LIMITED NOUN INCORPORATION IN WASHO[1]

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In this paper, we discuss two bipartite verb stem formation constructions in Washo, where an element translated into English as a nominal appears as the INITIAL in a bipartite verb stem: Body-Part Initials (BPIs) and Instrument Noun Initials (INIs). We pursue the idea that these may in fact be instances of Noun Incorporation (NI) in Washo. These two constructions differ in their morphosyntactic and discourse properties, specifically with respect to argument structure and discourse transparency of the nominal initial. We compare the properties of BPI and INI stems against the typological predictions made by two influential theories of NI: the lexicalist theory of Rosen (1989) and the syntactic theory of Baker (1988) and Baker, Aranovich, and Golluscio (2004). We ultimately conclude that BPI stems represent an example of syntactic NI, while INI stems do not involve NI at all but rather are more akin to instrumental affix constructions found in other Amerindian languages.

[KEYWORDS: Washo, noun incorporation, syntax, morphology, bipartite verbs]

1. Introduction. The Washo language of Northern California and Nevada (ISO code: was) is often classified as an isolate, though has controversially been linked with Hokan (see discussion in Campbell 1997 and Mithun 1999). However, Washo shares certain areal features with several neighboring languages. In particular, Washo is a participant in the so-called bipartite stem belt along with Klamath (ISO code: kla), Sahaptin (ISO code: yak), Yana (ISO code: ynn), and Atsugewi (ISO code: atw) (Delancey 1996 and Beavert and Jansen 2011), and also Karuk (ISO code: kyh) (Macaulay 1993). These languages all share a pattern of compound stem formation

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first described by Jacobsen (1980). An example of a verb formed by this construction is given in (1):[2]

(1) *gešuʔmáwdi*
    ge-šuʔm-awd-i
    3OBJ-throw-over.edge-IPFV

    'He is throwing it over the edge'.

Here, the INITIAL element *šuʔm-* contributes the meaning 'throw' and the FINAL element *-awd* contributes the meaning 'over the edge'.[3] Tense, aspect, mood, and agreement morphology appear outside the bipartite stem. The majority of verb stems in Washo are bipartite stems.

Jacobsen (1980) presents an analysis of Washo bipartite stems in terms of combinatorial classes. That is, initials of one class may only combine with finals of the same class. However, an important feature of Washo verb stems that Jacobsen's analysis fails to capture is the distribution and behavior of nominal-like elements within the verb stem. Specifically, there are two types of initials in a bipartite verb stem that can be translated into English as nominal-like: body-part initials that informally act as the direct object of logically transitive or ditransitive verbs, as in (2), and instrumental classifiers, as in (3):

(2) BODY-PART INITIALS (BPIs):
    John tuʔmáʔami
    J tuʔm-aʔam-i
    J foot-into.water-IPFV

    'John is putting his foot into the water'.

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[2] Washo is a highly endangered language, with only about ten living native speakers left. Unless otherwise specified, the data used in this paper come from our own fieldwork with two elders between March 2009 and March 2011. In elicitation sessions, we used grammaticality judgments, truth-value judgments, and felicity judgments, following the methodology outlined in Matthewson (2004). Unless otherwise indicated, the judgments indicated in this paper hold for both consultants. Since both consultants agree on the status of the majority of the judgments, we take this to mean that the phenomena discussed in this paper reflect robust grammatical distinctions still active in Washo despite its moribund status.

We present Washo examples using a slightly modified version of the orthography of Jacobsen (1964). Most characters correspond to their IPA usage, with the following deviations: *c* = [ts], *š* = [ʃ], *y* = [j], and *L* and *M* represent voiceless resonants of [l] and [m], respectively. Abbreviations are as follows: 1, 2, 3 = first, second, third person, AOR = aorist, ATTR = attributive, CAUS = causative, INCH = inchoative, INS = instrumental, IPFV = imperfective, LOC = locative, NMLZ = nominalizer, OBJ = object, POSS = possessive, REFL = reflexive, SEQ = sequential, SG = singular, SR = switch-reference, SBJ = subject, UNEXP.OBJ = unexpressed object. Gender is not marked in Washo agreement or pronouns, so we interchange 'she' and 'he' in English translations.

[3] Jacobsen (1980) uses the terms "lexical prefix" for initials and "dependent verb stem" for finals. We maintain our terminology throughout the article for perspicuity.

(3) INSTRUMENT NOUN INITIALS (INIs):
     t'ánu pélew ʔugát'ɨgi
     t'ánu   pélew   ʔ-ug-át'g-i
     person   rabbit   3-with.club-kill.SG-IPFV

     'Someone killed a rabbit (with a club-like object)'.

In this paper, we show that the bipartite verbs in (2) and (3) represent two distinct constructions that differ in their syntactic and discourse properties. Specifically, we show that Body-Part Initial (BPI) verbs (as in 2) are morphologically strictly intransitive, and that the initial element is discourse transparent. In addition, the nominal reference of the initial can be doubled with an independent NP in the instrumental case and can be subject to apparent external modification, also in the instrumental case. These properties of BPIs were first noted by Lemieux (2010). Meanwhile, Instrument Noun Initial (INI) verbs (as in 3) can be transitive, intransitive, or ditransitive, and the nominal is discourse opaque but also shows apparent doubling and external modification in the instrumental case, like BPI verbs.

Since the initials in these constructions are translated as nouns, we consider the possibility that these are in fact instances of noun incorporation (NI). A century ago, during the historical debates over what constitutes NI, two competing definitions were proposed by leading Americanists. According to Kroeber (1909:569), NI "is the combination into one word of the noun object and the verb functioning as the predicate of a sentence." Under this definition, only BPI stems in Washo would possibly count as NI, since the initials of INI bipartites function as instruments rather than objects of the verb. This definition also includes noun–verb compounds in English, such as *song-write*. However, Sapir (1911) advocated an expanded definition of NI to include compounding of a verb with a noun of any syntactic function, including object, subject, instrument, or location. Under this wider definition, both BPI and INI bipartites in Washo could plausibly fall under the rubric of NI. Conversely, there are many languages that use compound verb formation similar to Washo INI stems where the instrumental element is analyzed not as an IN but rather as an instrumental prefix (or suffix), following the terminology of Sapir (1911). Sapir treats these cases as distinct from NI since the instrumental elements in the compounds form suppletive pairs with their independent nominal counterparts. Additionally, instrumental prefixes in such languages often receive a manner interpretation, rather than referring to a specific instrument (e.g., Central Pomo [ISO code: poo], Haida [ISO code: hai], Klamath, and many others) (see Mithun 1999). Many Americanists have followed in this tradition by analyzing these elements as instrumental affixation rather than incorporation (see discussion in Mithun 1999 and references therein).[4]

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[4] Examples include the "lexical suffixes" that have been studied in Salish languages (e.g., Gerdts and Hinkson 1996 and Kinkade 1998) and "lexical prefixes" in Klamath (Delancey 1999).

As our understanding of morphological, syntactic, and semantic processes has developed over the past century, so too have the definition and scope of NI evolved since the Kroeber–Sapir debates. For instance, our understanding of the syntactic representation of subjects and objects sheds light on the observation that generally only objects of transitive verbs and subjects of unaccusative verbs may incorporate, but not subjects more generally. Furthermore, it has also been shown that the interpretation of INs is parallel to that of any (narrow-scope) bare NP, making incorporation a semantically vacuous operation (Baker, Aranovich, and Golluscio 2004 and Chung and Ladusaw 2004, though see Farkas and de Swart 2003 for a more detailed account of the semantics of incorporation).[5] In this paper, we focus on the following morphosyntactic properties that have come to be the focus of morphosyntactic research on incorporation: changes in argument structure; discourse transparency of the IN; and doubling and external modification.

To pursue the question of whether BPI and INI bipartites in Washo constitute NI, we focus on Rosen's (1989) lexicalist theory and Baker's (1988) syntactic theory, since these two proposals make the most explicit typological predictions among theories of NI. We show that the properties of BPI stems in Washo are best captured under a syntactic analysis of NI, while the properties of INI stems are not predicted by either lexicalist or syntactic theories of NI. In the end, we therefore conclude that the BPI construction in Washo does indeed constitute NI, while the INI construction does not.

Section **2** outlines relevant background on the Washo language and its verbs, as well as the morphosyntax of nominal arguments. In **3**, we examine in detail the properties of BPI, where the resulting verb is strictly intransitive and the nominal element is discourse transparent and can be doubled as an independent NP and targeted by apparent external modification in the instrumental case. Next, in **4**, we contrast the behavior of BPI verbs and INI verbs, which show the opposite behavior in certain key respects. Section **5** summarizes the main analyses and predictions of both the lexical theory of NI of Rosen (1989) and the syntactic theory of Baker (1988) and Baker, Aranovich, and Golluscio (2004), focusing on their treatments of argument structure, discourse transparency, and doubling and external modification of the IN. In **6**, we review our findings and argue that while the BPI construction is indeed an instance of NI, the INI construction is more appropriately analyzed as a lexical affix construction. Furthermore, we argue that the syntactic analysis is better suited to handling the Washo BPI data, and we show that the

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[5] Of course, incorporation is known to have discourse structural effects, such as backgrounding known or incidental information (Mithun 1984). Discourse transparency, i.e., the ability of an incorporated nominal to serve as the antecedent to a pronoun in later discourse, has become a hot topic in research on noun incorporation since Sadock (1980) and will figure into our discussion more prominently in later sections.

observed patterning follows the typological predictions of Baker, Aranovich, and Golluscio (2004). Conclusions appear in **7**.

2. Background on Washo verbal morphosyntax.

2.1. Bipartite verb stems. The majority of verbs in Washo consist of two bound morphemes that combine to form a stem that can then be inflected for agreement, tense, aspect, etc. Monomorphemic verbs do exist in Washo; however, they are the exception rather than the rule. A couple of examples of bipartite verbs are given below. In (4*a*), the initial *p-* 'fall' combines with the final *-a:š* 'in' to create the verb stem *pa:š* 'fall in'. In (4*b*), the initial *se-* 'by heat' combines with the final *-ihuk'* 'dry' to create the verb stem *sehuk'* 'dry by heat'. Although the initial *p-* 'fall' and the final *-ihuk'* 'dry' are glossed as verbs in English, none of the initials nor most of the finals can themselves act as verb stems alone; they require a final or initial, respectively, in order to be used as bipartite verb stems.

(4*a*)   *dipá:ši*
     di-p-a:š-i
     1SBJ-fall-in-IPFV

     'I fell in'.

(4*b*)   *geséhuk'i*
     ge-se-ihuk'-i
     3OBJ-by.heat-dry-IPFV

     'She dried it outside (by heat/in the sun)'.

In his detailed account of Washo bipartite verbs, Jacobsen (1980) argues that the finals in these verbs represent true verbal roots, with the initials modifying the action named by the root in some way. Evidence that the finals are themselves the verb root comes from the fact that certain finals can also appear as monomorphemic verbs and that in general the finals have more phonological content. Finals typically lexicalize paths, result states, and attributes, while initials typically lexicalize manner of motion, instruments, and body parts. Representative examples are shown in (5).

(5*a*)   FINALS
(5*ai*)   Paths: *-ahad* 'across'; *-itiʔ* 'down(ward)'
(5*aii*)   Result States: *-a:baš* 'kill/die.PL'; *-aʔil* 'cut'
(5*aiii*)   Attributes: *-ileg* 'red'; *-ilp'il* 'blue'

(5*b*)   INITIALS
(5*bi*)   Manner of Motion: *mu-* 'run.sg'; *p'-* 'crawl'
(5*bii*)   Instrument: *de-* 'with hand'; *ug-* 'with club'
(5*biii*)   Body Parts: *dule-* 'hand'; *tuʔm-* 'foot'

Jacobsen (1980) divides initials and finals into three classes to account for their combinatorial properties. Namely, initials of one class can only combine with finals of that same class, and vice versa. Such an account has some inherent limitations, though we do not intend to propose a new theory of the general mechanism of bipartite stem formation as a whole. Rather, we intend to focus on cases of bipartite stem formation involving nominal-like elements used as initials and to propose that at least some bipartite verb stems in Washo are the result of incorporation. We now turn to the morphosyntactic properties of argument structure and NP ellipsis in Washo, which will become important to our arguments later on.

2.2. Argument structure and NP ellipsis.   The canonical word order in Washo is SOV, and nominative and accusative cases are morphologically unmarked on overt subject and object arguments.[6] Independent personal pronouns are typically absent and are only used for emphasis. Instead, subject and object agreement is mandatorily marked using prefixes on the verb. Third-person arguments may appear as full lexical NPs or may be phonologically null. For transitive verbs with third-person subject and object, two different agreement patterns are used, depending on whether the object is overt or null. If the object argument is overt, then a null prefix is used on consonant-initial stems, while *ʔ-* is used on vowel-initial stems. If the object argument is null, then the prefixes *ge-* or *k'-* are used. This contrast is shown in (6), with the monomorphemic verb stem *iʔiw* 'eat':[7]

(6a) *t'á:gɨm ʔíʔwi*
        t'a:gɨm   ʔ-iʔiw-i
        pine nuts   3SBJ-eat-IPFV

        'He is eating pine nuts'.

(6b) *k'íʔwi*
        k'-iʔiw-i
        3.UNEXP.OBJ-eat-IPFV

        'He is eating it/something'.

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[6] The only place in the grammar where subject and non-subject arguments are morphologically distinct occurs in internally headed relative clauses, where different verbal suffixes indicate whether the relative clause is to be interpreted as a subject or non-subject argument in the superordinate clause (Jacobsen 1981 and Peachey 2006).

[7] A reviewer wonders whether third-person agreement is actually always null in Washo, where the *ʔ-* prefix in (6a) is simply epenthetic to ensure a syllable onset, while the *ge-/k'-* prefix is an incorporated object pronoun. This would be an interesting alternative to our characterization of the facts, and we are not aware of any evidence against such an analysis. The take-home point of these examples, though, is simply that the presence of *ge-/k'-* unambiguously signals morphological transitivity of the verb in the absence of an overt object NP.

Lexical nominals may undergo NP ellipsis if their reference is known from context. In the case of a modified noun, NP ellipsis results in modifier stranding. (7*b*) is a version of (7*a*) where the NP *dewdiʔiš* 'tree' is null, leaving a property term stranded. Meanwhile (8*b*) is a version of (8*a*) with a null object NP, leaving a numeral stranded.

(7*a*) *dewdíʔiš delkáykayiʔ lí:giyi*
        dewdiʔiš   de-ʔil-kaykay-iʔ   le-i:gi-i
        tree   NMLZ-ATTR-tall-ATTR   1SBJ-see-IPFV

        'I saw the tall tree'.

(7*b*) *delkáykayiʔ lí:giyi*
        de-ʔil-kaykay-iʔ   le-i:gi-i
        NMLZ-ATTR-tall-ATTR   1SBJ-see-IPFV

        'I saw the tall (one)'.

(8*a*) *háʔwaʔ dewdíʔiš lí:giyi*
        haʔwaʔ   dewdiʔiš   le-i:gi-i
        four   tree   1SBJ-see-IPFV

        'I saw four trees'.

(8*b*) *háʔwaʔ lí:giyi*
        haʔwaʔ   le-i:gi-i
        four   1SBJ-see-IPFV

        'I saw four'.

Because of the possibility of NP ellipsis, the valence of a verb may be determined by the use of an object agreement prefix. The presence of the 3OBJ prefix *ge-/k'-* in the following two examples indicates that these are morphosyntactically transitive clauses, despite the lack of overt direct object argument.

(9) *geLéʔiši*
     ge-Le-iʔiš-i
     3OBJ-chase-forward-IPFV

     'He's chasing it'.

(10) *k'íʔwi*
      k'-iʔiw-i
      3.UNEXP.OBJ-eat-IPFV

      'He is eating it/something'.

Note that this property applies equally to bipartites (as in 9) and monomorphemic verb stems (as in 10).

    These properties of Washo morphosyntax will figure into our discussion of the two constructions at issue in this paper. We now move on to detailing the morphosyntactic properties of the BPI construction.

3. Body-part initials.   The initial slot of the Washo bipartite template may be filled with a body part, such as in (11), repeated from above.

(11) *John tuʔmáʔami*
    J   *tuʔm-aʔam-i*
    J   foot-into.water-IPFV

    'John is putting his foot into the water'.

The nominal initial *tuʔm-* 'foot' in (11) combines with a directional final *-aʔam* 'into water' to create an intransitive verb *tuʔmaʔam* 'to have/put one's foot into water'. There is a sense in which the body-part initial acts as the object of a logically transitive verb. There are five initials in Washo that enter into this construction; these are given in (12). The suppletive nominal stem variants of these initials appear in parentheses. Further examples involving each of these initials are given in (13)–(16).

(12*a*) *tuʔm-* 'foot' (*mayab*)

(12*b*) *dule-* 'hand' (*-a:du*)

(12*c*) *tug-* 'eye' (*wi:gi*)

(12*d*) *c'ig-* 'buttocks' (*c'aŋa*)

(12*e*) *k'ile-* 'head' (*iheb*)

(13) *sí:su lák'aʔ gálɨŋlu duláʔami*
    si:su   lak'aʔ   g-alɨŋ-lu   dule-aʔam-i
    bird   one   POSS-arm-INS   hand-into.water-IPFV

    'The bird put its wing into the water'.

(14) *c'ɨ́k'ɨ tugítiʔi*
    c'ɨ́k'ɨ   tug-itiʔ-i
    spider   eye-down-IPFV

    'The spider is looking down'.

(15) *gá:p'ɨlu c'igáʔami*
    g-a:p'ɨl-lu   c'ig-aʔam-i
    POSS-tail-INS   buttocks-into.water-IPFV

    'It put its tail into the water'.

(16) *mé:hu k'ilétiʔi*
    mé:hu   k'ile-itiʔ-i
    boy   head-down-IPFV

    'The boy put his (own) head down'.

The meanings derived from the bipartite stem formation in these examples are generally fairly straightforward and predictable, though somewhat idiosyncratic in certain respects (for example, in 14, 'eye' + 'down' = 'to look

down'). This type of bipartite verb stem formation systematically displays several properties, which we expound upon in this section: (*i*) formation of intransitive verbal predicates; (*ii*) discourse transparency of the initial; (*iii*) possibility of doubling with an independent NP in the instrumental case; and (*iv*) apparent verb-external modification of the initial, also in the instrumental case.

Before going into detail about these specific syntactic properties of BPI, we briefly point out the limited productivity of this construction, specifically the fact that only a closed class of nominal elements can appear in this construction. While the body-part initials in (13)–(16) all represent patients of logically transitive verbs, not all possible patients can enter into such bipartite stem constructions. In fact, no patients other than the body parts listed in (12) participate in this construction, as shown in (19) and (20). Rather, the patient is the syntactic direct object of a transitive bipartite verb whose initial indicates manner of motion, as in (17) and (18).[8]

(17) *tóšap dímeʔa ʔuʔláʔami*
    tošab   dimeʔ-a   ʔuʔle-aʔam-i
    sack   water-LOC   carry-into.water-IPFV

    'He carried his sack into the water'.

(18) *súkuʔ dímeʔa máʔami*
    sukuʔ   dimeʔ-a   m-aʔam-i
    dog   water-LOC   throw-into.water-IPFV

    'He threw his dog into the water'.

(19) **tošab-aʔam-i*
    sack-into.water-IPFV

    Intended: 'He put his sack in the water'.

(20) **sukuʔ-aʔam-i*
    dog-into.water-IPFV

    Intended: 'He put his dog in the water'.

While Jacobsen (1980) argues that initials can be derived fairly productively from nominal stems,[9] we have found that only the nominal initials listed in

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[8] Throughout this paper, we reserve * for sentences that are syntactically ill-formed and ?? for those that are semantically anomalous. We concede that it is not always easy to tell the difference between syntactic and semantic ill-formedness; however, these judgments are based on our direct elicitations with our native speaker consultants and are based in part on clues revealed by their comments and reactions to our attempts at constructing forms that turned out to be deviant.

[9] The derivational process described by Jacobsen (1980) involves suffixing a "vowel-coloring morphophoneme" (rendered as *-ᵉ* or *-ᵘ*) to derive an initial from an independent nominal stem. One example offered by Jacobsen that is highly relevant to our purposes is the initial *mo:k'o-ᵉ*, derived from *mo:k'o* 'knee', which is found in the bipartite stem *mo:k'oyeweʔ* 'to kneel' (with

(12) display the properties of BPI stems that are at issue in this section. While we concede that it is possible that more BPI initials may eventually be found in future fieldwork, we are confident that, even if this is the case, the possible initials entering into the BPI construction would remain a closed class.

Another interesting property of note for BPIs (as well as INIs) is the fact that the forms that appear as initials do not share the same phonological shape as their independent counterparts. For Sapir (1911), the presence of suppletive forms served as justification against an incorporation analysis for such cases. However, according to Mithun (1984), it is in fact common to find suppletion between incorporated and free forms in languages where incorporation has evolved extensively, such that phonological changes and lexical replacement over time have led to opaque relations between incorporated and free forms of the nominals in question. She identifies certain noun stems in Mohawk (ISO code: moh) that show this behavior, and outside of the Americas, a number of noun stems in Sora (ISO code: srb) and Ngandi (ISO code: nid) show suppletion as well. Mithun shows that despite the suppletive relationship between incorporated and free forms, the incorporation structures nevertheless show the expected morphosyntactic behavior of NI. Among the BPI initials in (12), Jacobsen (1980) identifies two that have resemblances to their independent counterparts, however tenuous they may be: the initial *dule-* 'hand' resembles the noun stem *-a:du* 'hand', while *c'ig-* 'buttocks' slightly resembles the noun stem *c'aŋa* 'buttocks'. The other three initials in (12) are completely suppletive with their independent forms. As argued by Mithun, languages with a long history of incorporation will tend to have the most phonologically complex relations between the independent and incorporated forms of a nominal.[10] We therefore do not take the suppletion facts as an a priori argument against an NI analysis for the BPI construction.

3.1. Valence.   Bipartite verbs with incorporated body-part initials are syntactically and morphologically intransitive. We argue that the BPI construction results in a change of argument structure, specifically a reduction in valency as a result of incorporation. In this section, we show that BPI verbs, such as (21) and (22), repeated from above, are formally intransitive. This contrasts with verbs formed with the same finals but with non-BP initials, which are in fact transitive, selecting for a patient object argument, as shown in (23) and (24).

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the final *-iweʔ* 'on the ground'). Unfortunately, our consultants did not recognize this form when we attempted to re-elicit material from Jacobsen (1980).

[10] Indeed, Jacobsen (1980) suggests that the bipartite system found in Washo today is derived historically from a more general stem-compounding mechanism in the grammar, stating that "the beginning of this process must be very old, dating back perhaps to the time of Proto-Hokan" (1980:97).

(21) *John tuʔmáʔami*
  J   *tuʔm-aʔam-i*
  J   foot-into.water-IPFV

  'John is putting his foot into the water'.

(22) *sí:su lák'aʔ gáliŋlu duláʔami*
  si:su   lak'aʔ   g-aliŋ-lu   dule-aʔam-i
  bird   one   POSS-arm-INS   hand-into.water-IPFV

  'The bird put its wing into the water'.

(23) *tóšap dímeʔa ʔuʔláʔami*
  tošab   dimeʔ-a   ʔuʔle-aʔam-i
  sack   water-LOC   carry-into.water-IPFV

  'He carried his sack into the water'.

(24) *súkuʔ dímeʔa máʔami*
  sukuʔ   dimeʔ-a   m-aʔam-i
  dog   water-LOC   throw-into.water-IPFV

  'He threw his dog into the water'.

There are three pieces of evidence we take to indicate the intransitive status of these stems. First, the subject of the verb must also be the possessor of the incorporated nominal. For instance, in (25), it cannot be the case that the boy put someone else's head down (we use subscripting for coindexation).

(25) *mé:hu k'ilétiʔi*
  mé:hu   k'ile-itiʔ-i
  boy   head-down-IPFV

  'The boy$_i$ put his$_{i/*j}$ head down'.

Second, the third-person object prefix *ge-* cannot be used with intransitive stems. The use of this prefix is illicit in such NI bipartite stems. It cannot be used to refer to either the IN itself or another person who is the possessor of the IN.

(26) **gek'ilétiʔi*
  ge-k'ile-itiʔ-i
  3OBJ-head-down-IPFV

  *'He$_i$ put it (his$_i$ head) down'.
  *'He$_i$ put his$_j$ head down'.

Third, in order to increase the valence of the verb, the applicative suffix *-ha* must be used. The result is a derived transitive verb, whose direct object is the possessor of the body part named by the initial.[11]

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[11] Applicative *-ha* can increase the valence of both intransitive and transitive verb stems, although its interpretation is always causative when applied to intransitive stems and is usually

(27) *Tim Ryan tuʔmáʔamhayi*
     T   R   tuʔm-aʔam-ha-i
     T   R   foot-into.water-CAUS-IPFV

     'Tim put Ryan's foot into the water'.

Object markers can be used with these derived transitive verbs to refer to
the direct object possessor of the body part named by the initial. In (28) the
first-person object prefix *le-* is used, while in (29) the third-person object
prefix *ge-* is used.

(28) *Ryan (dímeʔa) letuʔmá:šhayi*
     R (dimeʔ-a)   le-tuʔm-a:š-ha-i
     R (water-LOC)   1OBJ-foot-in-CAUS-IPFV

     'Ryan put my foot in (the water)'.

(29) *gek'ilétiʔetihayi*
     ge-k'ile-itiʔ-etiʔ-ha-i
     3OBJ-head-down-INCH-CAUS-IPFV

     'He$_i$ made him$_j$ put his$_j$ head down'.

Thus, BPI verbs are syntactically and morphologically intransitive but may
be made transitive by the addition of the valence-increasing suffix *-ha*, which
introduces a direct object possessor of the body part.

   3.2. Discourse transparency.   A body-part initial can introduce a dis-
course referent. That is, the bipartite verb stem does not behave as an
anaphoric island. As shown in (30), the dog's butt is introduced into dis-
course as the IN *c'ig-* and can then be referenced by the null subject of
the following clause.

(30) *súkuʔ ŋáwaya c'igíweʔi ʔida yéc'išetiʔi*
     sukuʔ   ŋawa-a   c'ig-iweʔ-i   ʔida   yec'iš-etiʔ-i
     dog   ground-LOC buttocks-down-IPFV and   dirty-INCH-IPFV

     'The dog$_i$ put its butt$_j$ on the ground, and it$_{i/j}$ got dirty'.

In (30), the subject of the second clause can be interpreted either as the dog
itself or the dog's butt. This means that the nominal initial *c'ig-* can introduce
a discourse referent that can be picked up later on as an argument in another
clause. A similar example occurs in (31), where the boy's head is introduced
into discourse as the IN *k'ile-* and is then interpreted as the subject of the
second clause.

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benefactive when applied to transitive stems (Jacobsen 1964:584). Though far from being knock-
down evidence for the morphological intransitivity of BPI stems, the fact that the addition of
-ha to these stems yields only a causative reading is highly suggestive.

(31) *mé:hu k'iléti?udi yáhayeti?i*
    me:hu   k'ile-iti?-ud-i   yaha-eti?-i
    boy   head-down-SEQ-IPFV   hurt-INCH-IPFV

    'The boy put his head$_i$ down, and then it$_i$ (began to) hurt'.

More striking evidence comes from (32), where the switch-reference (SR) marker *-š* indicates that the two clauses have different subjects (see Jacobsen 1964; 1981).

(32) *dí?yuya didulá:šaš dópoši*
    di?yu-a   di-dule-a:š-a?-š   dopoš-i
    fire-LOC   1SBJ-hand-in-AOR-SR   burn.up-IPFV

    'I put my hand$_i$ in the fire, (and) it$_i$ got burned up'.

In this example, the initial *dule-* 'hand' introduces a discourse referent that is then used as the subject argument in the second clause. The use of SR unambiguously indicates that the subject of the second clause is distinct from the subject of the first clause. The lack of first-person agreement on the verb in the second clause also indicates that the subject is not first person. That is, the subject of the first clause in (32) is first person, while the subject of the second clause is the hand that is introduced within the bipartite verb. SR is not necessary in (30) because SR in the third person is only used for disjoint reference, as observed by Peachey (2006). If the subject referent of the second clause is a subset of the subject referent of the first clause, no switch-reference marking is necessary. Since the dog's buttocks are a subset of the dog, no SR is necessary in (30), which results in the observed indeterminacy as to whether the dog or just the butt is dirty.

We take these examples as evidence that the initials in BP constructions are discourse transparent, meaning that the bipartite verb in this case is not an anaphoric island.

3.3. Doubling and modification. As we have already seen in some previous examples, the nominal appearing within the BPI verb stem can be doubled as its own NP constituent outside the inflected verb.

(33) *sí:su lák'a? gáliŋlu dulá?ami*
    si:su   lak'a?   g-aliŋ-lu   dule-a?am-i
    bird   one   POSS-arm-INS   hand-into.water-IPFV

    'The bird put its wing into the water'.

(34) *gá:p'ilu c'igá?ami*
    g-a:p'il-lu   c'ig-a?am-i
    POSS-tail-INS   buttocks-into.water-IPFV

    'It put its tail into the water'.

(35) *John tuʔmáʔami máyaplu*
    J   tuʔm-aʔam-i   mayab-lu
    J   foot-into.water-IPFV   foot-INS

    'John is putting his foot into the water'.

In all these examples, the doubled nominal appears with the instrumental suffix *-lu*. Since the BPI verbs are syntactically intransitive, these doubled NPs are not true direct objects of the verb, meaning they do not receive accusative case, which is unmarked on lexical NPs in Washo. Rather, these nominals appear in the instrumental case, which suggests that these are adjuncts rather than true arguments of the verb.

Additionally, the verb-internal body part can be subject to apparent verb-external modification. External modifiers may be "adjectival," [12] as in (36), or a numeral, as in (37).

(36) *John t'í:yelilu tuʔmáʔami*
    J   t'-i:yeliʔ-lu   tuʔm-aʔam-i
    J   NMLZ-big-INS   foot-into.water-IPFV

    'John is putting his big foot into the water'.

(37) *c'ɨk'ɨ háʔwaʔlu tugítiʔi*
    c'ɨk'ɨ   haʔwaʔ-lu   tug-itiʔ-i
    spider   four-INS   eye-down-IPFV

    'The spider is looking down with four eyes'.

As in the case of doubled nominals, the external modifier appears with the instrumental suffix. As is shown in (38), a modifier + NP constituent can be found doubling a body-part initial, where the instrumental suffix appears on the final element of the constituent.

(38) *t'é:liwhu t'í:yeliʔ máyaplu tuʔmáʔami*
    t'e:liwhu   t'-i:yeliʔ   mayab-lu   tuʔm-aʔam-i
    man   NMLZ-big   foot-INS   foot-into.water-IPFV

    'The man is putting his big foot into the water'.

Thus, external modifiers are in fact modifying a null nominal within an instrumental NP, as opposed to actually modifying an element within the verb stem. The instrumental marking in (36) and (37) appears on the modifier since there is no overt nominal within the NP. Therefore, apparent verb-external modification of an IN is actually the result of doubled nominals appearing in the instrumental case, coupled with the fact that Washo allows optional NP ellipsis.

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[12] Washo does not have a class of adjectives distinct from nouns and verbs. Most notions that are translated as adjectives into English are verbs in Washo, but they appear in a nominalized form when used attributively.

3.4. Summary. The relevant properties of BPI bipartite verbs are summarized in (39):

(39) Properties of Body-Part Initial (BPI) bipartites:
- intransitive stem (valence-decreased relative to non-BPI initials)
- discourse transparency of initial
- doubling possible in instrumental case
- apparent external modification in instrumental case

Each of these properties has figured into the discussion of NI in the literature and each is discussed further in **5** below when we evaluate whether the BPI construction should be analyzed as an instance of NI. To preview the outcome: we argue that the properties of BPI can best be captured by a syntactic analysis of NI (Baker 1988 and Baker, Aranovich, and Golluscio 2004). We now turn to INI bipartite stems and discuss their morphosyntactic behavior relative to the properties listed in (39).

4. Instrument Noun Initials. Other nominal-like elements besides body parts can appear in the initial slot of a bipartite verb in Washo. Such nominals receive an interpretation as an instrument or manner that further specifies the action denoted by the final. For this reason, we refer to verbs formed in this construction as the Instrument Noun Initial (INI) verbs. Two examples follow.

(40) *t'ánu pélew ʔugát'ɨgi*
    t'anu   pelew   ʔ-ug-at'g-i
    person   rabbit   3-with.club-kill.SG-IPFV

    'Someone killed a rabbit (with a club-like object)'.

(41) *t'ánu pélew dát'ɨgi déʔeklu*
    t'anu   pelew   d-at'g-i   de?eg-lu
    person   rabbit   with.stone-kill.SG-IPFV   stone-INS

    'Someone killed a rabbit with a stone'.

Certain body parts may also appear in initial position in this construction, but their phonological shape is different from the BPI cases. For example, compare the INI verb stem in (42) with the initial *de-* 'with.hand' and the BPI verb stem in (43) with the initial *dule-* 'hand'.

(42) *bedíliʔ ledéšɨl*
    bedili?   le-de-išl
    match   1OBJ-with.hand-give

    'Hand me the match!'

(43) *díʔyuya didulá:šaš dópoši*
    di?yu-a   di-dule-a:š-a?-š   dopoš-i
    fire-LOC   1SBJ-hand-in-AOR-SR   burn.up-IPFV

    'I put my hand$_i$ in the fire, (and) it$_i$ got burned up'.

Though the initial in (42) is translated as involving a body part, the resulting verb stem displays the same syntactic behavior as other INI stems. For this reason, and the fact that the initial in this case is still interpreted as an instrument, we treat cases such as (42) as INI rather than BPI. In this section, we show that this type of NI displays properties that are very different from BPI in certain key respects.

One other property that deserves mention here is the fact that INI initials are often classificatory in nature. For instance, the initial in (40) is vague about whether the rabbit was killed with an actual club or with an object that is sufficiently club-like to fall under the set of objects classified by the initial *ug-* 'with club'. This restriction on the type of entity that may be described by instrumental initials can be seen by the fact that a doubled nominal outside the verb stem must fall under the class of objects named by the initial. For instance, in (44), a stick counts as a club-like object and so the doubled nominal is allowed here.

(44) *t'ánu pélew máʔaklu ʔugát'ɨgi*
      t'anu   pelew   maʔag-lu   ʔ-ug-at'g-i
      person   rabbit   wood-INS   3-with.club-kill.SG-IPFV

      'Someone killed a rabbit with a stick'.

By contrast, in (45), a club does not count as a stone-like object and so this doubled nominal is unacceptable.[13]

(45) ???*ʔitmugáyamlu gadát'ɨgi*
      ʔit-mugayam-lu   ge-d-at'g-i
      NMLZ-club-INS   3OBJ-with.stone-kill.SG-IPFV

      Intended: 'He killed it (with a stone) with a club'.

Thus the initial in INI verbs may be classificatory in nature, which results in a restriction placed on the range of nouns that may be doubled outside the verb stem. We now turn to the syntactic properties of INI verbs and show how their behavior differs from BPI verbs.

4.1. Valence.   The verbs formed through INI can be either transitive, intransitive, or even ditransitive. This behavior contrasts with that of BPI verbs, which are strictly intransitive. For example, in (46), an object marker may appear on the verb in the absence of an overt direct object, indicating that the verb stem is transitive.

(46) *ʔitmugáyamlu gawgát'ɨgi*
      ʔit-mugayam-lu   ge-ug-at'g-i
      NMLZ-club-INS   3OBJ-with.club-kill.SG-IPFV

      'He killed it with a club'.

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[13] We label the ill-formedness of (45) as ?? rather than * since INI verbs do allow doubled nominals in general, as in (44), and so the degraded status of (45) seems to be due to a semantic restriction rather than a syntactic one.

Likewise, this same prefix may appear on the verb in (47) along with a distinct overt object, indicating that the verb is ditransitive. Another ditransitive INI verb occurs in (48), where the prefix *le-* indicates a third-person subject acting on a first-person object, and co-occurs with an overt object *bedíliʔ* 'match'.

(47) *t'é:liwhu démlu gebíšɨli*
    t'e:liwhu   d-emlu   ge-b-išl-i
    man   NMLZ-food   3OBJ-container-give-IPFV

    'The man gave him food (in a container)'.

(48) *bedíliʔ ledéšɨli*
    bediliʔ   le-de-išl-i
    match   1OBJ-with.hand-give-IPFV

    'He is handing me the match'.

An example of an intransitive INI stem is given in (49). Note here again the use of an initial that names a body part but that describes an instrument or manner of movement and has a different phonological form than the body-part initials in the BPI construction.

(49) *súkuʔ dímeʔa séʔeši*
    sukuʔ   dimeʔ-a   se-iʔiš-i
    dog   water-LOC   with.foot-forward.motion-IPFV

    'The dog is wading in the water'.

In the Washo INI construction, the nominal initial has an instrumental meaning and does not represent an object or patient of the action described by the verb. That is, in the case of INI, the nominal does not satisfy an argument position of the verb, and the argument structure of the root is not affected. Therefore, valency is not affected by this type of initial, and so verb stems in this construction can be intransitive, transitive, or ditransitive.

4.2. Discourse opacity. The initials in the INI construction show a markedly different behavior from those in BPI stems with respect to discourse transparency. In fact, the instrumental INs are discourse opaque.

As with BPI verbs, we test the discourse status of instrument initials by seeing whether a discourse-new initial in one clause can be interpreted as the null subject of a following clause. In the case of BPIs, we saw that this was indeed possible, indicating that nominal initials in that construction could introduce a discourse referent. This is not possible, however, for nominal initials in INI constructions. This restriction can be circumvented in at least two ways. First, the null subject of the second clause may be introduced overtly as a doubled nominal in the first clause, as in (50*a*). Without the instrument being named as an independent NP, coreference between the IN and the subject of the second clause is ruled out, as in (50*b*).

(50*a*) *t'ánu pélew ʔugát'ɨgi máʔaklu gɨ́lgayiš*
       t'anu   pelew   ʔ-ug-at'g-i   *maʔag-lu*
       person rabbit   3-with.club-kill.SG-IPFV stick-INS

       gɨlga-i-š
       break-IPFV-SR

     'Someone killed a rabbit with a stick$_i$ (and) it$_i$ broke'.

(50*b*) ??*t'ánu pélew ʔugát'ɨgi gɨ́lgayiš*
       t'anu   pelew   ʔ-ug-at'g-i   *gɨlga-i-š*
       person rabbit   3-with.club-kill.SG-IPFV break-IPFV-SR

     Intended: 'Someone killed a rabbit (with a club$_i$) (and) it$_i$ broke'.

The second strategy is to overtly specify the subject of the second clause, even if the intended referent is named by the initial in the first clause.

(51) *gemugí:giyi githáŋa yáhayišga*
     ge-mu-gi:gi-i   *git-haŋa*   *yaha-i-š-ga*
     3OBJ-with.mouth-sense-IPFV 3POSS-mouth hurt-IPFV-SR-although

     'He tasted it, although his mouth was hurting'.

In this example, the presence of the initial *mu-* 'with.mouth' does not license a discourse referent that can be used as the null subject of the following clause. The subject of the second clause in (51) cannot be interpreted as 'his mouth' without the overt subject *githaŋa*. Such a version without *githaŋa* is indeed licit but can only mean that the subject's entire body is hurting, not just the mouth. Therefore, the initial *mu-* cannot introduce a discourse referent that can be used as a null argument of a later clause. This example in (51) is particularly interesting, given that the initial here is a body part and that, as shown in **4.1** above, BPI initials are discourse transparent.

    Thus, the initials of INI stems appear to be discourse opaque, whereas those in BPI stems are discourse transparent.

    4.3. Doubling and modification. As is the case for BPI verbs, the noun referred to by the initial in INI constructions can also be doubled as an independent NP outside the verbal complex in the instrumental case. We have already encountered a few examples of this sort, such as (41), repeated here.

(52) *t'ánu pélew dát'ɨgi déʔeklu*
     t'anu   pelew   d-at'g-i   *deʔeg-lu*
     person rabbit   with.stone-kill.SG-IPFV stone-INS

     'Someone killed a rabbit with a stone'.

Once again, as in the case of BPI verbs, the doubled noun appears with the instrumental suffix *-lu*, indicating its non-argument status.

A doubled noun may appear with a modifier, as in (53). As in the case of BPIs, the doubled noun may be elided, leaving the modifier stranded and marked with the instrumental suffix, as in (54).

(53) *t'ánu pélew t'í:yeliʔ máʔaklu ʔugát'ɨgi*
    t'anu   pelew   t'-i:yeliʔ   maʔag-lu   ʔ-ug-at'g-i
    person   rabbit   NMLZ-big   wood-INS   3-with.club-kill.SG-IPFV

    'Someone killed a rabbit with a big stick'.

(54) *bedíliʔ míʔlešilu ledéšɨli*
    bediliʔ   miʔleši-lu   le-de-išl-i
    match   both-INS   3SBJ/1OBJ-with.hand-give-IPFV

    'He is handing me the match with both (hands)'.

As in the BPI case, apparent external modification of the initial is in fact a case of modification of an elided noun within an instrumental adjunct. The ability to strand modifiers of elided nominals should then be subject to general constraints on when nominals can be elided in the first place. That is, as mentioned in **2** above, elided nominals must be recoverable from context. Indeed, comments from our speakers indicate that (54) is acceptable only if it is known already from context that we are talking about hands; otherwise, a version of (54) with an overt nominal is preferred. However, a case where the stranding of a modifier results in a sentence that is degraded is shown in (55).

(55) ??*t'ánu pélew t'í:yelilu ʔugát'ɨgi*
    t'anu   pelew   t'-i:yeliʔ-lu   ʔ-ug-at'g-i
    person   rabbit   NMLZ-big-INS   3-with.club-kill.SG-IPFV

    Intended: 'Someone killed a rabbit with a big one (club-like object)'.

In this case, we believe that it is the classificatory nature of the initial that is the source of infelicity of (55), rather than a restriction on apparent external modification per se. Since the initial does not identify a specific instrument, but rather a class of objects that falls within a classification, then modification of a null object in an out-of-the-blue context is infelicitous because the referent of the null object is left unspecified. If this is the case, then the degraded judgment of (55) is due to pragmatic infelicity due to constraints on ellipsis in general, rather than syntactic ungrammaticality.

4.4. Summary. The properties of INI as outlined in this section are summarized in (56):

(56) Properties of Instrument Initial bipartites:
- no change in valence
- discourse opacity of initial
- doubling possible in instrumental case
- apparent external modification possible in instrumental case

Comparing this behavior to that of BPI bipartites, we note that with respect to the first two properties, INI shows the opposite behavior. The fact that apparent doubling and external modification are the same for both BPI and INI indicates that these properties are somewhat independent of the bipartite constructions themselves and are rather reflexes of more general mechanisms in the grammar of Washo. We now turn to an examination of two influential theories of NI in the literature and their predictions on the morphosyntactic behavior of NI constructions. It becomes clear that INI bipartites do not pattern as expected based on either theory, and we ultimately argue that the INI construction is not a case of NI.

5. Lexicalist and syntactic theories of NI.   It has been hotly debated in the literature whether NI should receive a lexical or syntactic analysis. On one hand, lexicalist theories claim that NI is a morphological word formation process that occurs in the lexicon and is strictly pre-syntactic. Notable lexical theories of NI include those of Mithun (1984; 1986) and Rosen (1989). On the other hand, syntactic theories maintain that NI is derived in the syntax and is therefore subject to regular syntactic operations such as movement. Advocates of syntactic theories of NI include Sadock (1980; 1986) and Baker (1988) and Baker, Aranovich, and Golluscio (2004). In this section, we outline the main aspects of lexicalist and syntactic theories of NI and summarize the predictions made by each theory in terms of what properties they predict for NI across languages. We focus on the lexicalist theory of Rosen (1989) and the syntactic theory of Baker (1988) and Baker, Aranovich, and Golluscio (2004), as these theories make the most explicit predictions about the types of NI we expect to find cross-linguistically.

5.1. A lexicalist approach.   Rosen (1989) argues for the existence of two types of NI cross-linguistically: Classifier NI and Compound NI. Each type of NI has distinct properties, which Rosen claims can only be captured by a theory where NI is derived in the lexicon.

In Classifier NI, the IN does not saturate an argument position of the verb; thus the valence of a verb does not change in this construction. A sketch of a VP in a Classifier NI language is given in figure 1. This configuration makes a number of predictions about the properties of Classifier NI. First, as Rosen claims, all languages that have Classifier NI constructions also allow optional NP ellipsis.[14] This means that the NP may be null, or it may be filled with

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[14] Rosen seems to conflate pro-drop, NP ellipsis, and stranding. We use the term NP ellipsis throughout the paper in keeping with current terminology. Furthermore, since Washo has no overt determiners, we abstract away from positing D or DP in the syntactic structures. This means that when the NP sister to a modifier is null, the result is what Rosen calls stranding, and when the entire NP is null, this amounts to pro-drop. Thanks to an associate editor for helping us clarify these issues.

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                VP
              /    \
            V        NP
            |       /  \
        [N + V]  Mod    NP
                        |
                        N
                        |
                       (∅)
```

```
        VP
        |
        V
        |
     [N + V]
```
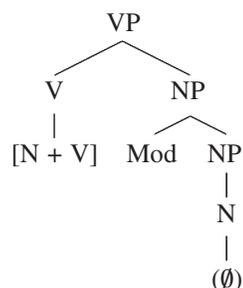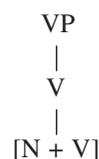
FIG. 1.—VP of Rosen's Classifier NI.   FIG. 2.—VP of Rosen's Compound NI.

an overt lexical noun, whose extension must fall within the class of objects identified by the IN. The latter case corresponds with "doubling" of the IN, which is fully predicted for Classifier NI. Also predicted is apparent modification of an IN, which is the result of a stranded modifier as the sister of a null NP. Discourse transparency is also predicted under this account, since a lexical NP in another clause can be anaphoric to the elided NP in a Classifier NI configuration. Furthermore, for Rosen, Classifier NI always arises in a morphosyntactically transitive clause. As shown in figure 1, the verb including the IN selects for a direct object NP.

Meanwhile, in Rosen's Compound NI, the IN saturates the direct object position of the verb; thus the result of NI in this case is an intransitive verb. Since intransitive verbs do not select for an object, not even a null object pronoun may be present within the VP. This predicts that neither doubling nor apparent external modification of the IN should occur. The account also predicts that INs should be discourse opaque. This is because the verb with an IN is a word formation process that occurs in the lexicon, and the word is an anaphoric island (see Mithun 1984). This contrasts with Classifier NI, whereby the (possibly elided) NP is selected as a direct object of the verb and can serve as a discourse antecedent for an NP in a later clause. In Classifier NI, there is no independent NP (null or overt) outside the verb stem that can serve as a discourse antecedent. The structure of the intransitive VP would be as shown in figure 2.

The predictions about the properties of Classifier vs. Compound NI are summarized in table 1. In **6**, we evaluate the predictions of Rosen's theory in view of the behavior of BPI and INI constructions in Washo. First, however, we compare this lexicalist approach with a syntactic approach to NI.

5.2. A syntactic approach. The syntactic approach of Baker (1988) derives verbs with INs directly in the syntax. Specifically, a verb's direct

TABLE 1
PROPERTIES OF CLASSIFIER AND COMPOUND NI

	Classifier NI	Compound NI
Valence	Transitive	Intransitive
Discourse transparent	Okay	*
Doubling of IN	Okay	*
Modification of IN	Okay	*

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              VP
             /  \
           V      NP
          / \      |
        N_i   V   t_i
```
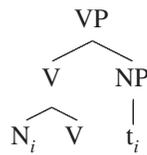
FIG. 3.—VP of Baker's NI.

object may come to be incorporated via head movement to V, leaving be-hind a trace. A sketch of a VP under this analysis is given in figure 3. This analysis makes predictions about the behavior of NI that are different from the predictions of the lexical account sketched above. Verbs with INs are predicted to be syntactically transitive in the sense that the IN is generated in direct object position before incorporating. However, the account also predicts that no overt nominal should appear as the direct object of the verb, since this position is occupied by a trace. Therefore, under this analysis, doubled INs must be represented as syntactic adjuncts. In a refinement of Baker's (1988) theory, found in Baker, Aranovich, and Golluscio (2004), the syntactic account leaves the morphological transitivity of the verb to parametric variation across languages. Specifically, Baker, Aranovich, and Golluscio propose that the trace of an IN may or may not retain its person, number, and gender (PNG) features. In the case where these features are retained, the verb shows agreement with the IN, as it would with an independent object NP (e.g., Southern Tiwa [ISO code: tix], Mayali [ISO code: gup]). When these features are deleted, the verb is morphologically intransitive (e.g., Mapudungun [ISO code: arn], Nahuatl [ISO code: nci], Chukchee [ISO code: ckt]).

External modifiers are predicted, since only the N head undergoes move-ment, leaving behind any modifiers within NP. Under the analysis of Baker (1988), stranded modifiers are predicted to appear in objective case, since they are in fact modifying the syntactic object of the verb, which has undergone

TABLE 2
PREDICTIONS OF BAKER ET AL.'S NI TYPES

	PNG Features Retained	PNG Features Deleted
Change in argument structure	Morphological agreement with trace	No morphological agreement with trace
Discourse transparency	Okay	Okay
Doubling of IN	* (as adjunct only)	* (as adjunct only)
Modification of IN	Okay	*

head movement. However, this view is revised by Baker, Aranovich, and Golluscio (2004), and once again a typological division is made along the lines of whether the trace of head movement retains its PNG features. They argue that modifiers must always agree with their head noun in person, number, and gender features (even in languages like English, where there is no overt morphological reflex of the agreement operation). If such features are deleted from a trace, then the use of a modifier will be ungrammatical, since it cannot enter into the agreement relation. Otherwise, if these features are retained on the trace, then modifier stranding is licit, and the modifier agrees with these features of the trace.

Doubling of the IN is not predicted under Baker's account, since the object position of the verb is occupied by the trace of head movement. It is predicted that any form of doubling that is allowed is in fact the result of adjunction, since the argument position of the verb is already filled, and the doubled nominal would otherwise not be licensed in objective case.

Baker's analysis also predicts discourse transparency, since the IN begins its life as an object N in the syntax. That is, for Baker, incorporation is a syntactic word formation process as opposed to a lexical one, meaning that the complex verb created is not an anaphoric island.

The crucial typological split in the syntactic analysis is whether the trace of IN retains its PNG features. A summary of the predictions made by a syntactic analysis is given in table 2. In **6**, we show that this account can indeed capture the properties of BPI verbs in Washo, though it fails to predict the group of properties displayed by INI verbs.

6. Incorporation or not? In this section, we compare the typological predictions made by the lexicalist and syntactic theories of NI against the BPI and INI data discussed in **3** and **4** above. We argue that BPI stems are an example of syntactic incorporation, specifically the subtype whereby PNG features of the trace are deleted, while INI stems are not instances of NI at all. Rather, INI stems pattern more like lexical affix constructions found in neighboring languages.

TABLE 3
COMPARING CLASSIFIER AND COMPOUND NI TO BPI STEMS

	Classifier NI	Compound NI	BPI Stems
Valence	Transitive	Intransitive	Intransitive
Discourse transparent	Okay	*	Okay
Doubling of IN	Okay	*	* (adjunct only)
Modification of IN	Okay	*	* (adjunct only)

6.1. BPI as syntactic incorporation. Recall the relevant properties of BPI structures: morphologically intransitive stems and a decrease in valency relative to non-BPI initials; discourse transparency of the initial; and doubling and external modification only in the instrumental case. Comparing this set of properties to those predicted by Rosen's lexicalist analysis, we find that BPI patterns neither like Classifier nor Compound NI, as shown in table 3.

Intransitive stems are a property of Rosen's Compound NI structures, where the IN satisfies one of the arguments of a logically transitive predicate to create a syntactically intransitive verb. That is, the valence of a Compound NI verb is decreased by one relative to a verb without incorporation used in a paraphrase. As shown in **3.1** above, BPI stems are indeed morphologically intransitive, the result of a decrease in valence of the verb root, so they should fall under Rosen's Compound NI. Also as expected under Rosen's analysis of Compound NI, the Washo BPI stems do not allow doubling and external modification in argument position; these elements appear as instrumental adjuncts only. However, if BPI stems are taken to fall under Compound NI, then the discourse transparency facts are puzzling. This property is ascribed to Classifier NI constructions, which are transitive stems that take a direct object, which can in certain cases be null. Discourse transparency follows from the Classifier NI configuration, since the null object is still a true argument of the verb, allowing it to be used as a discourse referent. That is, under Rosen's account, discourse transparency is derived from the fact that Classifier NI results in a morphosyntactically transitive clause, and that Classifier NI languages allow NP ellipsis. However, as we have already seen, the other conditions on Rosen's Classifier NI are not met. BPIs in Washo are strictly intransitive, and in particular do not accept object markers. They also do not allow doubling or external modification in the expected way. This poses a problem for classifying BPI stems in Washo as either Classifier NI or Compound NI under Rosen's theory.

If we compare the BPI facts to the typology predicted under the syntactic analysis of Baker (1989) and Baker, Aranovich, and Golluscio (2004), we see that BPI stems pattern exactly as predicted for languages whose traces lack

TABLE 4
COMPARING BAKER ET AL.'S PREDICTIONS TO BPI STEMS

	PNG Features Retained	PNG Features Deleted/ BPI Stems
Change in argument structure	Morphological agreement with trace	No morphological agreement with trace
Discourse transparency	Okay	Okay
Doubling of IN	* (as adjunct only)	* (as adjunct only)
Modification of IN	Okay	*

TABLE 5
COMPARING CLASSIFIER AND COMPOUND NI TO INI STEMS

	Classifier NI	Compound NI	INI Stems
Valence	Transitive	Intransitive	No change in valence
Discourse transparent	Okay	*	*
Doubling of IN	Okay	*	* (adjunct only)
Modification of IN	Okay	*	* (adjunct only)

PNG features, as outlined in table 4. Thus, to accept the analysis of Washo BPI stems as instances of syntactic incorporation, all that needs to be said is that traces in Washo lack PNG features, and then all the expected properties are borne out. At this time, we are not aware of any independent motivation for claiming that traces in Washo lack PNG features. However, we note that Baker, Aranovich, and Golluscio (2004) point out that the languages included in their study that do not show agreement with the trace of NI (Mapudungun, Nahuatl, Chukchee, and Ainu [ISO code: ain]) also do not have gender systems. Washo too does not have a gender system, and we find that BPI stems behave exactly like incorporation structures in languages that also do not have gender systems. This fact should be unsurprising if there really is a tight connection between lacking PNG features and the morphosyntactic behavior observed in incorporation structures, as proposed by Baker, Aranovich, and Golluscio (2004). In sum, the morphosyntactic properties of the Washo BPI construction can best be modeled in terms of the syntactic analysis of NI.

6.2. INI as lexical prefixation. We turn now to INI bipartite stems. The properties that need to be accounted for are the following: no change in valence, resulting in transitive, intransitive, or ditransitive stems; discourse opacity of the initial; doubling and apparent external modification only in the instrumental case. Comparing this set of properties to those predicted by Rosen's lexicalist analysis, we find that INI patterns neither like Classifier nor Compound NI, as shown in table 5.

Under the lexicalist analysis of Rosen (1989), transitive stems fall under the domain of Classifier NI. Indeed, as we have shown, the initials in Washo INI structures have a classifying function, in that they can restrict the type of noun that can be doubled outside the verb, i.e., one whose extension falls under the class of objects denoted by the classifying initial. Thus, the doubling of the noun named by the initial is predicted under Rosen's account. However, this is not what we see in Washo INI constructions, where doubling and external modification are restricted to instrumental adjuncts. Also note that in the case of Washo INI, it is not the direct object of the verb that is subject to incorporation and doubling. Rather, the role of the initial is that of an instrument, which also must appear with the instrumental suffix when doubled, since apparent doubling is actually adjunction, just like in the BPI case. Thus, the fact that INI stems can be morphosyntactically transitive is unrelated to apparent doubling, contra the predictions made by Rosen's analysis. Furthermore, certain INI stems are in fact intransitive, which is not predicted for Classifier NI. Intransitive stems are the hallmark of Compound NI stems, but the argument structural effects expected under such an analysis are not observed in the data. The lexicalist account also predicts full discourse transparency for Classifier NI, since these verbs should always select for a direct object, which may be pro-dropped. As we have seen, the initials in Washo INI stems are in fact discourse opaque, and therefore Rosen's lexicalist theory of NI has difficulty predicting the range of properties of INI in Washo.

It turns out that the syntactic analysis of Baker (1988) and Baker, Aranovich, and Golluscio (2004) also has difficulty in explaining the facts. This account captures nicely the fact that doubled nominals appear with the instrumental suffix, since under Baker's account doubled nominals are syntactic adjuncts, and not true syntactic arguments of the verb. Verb-external modification is also predicted by this syntactic analysis, since in Washo this is simply the result of ellipsis of the noun within the instrumental adjunct, which is therefore not a case of true modification of an IN. Probably the biggest challenge to the syntactic analysis is the fact that there seems to be no argument structural effects of INI stems, which is a hallmark of the syntactic analysis. This problem could plausibly be circumvented by saying that since the initials name instrumental objects, they are not true arguments of the verb and so we do not expect the argument-changing properties observed with true object incorporation. But this fact then highlights another challenge to a possible syntactic account for INI verbs, namely, that it is not the direct object that is incorporated but rather an instrumental nominal that is not a true syntactic argument of the verb. Since instruments do not occupy the object argument position of the verb, incorporation in this case would have to be non-local, from an adjunct position. Baker circumvents this problem by claiming that instrumental phrases are not true PPs in languages with instrument incorporation; rather,

they are NPs that receive a theta role directly from the verb and thus do not pose a challenge to a movement-based theory of NI. Baker argues that such an analysis is plausible, given certain parallels between the syntactic behavior of patients and instrumentals cross-linguistically. As far as we can tell, though, discourse transparency should also be predicted under this account, since the IN would still start its syntactic life as an independent noun that is incorporated into the verb, leaving behind a trace. This process would be parallel to the BPI case, which also predicts discourse transparency, and so we would not expect different behaviors between BPI and INI with respect to discourse transparency on this account.

In sum, the behavior of INI stems is not consistent with either a lexicalist or syntactic analysis of NI. The properties of INI do not match any of the four typological possibilities predicted by these accounts. We therefore conclude that INI is not a case of NI after all. Rather, we suggest that they are more akin to lexical affix constructions found in other languages. Like the lexical affix constructions in Salish and other languages (Carlson 1990, Kinkade 1998, DeLancey 1999, and Mithun 1999), the inventory of IN initials is rather large, indicating that they likely derive historically from open-class elements that have since become grammaticalized as prefixes. These affixes across languages do not seem to display the morphosyntactic properties typically associated with NI, particularly the argument structure-changing behavior and discourse transparency, which further supports the idea that the INI stems be classified as a lexical affix construction rather than true NI. In these constructions, the initial element of the bipartite stem is not an incorporated nominal. The function of the instrumental initial is to further specify the type of event named by the final (e.g., to kill something with a stick vs. with a stone). We do not expect these elements, as event modifiers, to have argument structural effects on the verb, and indeed this is what we find in INI stems. This function of bipartite initials acting as lexical prefixes is a common feature of languages neighboring Washo and has been argued by DeLancey (1999) to be an areal phenomenon of Northern California and Oregon languages; and indeed Salish languages further north also famously use lexical affixation for similar functions (Kinkade 1963, Carlson 1990, and Mithun 1999).

7. Conclusion.   We have given a detailed description of two types of bipartite verb stem formation in Washo, where a nominal element appears in the INITIAL slot of a bipartite verb stem. We outlined the core properties of both types of stems with respect to valence, discourse transparency, and the possibility of doubling and modification of the initial outside the verb as an instrumental adjunct. After outlining the typological predictions made by two influential theories of NI, we argued that while the BPI bipartites are indeed instances of syntactic NI, INI bipartites are not and should be

grouped with instrumental affix constructions found in Salish and other languages. While the syntactic analysis is superior for capturing the Washo BPI facts, we believe that the debate on the appropriateness of a syntactic or lexicalist approach to NI cross-linguistically remains unresolved and will continue to be a contentious issue.

Our study brings to light evidence that bipartite stem formation is not a unified phenomenon in Washo. This conclusion is reminiscent of that of Jacobsen (1980), who divided bipartite verb stems into three combinatorial classes. That bipartite stem formation is not a unified phenomenon is also the conclusion of DeLancey (1999) for bipartites in Klamath. While Jacobsen's and DeLancey's divisions of bipartite stem formation are based largely on semantic grounds, our investigation shows that different types of bipartite stem formation may result in important morphosyntactic consequences, depending on the status of the initial element as an incorporated nominal or lexical prefix.

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