distinct) animate semantic arguments are referenced by pronominal prefixes.

• **Generalization 3:** Polyadic verbs with only one animate semantic argument behave like monadic or medadic predicates with respect to pronominal prefix selection: (i) they take intransitive prefixes; (ii) they lexically select Agent or Patient prefixes; and (iii) a verb that lexically selects Agent prefixes takes them only in the punctual and habitual aspects, and takes Patient prefixes in the stative aspect.

• **Generalization 4:** There are no basic or derived verb stems with three animate semantic arguments.

The first generalization is based, in part, on the fact that even verbs with no semantic arguments (medadic weather verbs) require a pronominal prefix. Relevant examples were 10 and 11. The second generalization was demonstrated with polyadic verbs that take Agent and Patient (i.e. intransitive) prefixes when one or more of the stem’s semantic arguments is inanimate; so both the polyadic verb ‘boil, steam’ in 24 and the monadic verb ‘die, pass on’ in 19 have an Agent prefix. The alternation of Agent and Patient prefixes, as in 24 and 25, or 26 and 27, underlies the third generalization. Finally, with respect to the fourth generalization, it was pointed out that in Oneida there are no verbs with three distinct animate arguments, equivalent to English verbs like ‘introduce someone to someone’.

To make the following discussion easier to understand, we need to introduce some terminology. As mentioned in the introduction, much of modern syntactic thinking is based on the idea that some expressions (typically, heads) select other expressions within a local domain (for concreteness, the maximal projection of those expressions). This is an idea whose roots are already implicit in the work of Ajdukiewicz 1935 (and even more implicitly in Bloomfield 1933) and explicit in the work of Bar-Hillel 1953 and Lambek 1958, but it is most prominently associated with the notion of subcategorization frames in Chomsky 1965. Local selection can be thought of as a set of relations defined on a local tree between heads and nonheads whose presence is required by particular heads. In some approaches, the relevant local tree is part of the sentence’s representation, whereas in others it is merely a record of derivational steps. Such differences are not relevant here. What is relevant for our purposes is the fact that such selection, and the resulting dependencies between some expressions and others, are assumed to exist in all natural languages, and the fact that, in most approaches to argument realization, the lexical entries of heads have some record of such selectional dependencies.

There is considerably greater variation across frameworks in how to model constraints that selecting expressions impose on the expressions they select. But, at a very general level, they all involve a way of differentiating between semantic arguments through **grammatical labels** that are associated with them. We illustrate this with the sentence in 47 (repeated from 1).

(47) I see you!

To ensure the proper association between syntactic realization and meaning, there must be a way of distinguishing the two semantic arguments of the predicate associated with *see* (hereafter, *see’*). Different frameworks adopt different strategies to that effect. In **categorial grammar** (see Steedman 2000, among others), a record of its syntactic combinatorial potential would be included in the lexical entry for *see*, basically, (NP:S)/NP, with the order of labels corresponding to the order of composition, and a general convention would ensure the proper association between the syntactically selected expressions whose labels are NP and the semantic arguments of *see’. In **lexical-
Functional grammar (LFG; Bresnan & Kaplan 1982), the entry for see would include two attributes, subj and obj, that would encode the relevant information for the sentence’s subject and object, and a general convention would, again, ensure the proper association of the see and seen arguments of see’ with the information included in the values of subj and obj. In Role-and-reference grammar (Foley & Van Valin 1984), the see and seen arguments of see’ would be labeled actor and undergoer, respectively. In head-driven phrase structure grammar (HPSG), the lexical entry for see would include an arg-str attribute whose value would include some information about the subject and object of see and the semantic arguments of see’. In some forms of cognitive grammar or construction grammar (see Langacker 1987, Goldberg 1995, Croft 2001), the entry for see would specify that the two semantic arguments of see’ are profiled, thus ensuring that both arguments are obligatorily expressed syntactically, and a semantic ‘matching’ principle would ensure that the see argument is realized as the agent and subject of the transitive construction, while the seen argument is realized as the patient and object of the transitive construction. Finally, although particular proposals vary quite a bit in details, in Principles-and-Parameters approaches, the lexical entry for see would include features conventionally associated with the see and seen arguments of see’ that would ensure that the phrase realizing the see argument c-commands the phrase realizing the seen argument.

This very brief description of but a sample of various frameworks suffices to illustrate the diversity of approaches to differentiating semantic arguments that are selected by heads. But they all involve a grammatical labeling of semantic arguments in that the labels do not reduce to natural semantic properties of arguments. Those labels are ordered either directly (in those approaches that assume a hierarchy of grammatical functions, following Keenan & Comrie 1977) or indirectly (through an ordering of generalized semantic roles or an ordering of nodes in tree configurations). We call the (ordered) grammatical labels grammatical arguments (or g-arguments). Finally, the (ordered) grammatical labels of semantic arguments involve or induce an ordering of semantic arguments. In some approaches, the relevant ordering will be the ordering of members of an argument structure (see e.g. Grimshaw 1990 and Manning & Sag 1999 for very different versions of this idea). In others, it will be the ordering of the realization of semantic arguments in the sentence’s configurational structure, typically through some version of a (c-)command relation on tree nodes (see e.g. Baker 1991 for an example of that approach for Iroquoian). In yet others, it will consist of assigning primitive grammatical functions relating semantic arguments to cooccurring expressions, and the grammatical functions will be ordered through some obliqueness hierarchy (see Perlmutter 1978). Yet in others, it will consist of ordering some generalized semantic roles through, for example, Actor-Undergoer hierarchies (see Foley & Van Valin 1984). Finally, ordering of semantic arguments can be modeled through a hierarchy of heads (as in Ramchand 2008, à la Lakoff 1970), with features on roots ensuring proper matching (through head movement) of roots and syntactic contexts in which roots can occur.

For concreteness, we discuss the grammatical labeling of semantic arguments in terms of argument structure and an ordering of semantic arguments, but nothing substantial hinges on this choice. Our discussion applies equally well to all approaches mentioned, since they all posit an (ordered) grammatical labeling of semantic arguments and either a direct ordering of semantic arguments based on some classificatory scheme or an indirect ordering through, for example, an ordering of syntactic heads. The notion of syntactic arguments we introduce below is similar to the various notions of ‘argument structure’ one finds in the literature (e.g. Grimshaw 1990 or Randall 2009), the notions of macro-
role and nonmacrorole core arguments defined in Van Valin & LaPolla 1997, and the notion of argument structure found in HPSPG, in particular in Wechsler 1995, Davis & Koenig 2000, and Davis 2001. Our notion of grammatical arguments or g-arguments is most similar to the notion of $A$ subscripts on conceptual-structure constituents proposed in Jackendoff 1990, although our use of the notion of g-argument is more general than that envisioned by Jackendoff for $A$-subscripted conceptual-structure constituents.

Our contention in the rest of this article is that there is no evidence that g-arguments play a syntactic role in the grammar of Oneida. This is not to say that there are no grammatical reflexes of semantic arguments, as our extensive discussion of pronominal prefixes demonstrates. This grammatical role is not syntactic, however, but inflectional in nature. In other words, assigning morphological labels to semantic arguments is useful for modeling Oneida, but assigning syntactic labels is not. We use the term inflectional g-arguments when a set of labels is only useful inflectionally and reserve the term syntactic g-arguments for instances where a grammatical labeling of semantic arguments is of some syntactic use. Finally, we call semantic arguments (henceforth, s-arguments) the unordered set of participant roles associated with a verb’s meaning and strongly activated by accessing that verb’s lexical entry (see Koenig et al. 2003).

We illustrate the difference between s-arguments and g-arguments with the verb eat in sentences 48a and 48b. In both sentences, eat has two s-arguments. (For simplicity purposes, we do not distinguish here between arguments and argument positions.) That is, the verb eat has the same number of s-arguments in 48a and 48b: semantically, an eating event always includes a relation between two entities, an eater and some food. However, eat has two g-arguments in 48a, with the proto-agent argument preceding the proto-patient argument, but only one g-argument in 48b, the proto-agent argument. This is because a verb’s g-arguments are a set of labels of a (not necessarily proper) subset of s-arguments, those that are relevant for syntactic or morphological processes, and the food argument plays no morphological or syntactic role in sentence 48b. For expository purposes, the labels that define g-arguments are simply represented as positions on an ordered list in 48.

(48) a. Martha ate pizza.
   s-arguments \{x_1, x_2\}; g-arguments: \{x_1, x_2\}

b. Martha ate.
   s-arguments \{x_1, x_2\}; g-arguments: \{x_1\}

3.1. Morphological referencing of arguments. One distinctive property of polysynthetic languages (and many nonconfigurational languages) is that g-arguments are morphologically referenced on verbs (or auxiliaries) (Jelinek 1984, Van Valin 1985, Mithun 1986, Nichols 1986, Baker 1996). The strong morphological referencing hypothesis (SMRH) reflects that property.

(49) Strong morphological referencing hypothesis: All g-arguments are referenced morphologically.

The SMRH is implicit, we believe, in Jelinek 1984, Van Valin 1985, Mithun 1986, and Nichols 1986, and is explicitly espoused in Baker 1996. Baker proposes that the grammar of polysynthetic languages includes the following (somewhat simplified) morphological visibility condition (MVC; see Baker 1996:17).

(50) Morphological visibility condition: A phrase X is visible for 0-role assignment from a head Y only if it is coindexed with a morpheme in the word containing Y through an agreement or movement relationship.
Generalizations 1–4 at the beginning of this section have a far-reaching consequence for the SMRH, namely that in Oneida only animate s-arguments are g-arguments. The reason is straightforward. Polyadic verbs with only one animate g-argument select Agent or Patient prefixes (not transitive prefixes), and those that select Agent prefixes undergo the same prefix alternation as monadic verbs that select Agent prefixes (namely, they require Patient prefixes in the stative aspect). These two facts indicate that inanimate arguments are not referenced morphologically. In other words, inanimate arguments are not simply phonologically unmarked; they are also inflectionally unreferenced by pronominal prefixes. Since the SMRH holds that all g-arguments are referenced morphologically, inanimate arguments cannot be g-arguments. The SMRH thus entails that the following constraint is operative in Oneida.

(51) **Animate argument constraint:** An s-argument is a g-argument and is referenced morphologically if and only if it is animate.

If only animate s-arguments are g-arguments in Oneida, we have an immediate account for the fact that no verb can describe situations with more than two animate participants—or, put differently, no verb can have more than two of its s-argument positions filled with animate entities. All animate s-arguments are g-arguments, and all g-arguments must be referenced by pronominal prefixes. Since pronominal prefixes can reference at most two g-arguments, it follows that no verb can have three animate s-arguments. Inanimate s-arguments are irrelevant here, since they are not g-arguments and are not referenced by pronominal prefixes. The SMRH explains the three-arguments constraint, in the sense that the constraint follows from the fact that all g-arguments are morphologically referenced and from the limited referencing possibilities of inflectional prefixes in Oneida.

Baker (1996) agrees that Iroquoian differs from English in requiring the morphological referencing of all g-arguments. But morphological referencing, in his analysis, need not be via pronominal prefixes; incorporated nouns can serve that function as well. Consequently, he provides an alternative account of the restricted distribution of ditransitive roots: inanimate incorporated nouns (which can be phonologically empty, ‘zero’) can be used to morphologically reference g-arguments that are not referenced by transitive prefixes. However, Baker’s assumption that sometimes triadic stems include a null incorporated root makes his account of the restricted distribution of triadic verbs hard to falsify.

Furthermore, as Baker himself points out (1996:461), complement clauses appear to challenge the generality of the MVC, since, being semantically inanimate, they are not referenced by pronominal prefixes. He suggests that verbs that take CP complements incorporate a root meaning something like ‘matter’, that is, that the structure involved is similar to English sentences of the form *believes the claim that* … While the nominal root meaning ‘matter, affair, business, reason’ (Mohawk -rihw-, Oneida -lihw-) can certainly be incorporated into verbs that take propositions as semantic arguments, its incorporation is not necessary when a complement clause occurs. Indeed, fewer than half of the Oneida verbs that take propositional arguments in our corpus also have an incorporated nominal root. Furthermore, some verbs that take propositional arguments cannot incorporate a nominal root (e.g. -anuh-te- ‘know’, -atkatho- ‘see, catch sight of’, -atnuhtuʔ- ‘wait’, -el(h)- ‘want’, -atu- ‘be possible, occur’). One might suggest, as Baker does, that verbs that take a propositional argument may incorporate a null nominal root in this case. But positing the necessary incorporation of necessarily null nominal roots renders Baker’s assumption yet again hard to falsify.
In conclusion, according to the SMRH, polyadic verbs with one animate s-argument in Oneida have one g-argument, just like monadic verbs. This is why they behave inflectionally like monadic verbs, that is, why they take intransitive pronominal prefixes, why they lexically select Agent and Patient prefixes, and why, if they select Agent prefixes in the punctual and habitual aspects, they select Patient prefixes in the stative aspect. In the next subsection, we discuss the syntactic consequences of the SMRH. We argue that the simplest analysis of Oneida syntax, IF THE SMRH IS CORRECT, is one in which verbs do not select expressions they cooccur with or, to put it differently, the syntax of verbs in Oneida is not organized around head/complement or head/specifier relations.

3.2. **Syntactic consequences of the SMRH.** We begin with non-wh NPs. As we have just seen, the SMRH entails, for Oneida, that inanimate semantic arguments of polyadic verbs are not g-arguments. On the standard assumption that phrases (overt or null) that occur as complements of verbs are projections of subcategorization requirements of a verb (modeled via valence attributes, as in HPSG, grammatical function attributes, as in LFG, or as features to be checked, in **minimalist** terms), the SMRH entails that no phrase that is coindexed with an inanimate s-argument occurs in complement position. Otherwise, those phrases would correspond to one of the g-arguments of the verb and then should be referenced morphologically.

This entails that the phrase $\text{laoto·ká· }$ ‘his axe’ in (52) is not in direct object position since the verb’s proto-patient argument is inanimate. The adjoined status of the phrase $\text{laoto·ká· }$ ‘his axe’ is a view shared by many scholars who have worked on nonconfigurationality or polysynthesis, for example, Jelinek (1984), Van Valin (1985), and Mithun (1986), and also by Baker (1996), although these authors vary as to how they precisely model ‘adjoined’ status. But the SMRH also excludes, contra Baker, the possibility of a null pro occurring in direct object position in sentences such as (52), since the verb $\text{-hyo?thiyat- }$ ‘sharpen’ has only one morphologically referenced s-argument and so only one g-argument. If the SMRH is correct, there could be no direct object position onto which to project a null pro.

(52) $\text{a-ha-hyo?thi·yat-e? laoto·ká·,}$
\begin{center}
FUT-3.M.SG.A-sharpen-PNC his.axe
\end{center}

‘he will sharpen his axe,’ (Clifford Cornelius, ‘A lifetime working’, recorded 1994)

Now, it is tempting to think that the occurrence of $\text{laoto·ká· }$ ‘his axe’ in adjoined position loosens the semantic association between that phrase’s referent and a semantic argument of the verb, as referees suggested. But, this intuition, we believe, comes from not distinguishing between selection and semantic binding of indices. As we show in §5 below, Oneida has rules that ensure that when they occur the indices of NPs are properly bound with a verb’s semantic argument position. What it does not have is any selection of the external NP by the verb: verbs are fully saturated (there are no formal features to check, no valence list that is not empty, no lambda-abstracts, no profiled semantic arguments to realize, and so forth).

While the overt phrase $\text{laoto·ká· }$ ‘his axe’ occurs in a syntactically adjoined position according to most researchers working on Iroquoian languages, the same is not true of all overt phrases that are coindexed with an argument of a verb. In particular, Baker claims that, in Mohawk, incorporated nouns, argument CPs, and wh-phrases can all occur in complement position. We show that the same argument that demonstrates that $\text{laoto·ká· }$ or a null pro cannot be in direct object position in sentences like (52) applies to these other cases as well.
Consider, for example, the verb -is\(\bar{a}\)(?)- ‘finish’, which has incorporated into it the nominal root -\(kh\(\bar{w}\)- ‘food’ in 53 and 54. In 53, the verb -is\(\bar{a}\)(?)- has an Agent prefix (3.M.SG.A h-) because it is in the punctual aspect, but in 54 it has a Patient prefix (1SG.P wak-) because, as detailed in the previous section, it is in the stative aspect. The SMRH holds that -is\(\bar{a}\)(?)- has only one g-argument, the one that corresponds to its proto-agent s-argument. The nominal root -\(kh\(\bar{w}\)- cannot, therefore, be a complement of the verb -is\(\bar{a}\)(?)- prior to incorporation: since the verb has only one g-argument, there is no subcategorization requirement that the nominal root could satisfy.

(53) wa-h-ate-khw-\(\bar{i}\)\(\bar{\text{s}}\)a-ne? ohnekákli? FACT-3.M.SG.A-SRF-food-finish-PNC

‘he finished eating the soup,’ (Norma Kennedy, ‘The fat cat’, recorded 2007)

(54) ohnekákli? wak-ate-khw-\(\bar{i}\)\(\bar{\text{s}}\)a-u?, soup 1SG.P-SRF-food-finish-STV

‘I have finished eating the soup,’ (Norma Kennedy, ‘The fat cat’, recorded 2007)

Why the SMRH predicts that CPs cannot occur in complement position is again fairly straightforward. Polyadic verbs that take a proposition or an interrogative as a s-argument undergo the same Agent/Patient prefix alternation as other polyadic verbs with an inanimate argument as well as monadic verbs. The sentences in 55 and 56 illustrate the alternation with the dyadic verb -atlihw\(\bar{i}\)\(\bar{\text{s}}\)a(?)- ‘agree’. The Agent prefix hy- is used in the punctual aspect, but the Patient prefix lon- is used when the verb is in the stative aspect.

(55) Ya-hy-at-lihw-\(\bar{i}\)\(\bar{\text{s}}\)a-ne? kati? wi- ka?iká LOC-3.M.DU.A-SRF-matter-finish-PNC then this

[t\(\bar{s}\)i\(\bar{\text{t}}\) tahyathwatsi‘láyesto?],

[that they would mix families]

‘They agreed [that they would get married].’ (Michelson & Nicholas 1981:16)

(56) Lon-at-lihw-\(\bar{i}\)\(\bar{\text{s}}\)a-u? kwí· ka?iká [t\(\bar{s}\)i\(\bar{\text{t}}\) tho kwí· nukwá: 3.M.DP.P-SRF-matter-finish-STV this [that that’s where

yahyanáklate? t\(\bar{s}\)i? sáha? néc’ yonuhsowa n\(\bar{\text{a}}\)],

over there the two will settle because more it’s her house is big]

‘They had agreed [that that’s where they would move because her place was bigger].’ (Michelson & Nicholas 1981:16)

The existence of triadic verbs with a propositional or interrogative argument corroborates the claim that, if the SMRH is correct, CPs do not occur in complement position. Consider the verb -hloli- ‘tell’ in the sentence in 57. It takes a transitive prefix that expresses properties of the speaker and addressee arguments, but it bears no morphological mark of the properties of the proto-patient argument. As we showed in the previous section, the three-arguments constraint is easily explained by the SMRH (since that hypothesis entails that only animate arguments are g-arguments). Sentence 57 conforms to the three-arguments constraint on the assumption that the propositional argument of -hloli- ‘tell’ is not one of its g-arguments.

(57) ʌ-hets-hlo’\(\bar{\text{i}}\): [t\(\bar{s}\)i? yah tha?tesatuhtusyoni], só t\(\bar{s}\)i?

FUT-2SG>3.M.SG-tell:PNC [that not you don’t want] too much

kano’\(\bar{\text{l}}\)\(\bar{\text{u}}\), it is expensive

‘you should tell him [that you don’t want it], it’s too expensive.’

(Mercy Doxtator, ‘Kastes buys a face’, recorded 1994)
The final class of expressions that, according to Baker, occurs in complement or specifier position in Iroquoian languages is wh-phrases. Again, a fairly straightforward and immediate consequence of the SMRH is that at least some wh-phrase do not occur in complement position (i.e. those that correspond to inanimate arguments). The argument takes the same form as that just made for CPs. Verbs that cooccur with inanimate wh-phrases display the usual, completely regular pronominal prefix alternation—the shift to Patient pronominals in the stative aspect—as monadic verbs and other semantically dyadic verbs with an inanimate proto-patient argument. An example is given in 58.

what  dl.3.m.sg.p-get.busy-stv this one.day.after.another  
‘What’s he busy at these days?’  
(speaken by Mercy Doxtator, 1994)

Corroborating evidence for the fact that, if the SM RH is correct, the wh-phrase is not base-generated in complement position in sentence 58 comes again from the behavior of triadic verbs such as -hloli- ‘tell’ in, for example, the sentence in 59; the proto-agent and recipient arguments of -hloli- are referenced by the transitive pronominal prefix, and the proto-patient argument is unreferenced. The generalization that triadic predicates can be used only when one of their semantic arguments is inanimate supports the hypothesis that the inanimate propositional argument is not a g-argument of -hloli- in sentences like 59 and that the wh-phrase is therefore not base-generated in object position (since, according to the SMRH, all g-arguments must be referenced inflectionally).

(59) Náhte? wa-hets-hlo’li-.  
what  fact-2sg>3.m.sg-tell:pnc  
‘What did you tell him?’  
(Mercy Doxtator, ‘A man tells off his boss’, recorded 1994)

This section has so far argued that the SMRH entails that no phrase coindexed with an inanimate argument occurs in complement position. What about phrases coindexed with an animate argument? In particular, can null pros (à la Baker) that correspond to animate arguments occur in complement position or in specifier position? We know of no compelling empirical data that would bear on the issue. But simplicity considerations favor a negative answer to this question, as otherwise two distinct mechanisms are required for relating phrases coindexed with semantic arguments of verbs, one for inanimate arguments and one for animate arguments. We conclude that, if the SMRH is correct, simplicity considerations support the following descriptions of Oneida syntax (assuming, for ease of exposition, that complements or specifiers are licensed via subcategorization or valence requirements).

• **Conclusion 1:** No word or phrase occurs in complement or specifier position in Oneida.

• **Conclusion 2:** No word includes valence requirements or subcategorization information in Oneida.

The SMRH, if correct, suggests that the concepts of local selection and local dependency, which are at the core of notions such as heads, complements, and specifiers, may not be useful for modeling argument realization in Oneida. Of course, the SMRH may be false, and we could adopt a weaker hypothesis according to which some, but not necessarily all, g-arguments are referenced morphologically. That is to say, while the SMRH claims that only animate s-arguments are g-arguments, and all g-arguments are referenced morphologically, the **Weak Morphological Referencing Hypothesis** (WMRH) claims that all s-arguments are also g-arguments, but certain g-arguments—those that are inanimate—are just not marked in the morphology.
Weak morphological referencing hypothesis: All animate g-arguments are referenced morphologically in Oneida.

Before evaluating the WMRH, we discuss another important aspect of Oneida syntax, namely the absence of any strictly syntactic (in contrast to inflectional) motivation for ordering s-arguments or for syntactic g-arguments.

4. Argument structure in Oneida. In a language like English, a constellation of syntactic and morphological facts justifies the notion of g-argument (we consider only simple clauses here and leave out coordination or relativization data that can otherwise be relevant for the justification for g-arguments—see Keenan & Comrie 1977 and Bickel 2011—since they do not bear on the issue of syntactic g-arguments in Oneida). Consider the sentence in 61. Knowing that love has two s-arguments is not enough. First, one needs to account for the verb-subject agreement recorded on the verb form loves. Second, one needs to account for the obligatoriness of the expression of those s-arguments, and the fact that the subject’s referent is the lover and the object’s referent the loved one. Third, one needs to account for the case of the object pronoun in the sentence in 63. Fourth, some constructions disrupt the mapping between g-arguments and surface structure and require reference to an ordering of s-arguments, as the passive variant of love in 62 illustrates. Fifth, anaphoric expressions like herself in 63 (as well as the relation between a wh-phrase and its putative trace in some approaches) require reference to the relative prominence of s-arguments (either through configurational or functional notions). The existence of these kinds of facts and the constructions illustrated in 61–63 has provided ample justification in the past few decades for the notion of argument structure, grammatical functions, an ordering of syntactic heads that license the realization of a verb’s semantic arguments, or, more generally, the difference between s-arguments and (inflectional or syntactic) g-arguments. Crucially, in Oneida only inflectional facts support the notion of g-arguments, and none of the kinds of evidence one can adduce to justify syntactic g-arguments in English or most other languages exist.

Mary loves John.

John is not loved by his students.

Mary loves herself.

It is, in fact, one rather stunning property of Oneida that none of the traditional kinds of evidence for the notion of syntactic g-arguments as distinct from s-arguments apply. The notion of g-arguments in Oneida does matter for inflectional processes, that is, for the selection of the appropriate pronominal prefix, but all syntactic evidence for g-arguments and argument structure is simply absent. We take as evidence for the absence of argument structure in Oneida (or any equivalent notions) the absence of the usual kinds of evidence for syntactic arguments or a syntactic notion of argument structure (or any of its equivalents). In what follows we discuss in turn the five kinds of putative evidence for inflectional or syntactic g-arguments. But before going into the details of Oneida’s morphosyntax, a few words on the nature of the evidence we provide are in order. Most of the evidence that can be adduced for the role of g-arguments in morphology or syntax comes from restrictions on words and phrases. Inflectional evidence comes from restrictions on the form of words given the meaning or argument structure of the stems they are based on. Syntactic evidence comes from restrictions on the occurrence of heads (they cannot occur without the relevant selected dependents; the selected dependents must take a certain form; the selected dependents must
be in a certain syntactic relation to each other; and so forth). Because evidence for
g-arguments comes from distributional restrictions, most of the evidence AGAINST
g-arguments must perforce come from the absence of distributional restrictions. The ev-
idence we present below against the syntactic relevance of g-arguments and argument
structure in Oneida is, therefore, mostly NEGATIVE: none of the distributional restric-
tions that motivate positing syntactic g-arguments and argument structure are found
in Oneida.

4.1. Inflectional evidence for the notion of g-arguments. We review first
the inflectional evidence for the existence of g-arguments in Oneida. Selecting the ap-
propriate transitive prefix depends on ordering s-arguments of polyadic verbs, more
specifically, deciding on which of the two animate g-arguments has more proto-agent
properties than proto-patient properties (in Dowty’s terms). Thus, the presence of the
prefix shako- in 64 indicates that the teller is male and the audience female or third-
person nonsingular because tellers bear more proto-agent properties than audiences
(and, conversely, audiences bear more proto-patient properties than tellers), while the
presence of the prefix huwa- in 65 indicates that the teller is female or third-person non-
singular and the audience male for the same reasons. To correctly inflect Oneida verbs,
then, we need to order animate s-arguments, that is, decide which is a proto-agent and
which is a proto-patient.10

(64) waʔ-shako-hloʔli·
  fact-3.m.sg>3-tell:pnc
  ‘he told her or them’
(65) wa-huwa-hloʔli·
  fact-3>3.m.sg-tell:pnc
  ‘she or they told him’

4.2. Cooccurrence constraints.

Obligatoriness. The need to distinguish between s-arguments that are required to
coccur with the verb and those that are not constitutes potential syntactic evidence for
syntactic g-arguments. Such a distinction is part of the motivation for the notion of ar-
gument structure in Grimshaw 1990 (where members of her notion of argument struc-
ture correspond roughly to what we call g-arguments) or A superscripts in Jackendoff
1990. Such lexically driven obligatory cooccurrences between verbs and other expres-
sions do not exist in Oneida. External phrases specifying further properties of s-argu-
ments are never syntactically required and are relatively infrequent in Iroquoian and, in
particular, in our corpus of spoken Oneida.

Reinforcing the claim that cooccurrences between a verb and phrases in Oneida are
qualitatively different from the kinds of cooccurrences exemplified in 61 is the obser-
vation that, when nominals occur, they enter into unbounded dependencies with the
verb (see Baker 1996). The sentence in 66 shows that the dependency between an ordi-
nary nominal and a verb whose inanimate argument it is coindexed with is unbounded,
just like the dependency between a wh-phrase and a verb (see the sentence in 67); the

10 As mentioned earlier, the approach to ordering s-arguments we adopt in our formal model of Oneida in
§5 follows Davis & Koenig 2000, Davis 2001, Koenig & Davis 2001, and, more specifically, Koenig & Davis
2003. In that approach, and in contrast to Dowty’s 1991 original view where the number of proto-agent and
proto-patient properties are compared, the ordering is induced by constraints relating arguments of predicates
that denote types of situations with positions on a list. See the references for why such an approach eschews
some of the difficulties in Dowty’s numerical comparison of proto-properties.
sentences in 68 and 69 show the same for animate arguments (although the ‘dislocated’ NP in 66 is in the scope of the focus particles kwah nök ‘just only’, ‘dislocated’ NPs need not be part of a topic/focus structure, as we discuss in §5.2). Whether the relation between a CP and a verb is also unbounded is more difficult to say. NPs can occur between a verb and a CP, as 70 shows, which is consistent with the hypothesis that the CP-verb dependency is also unbounded.


(Verland Cornelius, ‘A lifetime of memories’, recorded 1995)


English ‘what could he possibly say in English?’

(Mercy Doxtator, ‘A man tells off his boss’, recorded 1994)


‘Who did you wish would come to visit?’

(69) isé· katiʔ wi’: ká?iká yah thya ya’wáneʔ tsiʔ a-skwa-ye’na’ you well then this it.has.to.happen that FUT-2PL>1-accept:PNC kaʔi:ká. this ‘it’s up to you to accept me.’

(Ruben Cutcut, ‘Why the bat travels at night’, recorded 1982)


‘And my mother knew that he told her that’s where his money was,’

(Olive Elm, ‘Telling someone’s fortune’, recorded 1993)

An important piece of evidence that the relation between a verb and a cooccurring NP is of a different nature than that between an English verb and its object or subject is that the relation between the semantic index of overt NPs and that of the corresponding s-argument is not strictly one of coindexing. The adjoined NP can denote either a superset or subset of the set of entities characterized by the verb’s pronominal prefix. In other words, the two indices need not be identical; they are only required to denote sets in a subset or superset relation (see also Baker 1996:122 for Mohawk, and Evans 2002:32 for Bininj Gun-wok). We use the term overlap to cover through a single statement the two possible relations between indices. Thus, Mercy in the sentence in 71 denotes a subset of the persons who played together, and the NP onata:‘ló· ‘friends’ in the sentence in 72 denotes a superset of the set of addressees that are referenced on the verb (as indicated by the singular pronominal prefix). Similarly, úhkaʔ ‘who, anybody’ denotes a subset of the entities that walked out together in example 73, and é’lhal ‘dog’ denotes a subset of the animals that fought in example 74.


‘(I was so lonely) because Mercy and I can’t play together anymore, I can’t play together with Mercy anymore.’

(Norma Kennedy, ‘A wish comes true’, recorded 1994)
The fact that a verbal argument referenced in the verb’s pronominal prefix is not coindexed with the corresponding dislocated NPs provides yet another argument that overt NPs do not realize the verb’s argument and are not base-generated in complement or specifier position (and that the treatment of pronominal prefixes in Passamaquody presented in LeSourd 2006 or Bruening 2009 is inappropriate for Oneida). If they were, the semantic indices referenced on pronominal prefixes and the indices of these putative NP complements or specifiers would have to be identical, since both would target the same g-argument. 11

That the index of external NPs is only required to overlap with the index of the arguments referenced by pronominal prefixes leads to an interesting prediction. Since an external NP’s index can denote a subset of the entities denoted by the index of the arguments referenced by pronominal prefixes, the situation schematized in 75 should be possible.

\[(75) \text{NP}_i, \text{pref}_{i-j} - V\text{NP}_j\]

That is, if the pronominal prefix references a plural argument, each of two external NPs could denote a different member of the set of entities that correspond to a single argument of the verb and that are referenced by the pronominal prefix. Since the occurrence of two external NPs is very rare in naturally occurring conversations or narratives (unless one is a locative), it is not surprising that the second author did not find an example that fits the pattern in 75 in her corpus. But her Oneida collaborator offered several examples that she deemed quite natural and that fit this pattern, three of which are given in 76.

\[(76) \text{a. John } wá-hy-atláńayá-hn-á’ lohsótha.} \]
\[\text{John fact-3.m.du.a-go.to.church-pnc his.grandfather} \]
\[\text{‘John went to church with his grandfather.’} \]
\[\text{b. Norma } ní’ t-á-yaky-atatnihaft-eʔ. \]
\[\text{Norma I dl-fut-1du.excl.a-take.turns-pnc} \]
\[\text{‘I will take turns with Norma.’} \]
\[\text{c. Waʔ-t-hu’-tút-eʔKarín thiká} \]
\[\text{fact-dl-3.m.pl.a-eat.together-pnc Karín that} \]
\[\text{shakotlihungyá’niheʔ,} \]
\[\text{teachers [lit. ‘they make matters for them’]} \]
\[\text{‘Karín ate together with the teachers.’} \]

11 Wechsler & Zlatić 2003 and Corbett 2006 document many instances of agreement mismatches. But crucially, such mismatches result from grammatical properties of the agreement controller or target. The mismatches exemplified in sentences 73 and 74, in contrast, are ‘free’, in that they do not follow from grammatical properties of the external NPs or the pronominal prefixes, but from the referential choices of speakers.
In these examples, each external NP denotes a subset of the entities referenced by the pronominal prefix. Examples such as 76 illustrate how different from ordinary argument realization the relation between external NPs and verbs is in Oneida. That relation does not obey coindexing (between the NP’s index and the relevant verb’s argument) or even uniqueness (only one external phrase realizes an argument). We conclude that rarely occurring, unbounded dependencies between a verb and external NPs that do not involve coindexing do not support the notion of g-argument needed to model local syntactic selection in languages like English. The kind of local obligatory dependencies and the selection of a dependent by a head that motivates, at least in part, a level of argument structure simply do not exist in Oneida.12

Linear order. Another possible argument for syntactic g-arguments, aside from distinguishing syntactically necessary s-arguments from other s-arguments, is linear-order constraints between expressions that correspond to s-arguments. But, again, Oneida does not seem to have the need for such constraints. NPs, when they occur, can come before or after the verb; any linear ordering between a verb and an optionally cooccurring NP is pragmatically governed according to whether a piece of information is news-worthy, to borrow a term from Mithun 1987 (see the next section for more details). Of our thirteen examples with two NPs that correspond to core arguments (i.e. excluding the special case of locatives), eight are SVO, two VOS, one VSO, one SOV, and one OVS. It is clear that ordering s-arguments is not going to help much in predicting word order.13

4.3. Valence alternations. The contrast between the English active and passive verbs in 61 and 62 above, or between the two English sentences in 77a and 77b below, illustrates valence alternations or diathesis. There are many extant models of such alternations, but most, if not all, involve a reordering of g-arguments or a reordering of the syntactic realization of g-arguments (see Levin & Rappaport Hovav 2005 for a detailed summary). Valence alternations thus may provide further support for the syntactic distinction between g-arguments and s-arguments, since they often provide evidence for a syntactic reordering of s-arguments.

(77) a. Mary gave a book to John.
    b. Mary gave John a book.

Oneida and other Iroquoian languages are remarkable in that such alternations, as well as any other mentioned in Levin 1993, or even direct-inverse alternations found in Algonquian languages, are absent. The absence of diathesis is not that surprising, since the net effect of diathesis is (most often) to alter the list of phrases that must cooccur with verbs or their linear order (together with their position in the sentence’s structural representation, particularly in approaches like Kayne 1994). If we are correct that local selectional dependencies or linear-order relations between selected dependents of the kind found in so many languages are not present in Oneida, the absence of constructions or processes that would affect such relations is expected.

Now, the absence of diathesis does not mean that there are no morphological processes that affect the number of g-arguments a verb inflects for. Several prefixes and suffixes in

12 As Heidi Harley has pointed out to us, examples such as 71–76 point out how different the relation between external NPs and verbs in Oneida is from clitic dislocation structures in Romance languages or Greek. A sentence such as French ‘Jean, nous sommes partis ‘John, we left’ is outright ungrammatical.
13 Noun phrases in Oneida, like verb phrases, do not involve obligatory local selection of heads by dependents or argument structure either. See Koenig & Michelson 2009 for the structure of noun phrases in Oneida and Koenig & Michelson 2010b for how quantification is expressed in Oneida.
Oneida mark operations that affect the number of animate s-arguments and therefore the choice of pronominal prefix. All of these derivational affixes affect the list of g-arguments only insofar as they affect the semantics of the stem they attach to. As per the animate argument constraint in 51, if an s-argument is animate, it is also morphologically referenced. Any operation that adds or removes animate s-arguments therefore indirectly changes the number of g-arguments and the selection of pronominal prefixes.

But derivational processes that affect the number of g-arguments do not necessarily provide evidence for the syntactic relevance of g-arguments (syntactic g-arguments, for short). We need to distinguish morphosemantic operations—that is, operations that affect semantic representations or conceptual structure (what Ackerman 1992 calls morpholexical operations)—from what Ackerman (op.cit.) calls morphosyntactic operations (the class of operations to which passives or middles belong), whose descriptions require reference to a more syntactic level of representation, or syntactic g-arguments, in our terminology. To take a concrete example, any statement of passives must make sure it targets the external argument, the actor, the first member of the arg-str list, or the initial 1. Descriptions of this operation must therefore use notions that are not reducible to semantic categories, since it applies to a cluster of arguments that cannot be defined in semantic terms. So, operations such as passive formation provide evidence for syntactic g-arguments, that is, for some ordering of s-arguments that morphosyntactic processes can make reference to. Morphosemantic operations that can be modeled as operations on semantic or conceptual structures do not provide evidence for syntactic g-arguments, even if they do affect inflectional structure. They affect the number of s-arguments and may indirectly affect the number of g-arguments inflectionally referenced (since all animate s-arguments are g-arguments). But they do not provide evidence for a syntactically relevant ordering of g-arguments, since their effect on the list of g-arguments is indirect and only inflectional.

The Oneida affixes that have an effect on the choice of pronominal prefixes are the reflexive/reciprocal and semireflexive prefixes and the benefactive, causative, and instrumental suffixes. Reflexive and reciprocal marking is marked morphologically in Oneida via the reflexive prefix -atat- / atate-, and the reciprocal requires, in addition, the dualic prepronominal prefix. The reflexive prefix affects pronominal prefix selection in that a verb stem that otherwise would select a transitive prefix selects an intransitive prefix when the reflexive is prefixed to the stem.

(78) wa-hi-khw-á-nut-eʔ \[
\text{FACT-1SG}>3.M.SG-food-JN-feed-PNC}
\]
‘I fed him’

(79) wa-h-atate-khw-á-nut-eʔ \[
\text{FACT-3.M.SG.A-REFL-food-JN-feed-PNC}
\]
‘he fed himself’

(80) ʌ-k-askenh-ʔ \[
\text{FUT-1SG.A-fight.for-PNC}
\]
‘I will fight over it’

(81) waʔ-k-atat-askenh-ʔ \[
\text{FACT-1SG.A-REFL-fight.for-PNC}
\]
‘I tried hard, I tried my best’

14 For much more detail on Iroquoian derivational processes, see Lounsbury 1953 for Oneida and Chafe 1970, 1996 for Onondaga and Seneca, respectively. See also Mithun's (2006) discussion of valence alternations in Iroquoian. In addition, the dictionaries of Oneida (Michelson & Doxtator 2002) and Onondaga (Woodbury 2003) identify derivational morphemes in entries of complex stems.
The change from a transitive to an intransitive prefix suggests that the animate argument constraint targets distinct s-arguments. Only distinct animate s-arguments are inflectionally referenced.

The semireflexive prefix is illustrated in 82 and 83. It is (largely) an anticausative marker whose effect is to remove the causal portion of the caused change-of-state meaning of roots it attaches to (see Grimshaw 1982 for an analysis of French reflexives along those lines). The combination of a root plus the semireflexive thus has one less s-argument than the root, and therefore one less g-argument. The semireflexive bears the hallmark of a lexical process (unproductivity and semantic drift), as shown by the contrast between the dyadic verb in 84 and the anticausative form that has undergone semantic drift in 85.

(82) wa-hak-nitstakwalalhoʔ?
FACT-3.M.SG>1SG-dirty-PNC
‘he got me dirty’

(83) waʔ-k-at-nitstakwalalhoʔ?
FACT-1SG.A-SRF-dirty-PNC
‘I got dirty’

(84) waʔ-té-k-yahk-eʔ?
FACT-DL-1SG.A-break-PNC
‘I broke it’

(85) waʔ-t-k-át-yahk-eʔ?
FACT-DL-1SG.A-SRF-break-PNC
‘I got tired’

As mentioned above, Oneida has three derivationalsuffixes that potentially affect the number of s-arguments of a verbal stem: the benefactive, the causative, and the instrumental. The benefactive is quite productive and is illustrated in 86 (for these and other derivational morphemes, the reader is referred to Lounsbury 1953 or Michelson & Doxtator 2002 for additional Oneida examples). Still, it can show semantic drift, as in 86d. The causative and instrumental are both less productive. Many combinations of a verb stem with one or more of these suffixes show evidence of semantic drift and are best analyzed as the output of a lexical process. Example 87b illustrates an expected use of the causative suffix -ʔt-/ʔ-ʔ-/ʔt-, while 88b exemplifies a less predictable output. Example 87c similarly exemplifies a predictable output for the instrumental suffix -ʔkw-, while 89b is an example of a more lexicalized use of the instrumental. Example 89c is an example of the most frequent use of the instrumental, that is, as a way to create verbal nouns describing types of instruments, household appliances and other things, tools, and so forth.

(86) a. waʔ-e-kaʔ-látuʔ?
FACT-3.FI.A-story.tell-PNC
‘she told a story’

b. waʔ-uk-kaʔ-látu-ʔs-eʔ?
FACT-3>1SG-story.tell-BEN-PNC
‘she (or they) told me a story’

c. wak-noʔlú-heʔ?
1SG.P-get.stuck-HAB
‘I’m getting stuck, I have a hard time doing something, I cannot do it’

d. wak-nolú-ʔse-heʔ?
1SG.P-get.stuck-BEN-HAB
‘I’m feeling lazy, I’m bored, I’m tired of it’

The general point to draw from this necessarily brief presentation of Oneida verbal derivational morphology is that affixes that change the number of g-arguments only do so because they affect the semantic or conceptual structure of stems they apply to. The benefactive, instrumental, and causative suffixes add an s-argument to the verb; the anticausative removes one. To the extent that these semantic changes affect the number of animate s-arguments, the presence of these affixes indirectly affects the number of g-arguments morphologically referenced, in accord with the animate argument constraint in 51. Although the reflexive prefix does not affect the number of s-arguments per se, it affects the number of distinct s-arguments. If we interpret the notion of s-argument in the animate argument constraint as referring to the set of distinct semantic indices in the stem’s semantic representation (following suggestions in Jackendoff 1990 and Randall 2009), the reflexive marker does indirectly reduce the number of g-arguments. The reflexive marker affects the number of g-arguments by altering the number of distinct s-arguments.

We have just seen that models of Oneida verbal derivational affixes need make reference only to semantic representation or conceptual structure, not to any syntactic ordering of s-arguments. What is critically lacking in Oneida are passives, middles, inverses, and all other processes whose statements require reference to g-arguments.15 Oneida derivational affixes fall into the category of morphosemantic operations. No affix belongs to the class of morphosyntactic operations. The absence of affixes that encode

15 The term middle is also used more recently instead of the term semireflexive. Our use of the term middle is more narrow and corresponds to the use of the term in theoretical syntax, as in Fellbaum 1986.
morphosyntactic operations in Ackerman’s sense is a salient property of Oneida that any adequate model of its morphosyntax must explain.

4.4. COINDEXING AND EXTRACTION DO NOT PROVIDE EVIDENCE FOR SYNTACTIC G-ARGUMENTS. The last kind of evidence typically adduced for a level of argument structure or grammatical functions is restrictions on coindexing between two phrases that further specify (or realize) s-arguments. Baker argues (1991, 1996) that there is much more limited evidence for grammatically governed syntactic coindexing in Mohawk and other Iroquoian languages than in English. As we saw above, reflexive or reciprocal marking behaves like a lexical operation in that it affects the inflectional structure of words. There is also no syntactic control structure or binding of an implicit argument (as in short passive sentences like The vase was sold to raise money for charity), although the dislocative derivational suffix exemplified in 90 coindexes the goer and the hunter (see Jackendoff 1990 on lexically induced conceptual-structure coindexing).

(90) wa-h-atolát-h-a?
FACT-3.M.SG.A-hunt-DISLOCATIVE-PNC
‘he went hunting, he went (somewhere) to hunt’

We turn now to two phenomena that Baker discusses and that he claims provide indirect evidence for the presence of some subject-object asymmetry or, at least, some local selection of dependents in Iroquoian (or, in our terms, syntactic evidence for an ordering of s-arguments): the interpretation of a lexical NP (e.g. a proper name) as necessarily disjoint from a pronoun when the NP is part of an argument clause, and the fact that extraction of WH-phrases from within an argument clause is allowed, but not from an adjunct clause.16 We show in the first case that the Oneida facts contradict Baker’s conclusion and in the second case that the evidence does not support the notion of g-arguments per se.

Putative principle C violations. In 91, we schematize the relevant sentence structure for testing principle C (see Baker 1991:541) with a lexical NP after the complementizer tsiʔ and before the verb of the argument clause.

(91) preʔ-V [tsiʔ NP, preʔ-V]

When asking for the Oneida equivalents of English sentences such as John, told me that he, was sick and He, told me that John, was sick, the sentence in 92 was provided as an equivalent for John’s telling me that he was the one who was sick (i.e. where John and he are coindexed). And when asking instead for a sentence where the speaker was not the one who was sick (i.e. John and he are not coindexed), the sentence in 93 was provided.

(92) John wa-hak-hlo·lí· tsiʔ lo-nuhwáktani-heʔ naʔ né?:
‘John, told me that he, was sick.’

(93) Wa-hak-hlo·lí· tsiʔ lo-nuhwáktani-heʔ néʔ John.
‘He, told me that John, was sick.’

16 Baker 1996 discusses VP-ellipsis data in Mohawk that might display subject-object asymmetries. We were not able to replicate Baker’s data. Our Oneida consultants found the sentence type Baker discusses simply unacceptable, making testing any subject-object asymmetry impossible.
But it is crucial, for testing principle C, that the NP occurs directly after the complementizer tsiʔ, as in 94, to ensure that the NP is unambiguously a subconstituent of the argument clause. This alternative was said to sound okay but ‘not as good’, irrespective of coindexing issues.

(94) ??Wa-hak-hlo·li· tsiʔ John lo-nuhwákta·ni-heʔ.
   fact-3.m.sg>1sg-tell:pnc that John 3.m.sg.p-sick-hab
   ‘John told me that he was sick.’

In sentences with tsiʔ argument clauses, a name or other NP (e.g. a kin relation) occurs at the end of the sentence, as in the sentence provided in 93 above or that in 95. The only NPs that precede a verb in a dependent clause are independent pronouns, used for contrast, the indefinite pronoun úhkáʔ ok ‘someone’, as exemplified in 96, nouns indicating the location of an event, and quantity expressions (which are clauses in Oneida; see Koenig & Michelson 2012) but, critically, are rarely ordinary referential lexical NPs. A rare example in 97 with a kinship term before the verb is followed by a prosodic break.

(95) Neʔ tho·neʔ katiʔ wiʔ thikáʔ na wa-h-atkáʔ laht-eʔ tsiʔ.
   at.that.time so.then that then fact-3.m.sg.a-quit-pnc that
   waʔ-shakoʔ-7tanuwa·hsláʔ-ʔ shakotléʔa
   fact-3.m.sg>3-whip-pnc his.granddaughter
   ‘So at that time he quit whipping his granddaughter’
   (Mercy Doxtator, ‘A spoiled little girl’s medicine’, recorded 1994)

(96) kháleʔ né· lo-thu·té· thikáʔ tsiʔ úkhaʔ ok t-áʔ-yáʔ.
   and it’s 3.m.sg.p-hear:stv that that someone csl-fact-3.fl.a:walk:pnc
   ohnakáʔ shuʔ, all.along.behind
   ‘and he heard someone coming along behind,’
   (Norma Kennedy, ‘My father meets Waniʔkyáhtes’, recorded 2007)

(97) tahnú· waʔ-k-lihwáʔ·luk-eʔ tsiʔ lakeʔha, aʔéʔ né·
   and fact-1sg.a-hear:news:pnc that my.father way.over.there it’s
   Leamington lo-yoʔtáhs-u,
   Leamington 3.m.sg.p-go.to.work-stv
   ‘and I heard that my father had gone to work over in Leamington,’
   (Clifford Cornelius, ‘A lifetime working’, recorded 1994)

Moreover, a survey of the uses of preverbal and postverbal NPs in our corpus (even outside of argument clauses) suggests that for the most part (i) preverbal NPs are used when the NP referent is first mentioned in discourse (i.e. are used to introduce a discourse referent), to reactivate a discourse referent, or when the NP referent needs to be contrasted with another possible participant that the pronominal prefix could be referencing, and (ii) postverbal NPs are used for discourse referents that have already been introduced, for discourse referents introduced by internally headed relative clauses, for discourse referents that are generics (e.g. ‘Indians’, ‘elders’), and for discourse referents that are kin relations of the speaker and that generally denote participants that play no further role in the story (e.g. ‘my father told me this story’). To summarize, the structure in 91 above, which is critical in Baker’s work for testing condition C, is inconsistent with the pragmatic use of NPs in Oneida discourse (and with the pragmatic use of NPs in Iroquoian in general; see Mithun 1987, Chafe 2003). If the referent of NP, is first mentioned, it should occur first, that is, before the first verb, sometimes in an adjunct clause, as example 98 shows. If it is not, it should appear after the second verb. And the presence of a preverbal proper name or an ordinary noun before the verb of the argument clause is rare.
Moreover, there is another structure that would test whether condition C is operative in Oneida, as pointed out to us by a referee, and one that is consistent with discourse patterns, that is, where the external NP follows the verb in the argument clause. Consider sentences 99 and 100, which were based on not unlike sentences in our corpus, and which were judged perfectly natural. The temporal expressions ayólhané? ‘tomorrow’ and na kalista?késhu? tehotawalyéháti? ‘when he was going along on the railway tracks’ clearly modify the argument clause verbs, and the NP lake?níha ‘my father’ is therefore part of the argument clause in these examples. The most likely structure for the sentences in 99 and 100, at least in Baker’s and others’ putative structure for these sentences, namely 101, constitutes a violation of condition C, since the NP is c-commanded by the matrix verb and its proto-agent ‘pronominal’ argument. So, to the extent that one can elicit sentences that have the requisite structure, condition C seems not be operative in Oneida.


FACT-3.MS.G>1SG-promise-PNC that FUT-3.MS.G>1SG-story.tell-PNC

lake?níha ayólhané?,

my.father tomorrow

‘My father promised me that he would tell me a story tomorrow.’

(100) Wa-hak-hlo’lí-tsi wa-huwá-hsle-?

FACT-3.MS.G>1SG-tell:PNC that FACT-3>3.MS.G-chase-PNC my.father when

kalista?késhu? tehotawalyéháti?,

on.the.railway.tracks he.is.going.along

‘My father told me that she chased him when he was going along on the railway tracks.’

(101) [pre, V [tsi? pre, V (…) NP, particle/clause]]

Putative constraint on extraction domain violations. Extraction from a CP is possible, as shown in 102 as well as in 103–104. Also, as Baker suggests, extraction from a ‘because’-clause is not possible (see 105). But this is not enough to show that we need to distinguish between subject and object or, more generally, order s-arguments, as the contrast between 102 and 105 only suggests a difference between semantic arguments and semantic adjuncts.


‘Who did you agree to marry?’ (‘Who did you agree for you two to marry?’)

(103) Úhka? náhte? te-yo-tuhutsyóh-u aˈ-yu-tuhewáni-?

who DL-3.FZ.SG.P-need/want-STV OPT-3.FI.A-sweep-PNC

‘Who is supposed to sweep the floor?’

(104) Náhte? te-yo-tuhutsyóh-u a-étw-ast-é?

what DL-3.FZ.SG.P-need/want-STV OPT-1PL.INCL.A-use-PNC

‘What do we have to use (to put the sauerkraut that we’re making in)?’

(spoken by Ray John, 2009)
Hukari and Levine (2006) provide rather compelling evidence that challenges the grammatical status of the difficulty of extracting from within adjunct clauses (see also Truswell 2009 for a semantic explanation of some effects of the condition on extraction domains, as well as Hofmeister & Sag 2010 for extragrammatical motivations for several constraints on extraction). Let us assume, though, for purposes of argumentation, that the difficulty of extracting from within adjunct clauses is the result of a grammatical constraint, that is, a constraint that is part of the grammar of Oneida. The existence of such a constraint would not entail the need for a level of argument structure or a syntactically relevant ordering of semantic arguments. This is because all the constraint needs to express is that extraction is only possible out of phrases expressing s-arguments rather than s-adjuncts. So, as long as grammar rules or constraints have a way of identifying whether a phrase corresponds to a semantic argument or adjunct, we can model that part of the condition on extraction domains (Huang 1982). (Oneida shows no evidence that extraction from subjects is banned—partly because there is no uncontroversial evidence that there are subject argument clauses.) Since the distinction between s-arguments and s-adjuncts is needed irrespective of the need for any notion of g-arguments (simply to be able to determine how many argument positions the predicate corresponding to the verb’s meaning has), an account of any grammatical ban on extraction from adjuncts that does not refer to a syntactic ordering of s-arguments (or g-arguments), but merely to the distinction between s-arguments and s-adjuncts, is more economical and should be preferred. We present grammar rules in the next section that model a ban on extraction from adjuncts that relies on the distinction between s-arguments and s-adjuncts. We conclude that, even if extraction from within adjuncts is indeed a matter of grammar, modeling it does not require reference to g-arguments or an ordering of s-arguments (since it only requires reference to the strictly semantic difference between s-arguments and s-adjuncts).

The last section showed that if the SMRH is correct, no phrase realizes s-arguments in Oneida, and the notion of local selection (and its lexical correlates, for example, subcategorization or valence) is irrelevant when describing the way that semantic arguments are expressed in Oneida. This section showed that the kind of syntactic evidence typically adduced for argument structure or grammatical functions is not available in Oneida. Any syntactic phenomenon that depends on ordering s-arguments and a level of argument structure (obligatory realization of arguments, linear-order constraints, valence alternations, or constraints on coindexing between arguments) is simply absent from Oneida. The nonconfigurationality of Iroquoian thus seems more radical than that found in other languages: the language does not provide evidence for local selection by heads of complements or specifiers, or for a syntactic ordering of s-arguments or a level of argument structure (or grammatical functions). Oneida only has inflectional morphosyntactic representations in the sense of Anderson 1992.

Now that we have discussed in detail the lack of evidence for a syntactic ordering of s-arguments, let us go back to a comparison between the strong and weak versions of the morphological referencing hypothesis, the SMRH and WMRH, respectively. The SMRH holds that all g-arguments are morphologically referenced in Oneida, whereas the WMRH holds that only animate g-arguments are. The critical difference between the two hypotheses regards those inanimate arguments that are not inflectionally marked. The SMRH holds that they are not g-arguments (since it holds that all g-arguments are...
marked inflectionally); the WMRH holds that they are. What our discussion suggests is that, as far as Oneida is concerned, there is no use for the notion of g-arguments except insofar as pronominal inflection is concerned. So, the very existence of inanimate g-arguments that are not inflectionally marked is unwarranted. The WMRH leads to a more complex model of Oneida, since it requires positing g-arguments that we have no evidence for, namely inanimate g-arguments. It additionally requires ordering those s-arguments. Consider stems that have two semantic arguments \{x_1, x_2\}, one of which is inanimate (e.g. verbs that take propositions as semantic arguments, such as -laʔnha- ‘know how, have expertise in’) or stems that have three arguments \{x_1, x_2, x_3\}, one of which is inanimate (e.g. -hiloli- ‘tell’), and let us assume that \(x_2\) is the inanimate semantic argument. Since inanimate s-arguments are g-arguments, according to the WMRH, we need to order \(x_1\) and \(x_2\) or \(x_1, x_2, x_3\). But since the only evidence for the ordering of s-arguments is inflectional, and inanimate s-arguments are not reflected in the verb’s pronominal inflection, no evidence can bear on this ordering. We conclude that the SMRH is a better model of the morphological referencing of arguments characteristic of Oneida and Iroquoian than the WMRH.

5. A fragment of oneida grammar. In this section, we present a (simplified) HPSG fragment of Oneida syntax that models the SMRH and the claim that there is no argument structure, no grammatical functions, nor any syntactic ordering of s-arguments in Oneida. Our fragment assumes that words in Oneida are functionally complete (i.e. do not locally subcategorize for dependent expressions) and do not include an argument structure. Within HPSG, the claim that Oneida syntax is not based on local selection of dependent phrases realizing semantic arguments or a level of argument structure amounts to saying that, whereas English words bear valence and argument structure (ARG-STR) attributes, neither attribute is appropriate for Oneida words. The difference is illustrated in 106. An English transitive verb includes two elements on its ARG-STR list (we use xp as a cover term for any syntactic category) whose semantic indices correspond to the actor and undergoer s-arguments of the predicate associated with the verb and which are identified with members of the subj and comp valence (subcategorization) lists through the tags [1] and [2]. (Identically numbered tags indicate identity of attribute values.) Oneida dyadic verbs do not include any valence or argument-structure information, although they include an inflectional structure (INFL-STR) that orders the indices of the actor and undergoer animate s-arguments of the verb’s predicate.

\[
\begin{align*}
\text{English-transitive-verb} & \Rightarrow \\
\text{Oneida-dyadic-verb} & \Rightarrow
\end{align*}
\]

\[\begin{align*}
\text{CONTENT} & \Rightarrow \left[ \begin{array}{c}
\text{SUBJ} \\
\text{actor} \\
\text{undergoer} \\
\text{COMPS} \\
\text{XP} \\
\end{array} \right] \\
\text{VALENCE} & \Rightarrow \left[ \begin{array}{c}
\text{actor} \\
\text{undergoer} \\
\text{XP} \\
\end{array} \right] \\
\text{ARG-STR} & \Rightarrow \left[ \begin{array}{c}
\text{actor} \\
\text{undergoer} \\
\text{XP} \\
\end{array} \right] \\
\text{INFL-STR} & \Rightarrow \left[ \begin{array}{c}
\text{actor} \\
\text{undergoer} \\
\end{array} \right]
\end{align*}\]

\[\begin{align*}
\text{content} & \Rightarrow \left[ \begin{array}{c}
\text{subject} \\
\text{actor} \\
\text{undergoer} \\
\end{array} \right] \\
\text{valence} & \Rightarrow \left[ \begin{array}{c}
\text{actor} \\
\text{undergoer} \\
\text{subject} \\
\end{array} \right] \\
\text{argument structure} & \Rightarrow \left[ \begin{array}{c}
\text{subject} \\
\text{actor} \\
\text{undergoer} \\
\end{array} \right] \\
\text{infl-structure} & \Rightarrow \left[ \begin{array}{c}
\text{subject} \\
\text{actor} \\
\text{undergoer} \\
\end{array} \right]
\end{align*}\]

\[\begin{align*}
\text{content} & \Rightarrow \left[ \begin{array}{c}
\text{subject} \\
\text{actor} \\
\text{undergoer} \\
\end{array} \right] \\
\text{valence} & \Rightarrow \left[ \begin{array}{c}
\text{actor} \\
\text{undergoer} \\
\text{subject} \\
\end{array} \right] \\
\text{argument structure} & \Rightarrow \left[ \begin{array}{c}
\text{subject} \\
\text{actor} \\
\text{undergoer} \\
\end{array} \right] \\
\text{infl-structure} & \Rightarrow \left[ \begin{array}{c}
\text{subject} \\
\text{actor} \\
\text{undergoer} \\
\end{array} \right]
\end{align*}\]

\[\begin{align*}
\text{content} & \Rightarrow \left[ \begin{array}{c}
\text{subject} \\
\text{actor} \\
\text{undergoer} \\
\end{array} \right] \\
\text{valence} & \Rightarrow \left[ \begin{array}{c}
\text{actor} \\
\text{undergoer} \\
\text{subject} \\
\end{array} \right] \\
\text{argument structure} & \Rightarrow \left[ \begin{array}{c}
\text{subject} \\
\text{actor} \\
\text{undergoer} \\
\end{array} \right] \\
\text{infl-structure} & \Rightarrow \left[ \begin{array}{c}
\text{subject} \\
\text{actor} \\
\text{undergoer} \\
\end{array} \right]
\end{align*}\]

17 Malouf 1994 presents an earlier HPSG analysis of Mohawk in which Mohawk lexical items include an argument structure and subcategorize for CPs, but not lexical NPs.
Space limitations prevent us from introducing HPSG in this article (see Pollard & Sag 1994, Ginzburg & Sag 2001). Suffice it to say here that HPSG represents all linguistic information through attribute-value matrices of the kind illustrated in 106. Importantly, attribute-value matrices in HPSG have a type (written in italics before the arrow, as in 106, or at the top left of the matrix). Information that characterizes a type is true of all linguistic objects of that type. HPSG allows conditional constraints also illustrated in 106 (at least, provided one uses the RELATIONAL SPECIATE REENTRANT LANGUAGE logical language developed in Richter 1999). The upshot of 106 is, then, to say that if a verb is of type English-transitive-verb (Oneida-dyadic-verb), then properties encoded in the attribute-value matrices that follow the arrow are true for that verb.

Any model of Oneida morphosyntax will have to account for two sets of facts: (i) the distribution of pronominal prefixes described in §1, and (ii) the absence of a valence-mediated relation between verbs and external phrases whose indices overlap with the index of one of the s-arguments of the verbs. In §5.1, we discuss constraints that model the complex set of conditions that determine pronominal prefix selection, and in §5.2 we show how to relate phrases to verbs they cooccur with directly, that is, without the mediation of valence or subcategorization lists.

5.1. Constraints on Oneida verbs. We saw in §1 that the distribution of pronominal prefixes in Oneida is determined by three distinct properties:

(i) whether the verb has at most one animate argument or has more than one animate argument;
(ii) whether it selects Agent or Patient prefixes;
(iii) whether it belongs to the active or stative class of verbs (i.e. whether it occurs in all three aspects or only in the stative aspect).

Inflectional constraints. To model the first property, we introduce the constraint in 107, which embodies the SMRH as it applies to Oneida (for each constraint, we provide both an English paraphrase and a more formal representation). It requires the semantic indices of ALL AND ONLY animate arguments to be part of the inflectional structure that determines pronominal affix selection. The constraint in 107 entails that the infl-str list of verbs cannot contain inanimate arguments. As a result, Oneida polyadic verbs that have only one animate s-argument inflect like monadic verbs, since their inflectional structure has only one member. Note that the value of the infl-str attribute is an ordered list; that is, it orders the indices that correspond to animate s-arguments. The need to order s-arguments for inflectional purposes was illustrated in 64 and 65. We assume that the order of semantic indices follows from the kind of constraints discussed extensively in the linking literature (see below and Foley & Van Valin 1984, Pinker 1989, Grimshaw 1990, Jackendoff 1990, Dowty 1991, Goldberg 1995, Davis & Koenig 2000, and many others).

(107) a. All and only animate s-arguments of verbs are members of the infl-str.
b. ANIMATE ARGUMENT CONSTRAINT

\[
\forall \begin{bmatrix}
\text{HEAD} \\
\text{CONTENT} \\
\text{INFL-STR}
\end{bmatrix}
\begin{bmatrix}
\text{verb} \\
\begin{bmatrix}
\text{F} \\
\text{GEN anim}
\end{bmatrix}
\end{bmatrix} \Leftrightarrow \text{member}(\text{\#2})
\]

Section 2 argued that Oneida includes a constraint that precludes morphologically referencing more than two s-arguments. In Gerdt’s 1993 terms, Oneida is a 2-MAP language (MORPHOSYNTACTICALLY LICENSED ARGUMENT POSITION). Implementing this
constraint requires restricting the number of members of the infl-str list. The constraint in 108 ensures that Oneida words have at most two indices on that list.

(108) a. The inflectional structure of words cannot contain more than two members.

\[
\text{word} \Rightarrow [\text{infl-str} \ [\text{head}]] \wedge \text{length}(\text{head}) \leq 2
\]

The constraints we have introduced so far pertain to membership in the infl-str of verbs. The next set of constraints ensures that verbs are assigned the right set of features so that realizational rules can determine what kind of pronominal prefix combines with a verbal stem. The kind of morphological information that is relevant to inflection in Oneida in indicated in 109. Since, as we have seen, pronominal inflection is sensitive to the active/stative verb distinction and whether a verb selects for an Agent or Patient prefix, two features are part of the morphological information relevant to inflection (gathered, as usual in HPSG, under the head feature, which lists all of the morphological or syntactic information heads can carry). Constraint 109 says that when the head is a verb, two attributes are appropriate, the Boolean-valued attribute active, which encodes whether the verb is active or stative, and the attribute affix-type, which encodes whether the verb selects Agent (A) prefixes or Patient (P) prefixes.

(109) a. Oneida verbs are either stative (they occur only in the stative aspect) or active (they can occur in all three aspects) and select either A (Agent) or P (Patient) affixes.

\[
\text{verb} \Rightarrow [\text{active} \pm ] [\text{affix-type} A \lor P]
\]

The constraint in 110 models the aspectually conditioned shift from Agent to Patient prefix selection that we detailed in §1.

(110) a. If a verb is active, has only one g-argument, and is in the stative aspect, its affix-type is necessarily P (Patient).

\[
\text{HEAD} \begin{array}{c}
\text{verb} \\
\text{active} + \\
\text{aspect stat}
\end{array} \Rightarrow \text{HEAD} [\text{affix-type} P]
\]

Default feature values and morphological features of Oneida verbs. The application of the constraint in 107 can result in a word with an empty inflectional structure when all morphosyntactic arguments of the stem are inanimate. To explain the presence of a prefix in those cases, since all nouns or verbs require some pronominal prefix, we assume that, by default, the argument structure of verbs contains only one feminine-sonic singular member, as shown in 111 (information that follows the slash indicates a feature default value, that is, information that can be overridden; information that precedes the slash is strict, that is, cannot be overridden; see Lascarides & Copestake 1999). This default will, of course, ‘kick in’ only when the verb does not have an animate s-argument, either because its s-arguments are all inanimate or because it is a medadic verb (e.g. weather verbs). As a result of 111, a default inflectional structure can serve as input to realizational morphological rules for all verbs with otherwise null inflectional structures.
(111) a. The default inflectional structure of a verb contains a sole feminine-zoic singular member.

b. 
\[
\begin{array}{c}
\text{word} \\
\text{HEAD verb}
\end{array} \Rightarrow \begin{array}{c}
\text{INFL-STR} \\
\langle \text{GENDER feminine-zoic} \rangle
\end{array}
\]

The constraints in 112 and 113 model default selection of Agent/Patient series of pronominal prefixes for stative and active verbs, respectively. The constraint in 112 says that the affix-type of stative verbs is by default P. The constraint in 113 says that the affix-type of active verbs is by default A. The default in 113 is what the constraint in 110 overrides.

(112) a. If a verb is stative (nonactive), its affix-type is by default P (Patient).

b. 
\[
\begin{array}{c}
\text{verb} \\
\text{HEAD [ACTIVE -]}
\end{array} \Rightarrow \begin{array}{c}
\text{HEAD} \\
\langle \text{AFFIX-TYPE /P} \rangle
\end{array}
\]

(113) a. If a verb is active, its affix-type is by default A (Agent).

b. 
\[
\begin{array}{c}
\text{verb} \\
\text{HEAD [ACTIVE +]}
\end{array} \Rightarrow \begin{array}{c}
\text{HEAD} \\
\langle \text{AFFIX-TYPE /A} \rangle
\end{array}
\]

Ordering members of the infl-str. The following constraints link arguments that play particular roles in situation types with the first position on the list of indices that make up the value of the infl-str attribute. For example, the constraint in 114 says that if a stem denotes a causal relation, the index of the argument that plays the causer role in the situation will be the first member of the infl-str list. The ordering of indices on the infl-str thus represents the ordering of Agents acting on Patients in the interlinear morphemic glosses in our example (e.g. 3.m.sg>1sg), and it is this ordered list of indices that the selection of the appropriate pronominal prefix by realizational inflectional rules will be sensitive to (see Koenig & Davis 2003 for the approach to linking we are adopting here, and Koenig & Michelson 2015 on some of the complex issues pronominal prefix selection in Oneida raises for theories of inflectional morphology).

(114) 
\[
\begin{array}{c}
\text{CONTENT} \\
\text{cause-rel [CAUSER anim]}
\end{array} \Rightarrow \begin{array}{c}
\text{INFL-STR} \\
\langle \text{\ldots} \rangle
\end{array}
\]

(115) 
\[
\begin{array}{c}
\text{CONTENT} \\
\text{volit-rel [VOLITIONAL anim]}
\end{array} \Rightarrow \begin{array}{c}
\text{INFL-STR} \\
\langle \text{\ldots} \rangle
\end{array}
\]

(116) 
\[
\begin{array}{c}
\text{CONTENT} \\
\text{notion-rel [EXPERIENCER anim]}
\end{array} \Rightarrow \begin{array}{c}
\text{INFL-STR} \\
\langle \text{\ldots} \rangle
\end{array}
\]

(117) 
\[
\begin{array}{c}
\text{CONTENT} \\
\text{kin-rel [GEN-OLDER anim]}
\end{array} \Rightarrow \begin{array}{c}
\text{INFL-STR} \\
\langle \text{\ldots} \rangle
\end{array}
\]

5.2. Modeling the relation between verbs and cooccurring phrases. Constraints we have introduced so far suffice to model the morphological referencing of s-arguments via pronominal prefixes. These lexical constraints go a long way toward accounting for Oneida morphosyntax, since words are functionally complete and verbs need not combine with anything to form a complete utterance. However, phrases whose semantic indices overlap or are coindexed with s-arguments do cooccur with verbs. We now introduce constraints and phrase-structure constructions that ensure the proper association of phrases and s-arguments. Our claim is that all phrases cooccurring with verbs in Oneida—ordinary NPs, wh-phrases, and CPs—are licensed via syntactically
optional ‘dislocation’ constructions. It is tempting to assume that the structure involved for Oneida is similar to clitic dislocation structures in Romance or Greek, illustrated in 118 (see, among others, Lambrecht 1981, Cinque 1990, and Alexopoulou & Kolliakou 2002, and Baker 1996 for the resemblance between Romance clitic dislocation and the presence of lexical NPs in Mohawk). Thus, sentence 52 above could be more literally translated as *He will sharpen it, his axe*; similarly, sentence 55 is more literally translated as *They agreed on it, that they would get married*, and sentence 58 as *What is he busy at it, these days?*

(118) Jean, je l’aime.
Jean I him like
‘John, I like him.’

Romance or Greek clitic dislocation and Oneida-style dislocation differ in three important respects, though, and in our model ‘dislocated’ NPs are simply NPs that further specify semantic arguments but are not selected by the phrase’s head (the verb in this article). First, clitic dislocation structures are typically assumed to involve pronominals (whether pronominal clitics or affixes). But, as mentioned in n. 5, the true status of so-called pronominal prefixes in Oneida and polysynthetic languages in general is an unresolved issue that we do not weigh in on in this article. Thus, Oneida dislocation may not involve pronominals (see Koenig & Michelson 2010b for arguments that they do not). Second, the relation between the clitic index and the external NP in Romance or Greek is identity, whereas the relation between the argument referenced by pronominal prefixes and the external NP is one of overlap (see n. 12). Third, clitic dislocation structures are associated with an information-structure component (more specifically, a particular topic-focus articulation) that is absent in Oneida (see Van Valin 2013 for similar remarks, but a different conclusion, on the absence of a particular topic-focus articulation for the optional cooccurrence of phrases and verbs in another polysynthetic language family, Siouan). The absence of a particular topic-focus articulation associated with Oneida dislocation constructions is not surprising within an approach to the syntax of information structure such as that proposed in Lambrecht 1981 and 1994. The association of a particular topic-focus articulation with a structural configuration depends on the existence of allo-sentences (‘semantically equivalent but formally and pragmatically divergent sentence pairs’ (Lambrecht 1994:6), that is, alternative ways of expressing the same propositional content). Since dislocation is the only way phrases can be licensed to occur with verbs in Oneida, the absence of choice leads to the absence of a topic-focus correlate of the construction.

The absence of topic-focus correlates of dislocation in Oneida means that adjoined NPs do not seem to be restricted in exactly the way dislocated NPs are in other languages. As a referee points out, only certain NPs are felicitously dislocated in many languages (particularly Romance languages). Dislocation tends not to welcome quantified or nonspecific DPs, and, indeed, Baker 1995 claims that there are no quantificational DPs in Mohawk. Unfortunately, it is difficult to interpret the Oneida evidence (in fact, the Iroquoian evidence, in general), since quantity is expressed through verbs, typically meaning something like English *amount to* (see Koenig & Michelson 2012 for details). As a result, although it is true that there are no quantificational DPs in Oneida, it is because quantity is expressed through verbal means. But nonspecific indefinite DPs can be dislocated, as exemplified below in 117. Note, though, that discussions of the evidence on restrictions on adjunct DPs, following Rizzi 1982, typically comes from constructions with a particular topic-focus articulation, for example, clitic dislocation in
Romance. Since we know that quantification and topic-focus articulation interact in various ways (see Partee 1995), the absence of topic-focus articulation correlates of ‘dislocation’ in Oneida should not lead us to expect restrictions on quantificational DPs in Oneida. Similarly, we do not expect dislocated NPs in Oneida to be hanging topics. And, indeed, they need not be, as sentence 119 shows: there is no intonation break between the indefinite úhkaʔ ok and the rest of the sentence, and the indefinite NP introduces a new discourse referent.

(119) Tá·thuniʔ úhkaʔ ok sá· nok awa:túʔ isíʔ nyåhohnekutéhslaʔ, kwáh s or else someone also it. has. to. be he. will. go. throw. out. water just kyuhte wiʔ tsyoʔk nihotitsyaplöʔ-àʔ, swatyelá oniʔ nok awa:túʔ supposedly they. have. all. kinds. of. jobs sometimes too it. has. to. be úhkaʔ ok atsyeksohaléniʔ, tá·thuniʔ ahutuhewáníʔ, someone someone. will. wash. dishes or else they. will. sweep ‘Or else someone would have go to throw out the water, all kinds of jobs, sometimes someone would have to wash dishes or sweep the floor,’

(Mercy Doxtator, ‘Some woodcutters get a visitor’, recorded 1996)

Finally, in contrast to what happens in Romance or Greek, where verbs can impose morphosyntactic constraints on dislocated NPs or PPs, verbs in Oneida do not impose any constraints on the morphosyntax of cooccurring NPs. Verbs only constrain the relation between the semantic index of their s-arguments and the semantic index of any cooccurring NP. As a consequence, there is no evidence that verbs ‘see’ anything but the semantic indices of ‘dislocated’ NPs. All that an Oneida verb needs to know, so to speak, is how many semantic indices the INFL-STR list contains and their order (as it affects pronominal prefix selection). The irrelevance of the morphosyntactic information of dislocated NPs is consonant with our hypothesis that neither argument structure nor valence structure is present in Oneida (and therefore with the absence of syntactic selection of dependents by heads).

As we have just seen, verbs in Oneida do not impose any morphosyntactic constraints on cooccurring NPs. In contrast, there are APPARENT cooccurrence restrictions between verbs and CPs. We summarize those restrictions below (for purposes of exposition, we call dislocated CPs that correspond to one of a verb’s semantic arguments argument clauses).

(120) a. The argument clauses of some verbs (e.g. -kweni- ‘be able to’) typically have no overt complementizer (see 121).
   b. The argument clauses of some verbs (e.g. -kweni- in the negative) must be in the optative mode (see 122).
   c. The argument clauses of some verbs (e.g. -lihwahluk- ‘hear news about’) must or typically include the complementizer tsiʔ (see 123).

(121) Wa-hati-kwe:ní wa-huvá-lyoʔ thiká atilú, FACT-3.M.PL.A-able:PNC FACT-3>3.M.SG-kill-PNC that raccoon ‘They were able to kill the raccoon,’

(Clifford Cornelius, ‘A lifetime working’, recorded 1994)


(Georgina Nicholas, ‘The flirt’, recorded 1980)
and that my father had gone to work way over in Leamington,' (Clifford Cornelius, ‘A lifetime working’, recorded 1994)

The key to understanding the semantic underpinnings of these apparent cooccurrence constraints is that the constraints are not imposed on verbs (as a prior version of our research assumed), but on the CPs themselves. Different CPs are associated with distinct semantic constraints. Simplifying somewhat, argument clauses that include tsiʔ describe situations that are factual (in a few cases, the fact is a future fact and tsiʔ seems to be used to emphasize the certainty the speaker has that an event will occur). The optative is an irrealis marker. When neither tsiʔ nor the optative is present, the speaker does not commit to the factuality or nonfactuality of the described situation. If we are correct, cooccurrence restrictions follow from the need for a match between the semantic constraints imposed by the form of the CP and the semantic constraints verbs impose on their propositional or question arguments.

The advantage of the view that distinct CPs carry different meanings is that it allows for some verbs to take two distinct kinds of CPs, but with a slight difference in meaning. Consider the sentences in 124. The verb in 124a is in the optative, indicating that the feeding did not occur. The verb in 124b is not in the optative and the argument clause includes tsiʔ, as befits the factive nature of the interpretation of the main verb.

rep-fact:1sg.p-forget-pnc opt-1sg>3.m.sg-feed-pnc  
‘I forgot to feed him.’

b. S-ukeʔnikúlh-ʌʔ tsiʔ te-yo-hlíʔ-u.  
rep-fact:1sg.p-forget-pnc that dl-3.fz.sg.p-smash-stv  
‘I forgot that it’s broken.’

In conclusion, differences in the ontological status of the described situations explain differences in the form of argument clauses, and, crucially, those differences are internal to argument clauses. Matching of verbs with the form of the argument clause is a matter of congruence between the semantic constraints imposed by the verb on its situational or propositional argument and those imposed by the internal syntax of the argument clause.

Introducing unbounded dependencies. We have just suggested that cooccurring phrases are unbounded dependents of verbs and do not constrain the morphosyntactic properties of cooccurring NPs or CPs. We now provide a set of constraints that model these observations. To model the cooccurrence of overt phrases and verbs, we make use of two distinct attributes on verbs, disloc and extra. These attributes record the existence of unbounded or nonlocal dependents of verbs; that is, they record which of a verb’s semantic arguments are further constrained by cooccurring phrases. Whereas in languages like English, attributes that record unbounded dependencies between verbs and fronted phrases (e.g. the attribute slash that is used to model so-called wh-movement) record which morphosyntactic argument is expressed nonlocally (i.e. not as subject or complement), this is not the case in Oneida. In the Oneida sentence in 69, iséʔ does not express nonlocally a g-argument of -yena- ‘accept, grab hold of, catch’; it merely specifies further semantic information about one of the s-arguments of -yena-. Two distinct attributes are necessary since each attribute keeps track of different kinds
of information. The extra attribute keeps track of the entire semantic information contributed by cooccurring CPs; the disloc attribute only keeps track of the semantic index of NPs (which roughly corresponds to the variable bound by quantified NPs in standard first-order predicate calculus or discourse referents in discourse representation theory; Kamp & Reyle 1993).\(^{18}\)

As is typical of work that follows the lead of Gazdar et al. 1985, grammatical constraints introduced to model unbounded dependencies fall into three groups: constraints that ensure verbs bear appropriate information about their unbounded dependents, constraints that 'percolate' that information, and constraints that ensure those unbounded dependencies are resolved. We model the relation between a verb and external phrases specifying a semantic argument or adjunct of that verb through the same set of constraints.

Constraint 125 ensures that indices that are part of the disloc set overlap with indices of semantic arguments. Constraint 126 says that the semantic content of an argument clause can be the value of an argument of the verb. Constraints 125 and 126 basically say that an argument of the verb can overlap with the index of a 'dislocated' NP or can be coindexed with the semantic content of a 'dislocated' CP. Note that there is an important difference between the side effects of the introduction of unbounded dependencies in most languages versus Oneida. In languages like English, the introduction of unbounded dependency affects the subcategorization or valence of verbs or the relevant projection of a verb head (by either leaving a trace or leaving a copy after internal merge). In contrast, the presence of a dislocated NP or CP in Oneida does not affect the selectional potential of verbs or the structure of the maximal projection of a verbal head.

\[(125)\]
\[
a. \text{The indices of all unbounded, dislocated dependents of a verb overlap with an s-argument of that verb (the value of } F \text{ can be the event variable).}
\]
\[
b. \forall w (\text{word } \land [\text{head verb disloc ne-list}] \land \text{member}(w, \mathbb{E})) \Rightarrow [\text{content } [F \ w] \land \text{overlap}(w, \mathbb{E})]
\]

\[(126)\]
\[
a. \text{The semantic content of argument clauses cooccurring with a verb is the value of an s-argument of that verb.}
\]
\[
b. \forall w \mathbb{E} (\text{word } \land [\text{extra ne-list}] \land \text{member}(w, \mathbb{E})) \Rightarrow [\text{content } [F \ w]]
\]

**Percolating unbounded dependencies.** The next constraint makes sure that information about unbounded or nonlocal dependents is 'passed along' from daughters to mothers. Constraint 127, called in Ginzburg & Sag 2001 the generalized head feature principle, says that, by default, the (morpho)syntax and semantic information of a phrase is identical to that of its head-daughter. This principle ensures that extra and disloc information is passed up the tree. The upshot of 127 is that if a word has an unbounded de-

\(^{18}\) Some readers might be concerned about the proliferation of unbounded dependency features, in particular the introduction of the disloc feature. There is precedence within HPSG for an unbounded dependency feature that has semantic indices as values, namely the feature rel used to model relative clauses; see Sag 1997. See Bouma 1996 and Kay & Sag 2009 for models of extraposition within HPSG that, like our analysis of CP dislocation in Oneida, use a special extra feature. Finally, whether we truly need to distinguish between dislocated NPs and dislocated (extraposed) CPs depends on how semantic composition in Oneida is modeled and on some complex issues that pertain to semantic underspecification. We take a somewhat conservative approach in this section and assume that the entire semantic content of argument clauses is the value of the relevant verb’s semantic argument rather than merely the event or propositional index of the argument clause. As a result, we need to distinguish dislocation of argument clauses, which involves sharing of entire semantic contents, and dislocation of NPs, which merely involves sharing of indices. Nothing substantive rests on this choice.
dependent, so does the phrase that contains the word, and so on, until the dependency is resolved. These constraints thus ensure ‘percolation’ of unbounded dependencies of all dislocated phrases, whether they are CPs, wh-phrases, or non-wh NPs.

(127) a. By default, the morphosyntactic and semantic properties of the mother node of a local tree are identical to those of the head-daughter.

b. $[\text{SYNSEM} / \Box] \rightarrow \ldots [\text{SYNSEM} / \Box]$

Realization of unbounded dependents. The final group of constraints licenses the realization of unbounded dependents. Constraint 128 states, somewhat informally, that a phrase can consist of an expression that contains an unresolved DISLOC dependency together with a coindexed phrase. The DISLOC set of the resulting structure is stipulated to not include the dependency that has just been resolved. The construction in 128 does not order the dislocated phrase and the verbal head. But, while a non-wh NP can precede or follow the verb one of whose semantic arguments it is coindexed with, a wh-phrase must precede the verb that it is an unbounded dependent of. We therefore propose the linear-order constraint informally stated in 130 to account for the initial position of wh-phrases. Constraint 129 works exactly like 128 except that in this case the dislocated element is an adjunct that is not an argument of the verb it is dislocated from, but rather takes as argument the event variable of the verb it is dislocated from. Constraint 131 states that a phrase can consist of an expression that contains an unresolved EXTRA dependency followed by a phrase whose semantic content is identical to that unresolved EXTRA dependency. (Argument clauses must follow the verb one of whose semantic arguments they are coindexed with, indicated in 131 by absence of a comma between the two daughters on the right-hand side of the rule.) The EXTRA list of the resulting structure is stipulated not to include the dependency that has just been resolved.19

(128) For arguments: $[\text{DISLOC} / \Box] \rightarrow [\text{INDEX} / \Box], [\text{HEAD} \verb / \Box, \text{DISLOC} \{\Box} / \Box]$

(129) For adjuncts: $[\text{DISLOC} / \Box] \rightarrow [\text{F} / \text{sit-index}, \text{HEAD} \verb / \Box, \text{INDEX} / \Box, \text{DISLOC} \{\Box} / \Box]$

(130) NP[++wh] < XP

(131) $[\text{EXTRA} / \Box, \Box, \Box] \rightarrow [\text{EXTRA} [\Box, \Box] / \Box, \text{DISLOC} / \Box, \text{DISLOC} / \Box]$

6. Conclusion. Extensive research on the interface between the semantics of verbs and the syntactic contexts in which they occur has shown that it almost universally involves local selection of nonheads by heads and constraints that heads impose on nonheads (or equivalent notions). The representation and mechanisms used to model syntactic selection and constraints on selected expressions vary greatly across frameworks, but the relevance of these concepts has been virtually unchallenged and is assumed, implicitly or explicitly, to be universal. In this article, we examined more

19 Henry Davis (p.c.) wonders if the ordering of daughters in 131 does not amount to smuggling in argument ordering. The answer is ‘No’ for two reasons. First, the ordering at issue in the construction in 131 is a linear order of expressions rather than the more abstract ordering of semantic arguments we defined above. Although our notion of ordering of semantic arguments may translate into a linear order in some approaches in some cases, it need not (as in the RELATIONAL GRAMMAR notions of (initial) 1s and 2s). Second, what is being ordered in 131 are expressions that correspond to the semantic predicate and specify further a semantic argument, respectively, not the ordering of two expressions that each further specify a semantic argument.
closely these assumptions and asked whether there is anything invariant in the selection of phrases realizing semantic arguments. We argued that the facts of Oneida, and Iroquoian in general, suggest the answer to this question is No. There is no use in Oneida for local selection (and lexical records of those selectional facts in valence or subcategorization information), and words are, as a result, functionally complete. When expressions that specify a verb’s arguments occur, their relation to the verb is one of unbounded dislocation and involves a looser overlapping of indices rather than coin dexing, and thus differs markedly from the relation between a head and its complements or specifiers. We have also argued, more provocatively, that there is no use for a level of argument structure in Oneida or, more generally, a syntactically induced ordering of semantic arguments. We have shown that the kinds of processes that justify positing such a level are systematically absent in Oneida. We only need to posit the kind of inflectional morphosyntactic representations discussed in Anderson 1992, what we call here INFLECTIONAL STRUCTURE.

The facts of Oneida suggest that there is less universality in the syntactic selection of phrases realizing semantic arguments than is typically assumed and that languages may vary widely in the way semantics is mapped onto syntax. Such a conclusion is in line with Evans and Levinson’s (2009) suggestions. But the impact of our conclusion should not be overestimated. First, not all nonconfigurational or polysynthetic languages are alike. The fact that Iroquoian shows no evidence of local selection or the presence of a level of argument structure (or its equivalents) is not necessarily symptomatic of all polysynthetic languages, let alone all nonconfigurational languages. Nonconfigurationality is best seen as a syndrome whose causes are not necessarily always the same, as Legate (2002) has already pointed out. Iroquoian is possibly at one extreme of nonconfigurationality and shows no evidence of local selection and argument structure. But other well-studied cases of nonconfigurationality seem to provide more evidence for the relevance of these notions, at least from the languages’ extant descriptions. The existence of a language family like Iroquoian is important for testing the limits of what a natural language is.

Second, we did not argue that it is impossible to analyze Oneida via local selection and a level of argument structure. Syntactic frameworks have become sophisticated enough that it is unrealistic to hope for choices between analyses to come down to matters of descriptive adequacy. So, one can stipulate AXIOMATICALLY that arguments are syntactically realized in Oneida as they are in English and that Oneida lexical items include a level of argument structure, or that Oneida first-phase syntax, to borrow Ramchand’s (2008) term, is similar to English first-phase syntax. The resulting analysis will introduce entities or representations that are not needed to model the syntax of the language. If one takes the distinction between subjects and objects to be universal, one can simply stipulate that there are subjects and objects in Oneida and construct a model of Oneida syntax that makes reference to subjects and objects. The resulting structures will be more complex than the ones we posit, and, more importantly, the evidence for subject and objects or subject/object asymmetries that justifies postulating these constructs will be lacking. But we do not know of any insurmountable empirical objection to that avenue of analysis. Importantly, though, claims of the universality of constraints on syntactic argument realization then have no empirical basis. The constraints are universal not because the grammars of all languages can be shown to include them, but because all languages are analyzed using those constraints, whether a language provides evidence for them or not. This is what makes Oneida morphosyntax so interesting and important, we believe.
Another possible challenge to our conclusion that Oneida differs qualitatively from languages like English is to say, as several scholars have suggested to us, that morphological referencing of semantic arguments by pronominal prefixes is not as different from syntactic argument realization as we make it out to be. In other words, while it is true that Oneida verbs and nouns do not select for dependents that syntactically realize their semantic arguments, such scholars might point to the fact that Oneida animate semantic arguments are referenced morphologically to suggest that Oneida is not that different from other languages after all. And it is true that some of the same principles of the ordering of semantic arguments that were uncovered for many languages where semantic arguments are syntactically realized are operative in Oneida too, as §5 shows.

But morphological referencing of animate semantic arguments is a purely inflectional process in Oneida, with no syntactic reflex. Our conclusion that Oneida differs qualitatively from more well-known languages syntactically would therefore still hold. But, more broadly, we believe there is a qualitative difference between the syntactic realization of arguments and the morphological referencing of them. An easy way to see that is to think in terms of grammatical relations, abstracting away for now whether grammatical relations are primitives in one’s favorite syntactic framework. It makes sense to say that an external phrase $P$ bears the grammatical relation subject or object (or whatever) with a verb. But to say that a piece of inflection $I$ bears the grammatical relation subject or object with a verbal stem makes sense only if one adopts a morphemic approach to inflectional morphology. This is certainly possible, but it raises, as is well known, many difficult issues (see Anderson 1992 for a good summary and the portmanteau-like nature of Oneida transitive prefixes as a case in point). The very fact that talking about grammatical relations between inflections and verb stems raises this issue illustrates the difference in the two ways of understanding realization (in fact, ironically, realization theories of inflection are incompatible with the view that inflections bear grammatical relations to verbal stems). Talking of ‘realization’ for both the relation between a head and complements or specifiers and the relation between a stem and Oneida pronominal prefixes would gloss over the substantive differences between syntax and inflectional morphology.  

So, does the fact that there is no place for the notion of a syntactic selection of phrases realizing semantic arguments mean that there is no syntax in Oneida? It might seem so to some, since most of the kinds of phenomena that make up the content of syntactic descriptions are simply absent in Oneida. And indeed, if syntax is defined as the conventional constraints on the combinations of heads and dependents selected by heads, then Oneida has little or no syntax, at least when it comes to the realization of semantic arguments. But such a view would be an illusion due to our familiarity with syntactic selection. If syntax is defined more broadly as the study of the constraints on combining words and phrases and the semantic effect of combining those words and phrases, then Oneida has a syntax, just like English. It is in fact relatively easy to define the kind of syntax Oneida has. In minimalist terms, Oneida is a language in which the relation between heads and phrases specifying properties of semantic arguments involves exclusively pair-merge, and not set-merge, as is found in most languages (see Chomsky 2004).

20 A good example of the difference between morphological argument referencing and syntactic argument realization is the fact that Oneida transitive prefixes are portmanteau-like. They cannot be analyzed as the combination of two prefixes referencing one semantic argument each (although one can sometimes associate a meaning or function to subparts of the prefix). Thus, a single transitive prefix references two semantic arguments, something unheard of in the context of syntactic argument realization.
Viewed in the light of the broad notion of syntax just defined, our ‘every external phrase is adjoined’ claim, if true, parcels out the various possible contributions of syntax (Koenig & Michelson 2012 expands on that issue and its semantic consequences). Syntactic expressions that provide information about semantic arguments must minimally relate the semantic index of those expressions with a semantic argument position of the semantic content of the verb.21 Only in languages where semantic arguments are syntactically realized as dependents selected by heads do syntactic constraints or rules make reference to an ordering of semantic arguments. We can summarize what our study of the syntax of Oneida teaches us as follows.

(i) If more than one semantic argument must be referenced morphologically or realized syntactically in a language, that language will have a notion of g-arguments.

(ii) If more than one semantic argument must be realized syntactically, syntactic g-arguments are necessary.

Let us go back to what remains universal in the grammar of languages. At a very abstract level, g-arguments may be universal. That is, labeling of semantic arguments for syntactic or morphological purposes may be universal. Such a universal would make sense. As long as more than one semantic argument is referenced or realized, there must be a way of distinguishing semantic arguments. But syntactic g-arguments are not universal, although they are overwhelmingly frequent.

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21 Gil (1994) claims that Riau Indonesian allows for looser semantic relations between nominal expressions and verbs. Since we have not seen a large and precise enough description of that language, we cannot ascertain whether there is a substantive difference between Riau Indonesian and Oneida.


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