Hawaiian VP-remnant Movement: A Cyclic Linearization Approach

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Abstract

This paper presents an analysis of main clause word order patterns in Hawaiian, a Polynesian language typically described as VSO. I provide evidence that Hawaiian is syntactically comparable to Niuean, including with respect to (pseudo)-incorporation in VOS word order. Given these similarities, and also considering properties of the Hawaiian TAM system, I argue that Hawaiian can be analyzed in a principled way in terms of Massam's (2001) VP-remnant movement analysis of Niuean. However, adopting the VP-remnant movement approach raises several empirical and theoretical complications concerning the formation of the VP-remnant prior to VP-raising. While remnant formation has been linked to case in Niuean, Hawaiian differs from Niuean with respect to case marking pattern; further, the case-based account of remnant formation does not account for V-S-CP word order in either language. Instead of linking remnant formation to case, and upon adoption of a true incorporation account of VOS, I characterize remnant formation as a shape conservation effect, such that subjects precede non-subjects. I formalize the shape conservation analysis in terms of relativized cyclic linearization, also comparing Hawaiian remnant formation to Scandinavian object shift, thereby allowing a unified analysis of VP-remnant movement for Hawaiian and Niuean.

Keywords: VP-remnant movement; Remnant formation; Cyclic linearization; Hawaiian; Niuean

1. Introduction

Hawaiian is typically described as verb-initial, along with its close Polynesian relatives such as Maori, Tahitian, Niuean, and Tongan, to name a few. However, as pointed out by several researchers (e.g. Massam 2010, Polinsky and Potsdam 2007, Chung 2005, and others), 'verb-initial' is a surface description, which leaves open questions about representation at the syntactic level. For example, a number of different movement processes could in principle derive the verb-initial property of Hawaiian, raising further questions about the syntactic positions of various additional elements, and whether or not these elements also moved to their surface positions.

In this paper, I propose a detailed and formally explicit analysis of verb-initial sentences in Hawaiian such as (1).[1]

(1) Ua   kuʻai ʻo   Kekoa   i   ka   iʻa.
    PERF buy   SUBJ Kekoa OBJ the fish
    'Kekoa bought a fish.' (author's field notes (FN))

This sentence exemplifies several basic properties of a standard Hawaiian sentence, with VSO word order and a nominative/accusative case pattern. From the perspective of generative syntax, one issue that immediately arises with respect to (1) is whether the verb-initial word order arose via movement and, if so, what type of movement results in the fronting of the verb. Following Massam's (2001, 2010) analysis of Niuean and also considering discussion of VP-remnant movement more generally in Chung (2005), I argue that the verb-initial property in Hawaiian can be accounted for by VP-remnant movement. This paper is therefore concerned with aspects of 'micro-variation' within a language family. Since Niuean and Hawaiian differ morpho-syntactically at least with respect to case marking, ergative/absolutive in the former instance and nominative/accusative in the latter, can one analysis account for the word order in both languages? This question is particularly vexing since Massam's analysis ties VP-remnant formation to case, a major locus of variation between the two languages.

I answer the question about unifying the two grammars affirmatively with respect to VP-remnant movement, after discussing empirical and conceptual difficulties that confront the VP-remnant analysis for Niuean VSO noted by Chung (2005), McCloskey (2005), and other papers in Carnie et. al (2005). A central issue that confronts a VP-remnant movement analysis involves the motivation for the formation of the VP-remnant in the first place, given that not only DP, but also CP (and possibly PP) complements of V must vacate VP in the VP-raising analysis. If CP complements of V must vacate VP (yielding V-S-CP order), this suggests that case does not play a role in VP-remnant formation (the same issue extends to PP complements, although I don't discuss them extensively in this paper). Further, if Chomsky's (2000, 2008) reformulation of Agree is on track, according to which agreement is disassociated from movement, case

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[1] Abbreviations in glosses have the following definitions: ABS - absolutive, DET - determiner, DIR - directional, EMPH - emphasis, ERG - ergative, OBJ - object, PERF - perfect, PL - plural, POSS - possessive, PRED - predicate marker, PREP - preposition, PST - past, RESPR - resumptive pronoun, SBJNCTV - subjunctive, SUBJ - subject, TAM - tense/aspect/mood.

cannot be the primary factor motivating movement, although this is the central motivation for VP-remnant formation under Massam's account. Nevertheless, Massam's analysis is attractive because it accounts for a property of Niuean also shared by Hawaiian, namely that the language appears to be predicate-initial, and not only verb-initial. Therefore, I adopt Massam's proposal that VP-remnant movement applies, but do not appeal to case as motivation for VP-remnant formation.

Without recourse to case-properties, I compare Hawaiian XP movement out of VP to a better understood phenomenon, object shift in Germanic. Several researchers have characterized object shift in terms of 'shape preservation' effects; two proposals that are relevant in this respect are Fox and Pesetsky's (2005) approach to cyclic linearization and Müller's (2007) relativized system of the same. Given some empirical and conceptual problems with both accounts, I develop an approach to linearization in which linearization has to be relativized in the sense of Müller, but which crucially relies on ordering statements in the PF component, following Fox and Pesetsky. An innovation of the approach taken here is that Spell-Out domains are not stipulated; rather, Spell-Out occurs after each transformational rule application, along the lines of the cyclic spell-out approach proposed by Epstein and Seely (2002).

Adopting a linearization approach allows an analysis of VP-remnant formation that can potentially unify the Niuean and Hawaiian data. In particular, I propose that in Hawaiian, subjects and XP complements of V are strictly ordered with respect to each other (the subject precedes CP/DP complements of V), thereby requiring remnant formation prior to VP raising. However, crucial for this approach is the argument that apparent instances of VOS, what is known as Pseudo Noun Incorporation, do in fact involve incorporation (forming an X° element), contra Massam (2001) but following Chung and Ladusaw (2004). Only when incorporation occurs can an NP complement of V precede the subject, yielding VOS, escaping the shape conservation effect formalized in terms of linearization.

The purposes of this paper are therefore twofold. First, I present an analysis of some aspects of Hawaiian syntax, for which the main-clause word order has undergone relatively little formal research (a notable exception is Hawkins 1979); this discussion also includes original data from my own field work. I show that despite variation in terms of case properties, Hawaiian is in many respects comparable to the better studied Niuean. A second goal is to provide an explicit account of the VP-remnant movement that is available for Hawaiian despite evidence which suggests that case does not motivate VP-remnant formation (for both Hawaiian and Niuean). I therefore develop an account based on cyclic linearization, which is relevant for PF-interface accounts of movement phenomena beyond Polynesian, and compatible with theories of long-distance case and phi-Agree (Chomsky 2008). While I argue that VP-remnant movement applies for both Niuean and Hawaiian, the primary theoretical innovation of this paper concerns not VP-remnant *movement*, but rather the linearization account of VP-remnant *formation*.

This paper is structured as followed. In section 2, Hawaiian data motivates a comparison between Hawaiian and Niuean, despite differences in terms of case properties. A description of relevant aspects of Massam (2001) is also provided. Section 3 presents arguments specific to the VP-remnant movement analysis I develop here, in addition to the incorporation approach I adopt for cases of VOS; topics addressed in this section include the position of the subject, Pseudo Noun Incorporation (henceforth PNI) as bona-fide incorporation, and the motivation for

VP-remnant formation. Finally, an explicit relativized linearization algorithm is developed in section 4, and also compared against basic instances of Germanic object shift and successive-cyclic VP-movement.

2. Derivation of Hawaiian verb-initial word orders

2.1. Overview of predicate-initial and pseudo noun incorporation data

In this section I discuss sentences in which either a lexical verb or some other type of predicate is in sentence initial position, arguing that VP-remnant movement is the best model for the Hawaiian data. This proposal is developed in view of previous proposals for Polynesian languages by Massam (2001, 2010), as well as issues concerning Austronesian more generally (see especially Chung 2005 and Chung and Polinsky 2009).[2]

Hawaiian is a VSO accusative case-marked language. (2) shows several aspects of a standard Hawaiian sentence structure.

(2) Ua   noʻonoʻo ʻo   Kekoa   ke   ʻai nei ʻo   Noelani i   ka poi.
    PERF   think   SUBJ Kekoa   PRES eat DIR SUBJ Noelani OBJ the poi
    'Kekoa thought that Noelani is eating poi.' (FN)

In (2), the sentence begins with a tense-aspect-modality marker (TAM) *ua,* indicating perfective, followed by the intransitive verb *noʻonoʻo* 'think' and the subject, *Kekoa*. Note that subjects are typically marked by the particle *ʻo* when they are proper names, with no subject marking otherwise. The complement clause is introduced by the TAM *ke* followed by a verb and the directional *nei* (below I will argue that *ke* also functions as a complementizer). According to Elbert and Pukui (1979), the sequence *ke (verb) nei* indicates present tense. Objects of transitive verbs such as *ka poi* ('the poi') in the complement clause in (2) are generally marked by *i,* or *ia* for proper names and pronouns.[3]

In addition to being VSO, Hawaiian may also be described as a 'predicate-initial' language. It is useful to compare Hawaiian to Niuean, as the latter language has undergone more formal analysis in previous literature. While Hawaiian differs from the ergative-absolutive Niuean with respect to its accusative case marking, NP and PP predicates are fronted in a similar fashion in these languages. The following data from Niuean establish the predicate-initial property for NP (3) and PP (4) predicates.

(3) Ko   Mele   e   faiaoga.   Niuean
    PRED Mele ABS teacher

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[2] Given the scope of this paper, I set aside discussion of verb-initial languages outside of Polynesian; for extensive analyses in this domain see papers and references in Carnie, Harley, and Dooley (2005) and Carnie and Guilfoyle (2000).

[3] In this paper I will treat object nominals as DPs, following Massam's work on Niuean and other generative work on Polynesian. However, these nominals have also been analyzed as PPs (Elbert and Pukui, 1979). Since I ultimately eliminate case properties from the analysis of both languages, both the DP and PP analyses are compatible with the current proposal.

'The teacher is Mele.'

(4) Ha   he fale   gagao a ia.
   PRED in house sick ABS she
   'She is in the hospital.' (Massam 2000)

The following data from Hawaiian are similar to (3,4), because in each case, the predicate is initial. (5a) establishes this for NP predicates, while (5b) shows that the predicate-initial syntax of (5a) is unchanged when embedded. (5c-d) provide further examples of predicate-initial syntax of adjectival predicates.

(5)   a. He kumu kula   ʻo   Noelani.   Hawaiian
           a teacher-school SUBJ Noelani
           'Noelani is a teacher.'

        b. Ua   haʻi ʻo   Kekoa he   kumu kula   ʻo   Noelani.
           PERF say SUBJ Kekoa   a   teacher-school SUBJ Noelani
           'Kekoa said that Noelani is a teacher.'

        c. Hauʻoli ʻo   Kekoa.
           happy SUBJ Kekoa
           'Kekoa is happy.'

        d. Ua   hauʻoli ʻo   Kekoa.
           PERF happy SUBJ Kekoa
           'Kekoa was happy.' (FN)

The predicate-initial structures in (5) suggest that a VP movement analysis may be preferable to a head movement analysis for Hawaiian VSO, because a predicate such as *he kumu kula* '(be) a school teacher' is not a lexical head (i.e. not an X° element), but arguably the entire predicate (further arguments for VP-remnant movement as opposed to head movement appear in sections 2.3 and 2.4 as well).

     While (3-5) demonstrate the predicate-initial property of these Polynesian languages for non-verbal predicates, Massam (2001) has argued that Niuean is predicate-initial even for clauses with transitive verbs, in which the verb is initial but the direct object follows the subject. Under her analysis, VSO is derived by fronting of a VP-remnant, from which everything but V has exited. I review her analysis in the following section.

2.2. Pseudo noun incorporation and VP-remnant movement: Massam (2001)

Similar to Hawaiian (2), Niuean transitive sentences have VSO word order (6a). In addition to VSO clauses, Niuean also allows VOS clauses such as (6b), in which both the verb and its nominal complement appear clause-initially (note that several of the examples attributed to Massam in this paper, including (6), originally appeared in Seiter, 1980).

(6)   a. Takafaga tumau ni   e   ia e tau ika.   Niuean
           hunt   always EMPH ERG he ABS PL fish
           'He is always fishing.'

        b. Takafaga ika tumau   ni   a   ia.
           hunt   fish always EMPH ABS he
           'He is always fishing.' (Massam, 2001)

(6b) has several interesting properties as compared to (6a); in particular, the verbal complement
in (6b), *ika* 'fish,' cannot appear with functional elements such as plural or case marking. In
addition, the subject appears with ergative case marking in (6a) but with absolutive case
marking in (6b), indicating that (6b) has undergone a "partial detransitivization process"
(Massam, 2001), suggesting that the verb and its complement have undergone incorporation.
        However, unlike standard cases of noun incorporation discussed in the literature
(Sadock 1980, Baker 1988, among many others), these apparent instances of Niuean noun
incorporation allow verbal complements to (again apparently) incorporate even with nouns and
nominal modifiers (i.e. NPs), such as adjectives (7) and certain types of relative clauses.

(7) Ne inu   kofe   kono a Mele.
    PST drink coffee bitter ABS Mele
    'Mary drank bitter coffee.' (Massam, 2001)

Given that nouns and their modifiers are involved in this construction, Massam (2001) terms this
construction Pseudo Noun Incorporation (PNI); in fact, for Massam, (6b) and (7) do not involve
incorporation at all (thus 'pseudo' incorporation), a point discussed at greater length below.
        Massam notices the predicate-initial nature of (6b) and (7) and unifies non-verbal
predicate-initial structures (3, 4) with standard transitive clauses (6, 7), by proposing VP-fronting
for all transitive predicates, straightforwardly yielding VOS order. Under her analysis, all Niuean
finite clause types are predicate-initial. The analytical issue that arises now involves the
derivation of VSO. Namely, what syntactic structures license PNI, and to which position (and for
what motivation) does the object move in VSO clauses for which PNI is not licensed?
   Massam suggests that the verbal complement in PNI clauses enters the syntactic
structure as a bare NP, whereas VSO clauses have DPs (KPs, more precisely). When a DP
object is generated, it moves to the specifier of an Absolutive Phrase, which is headed by a null
K(ase) head; this movement is obligatory to check/value case features. The ergative subject is
generated and remains in-situ in the specifier of vP. The structure for a transitive, VSO clause
such as (6a) is given in (8), in which the VP-remnant moves to Spec, IP. (I discuss in a later
section an updated proposal (Massam 2010) for Niuean clause structure in which vP, and not
VP, fronts).

(8) Niuean Transitive VSO clause (Massam 2001)

IP
VPx   I'
V t_i I v^{max}
DP(erg)   v'
v   AbsP
DP_i(abs)   Abs'
K(abs) t_{VPx}
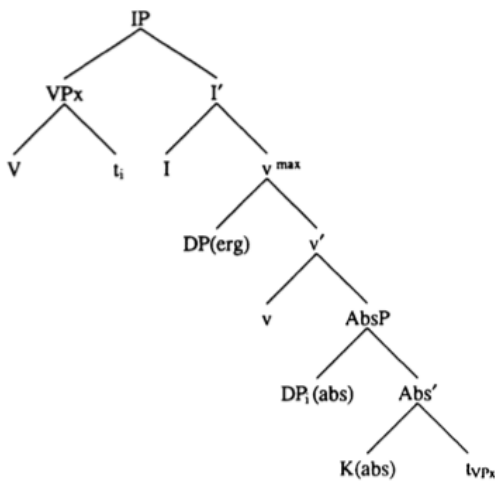
For PNI clauses, the complement of the verb is not a DP, but rather an NP. Therefore, there is no motivation for the verbal complement to move for case reasons. If an NP is generated, then the entire VP moves to Spec, IP, as in (9).

(9) Niuean PNI VOS clause (Massam 2001)

IP
VP_x I'
V   NP   I   AbsP
DP(abs)   Abs'
K(abs) t_{VPx}
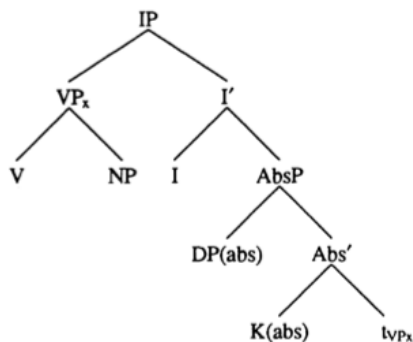
In (9), the external argument is base-generated in Spec, AbsP, resulting in the case marking pattern expected for an intransitive clause, as in (6b). Massam assumes that "agents can be variously generated in Spec of ErgP or Spec of AbsP ... an argument is generated in v^{max} (hence ergative) only if (a) it is an agent and (b) absolutive case has been checked" (Massam 2001, footnote 15). Therefore, there is an unexplained co-occurrence pattern between the complement of V and the presence of ErgP (or at least ergative marking on v); whenever an NP is generated as the complement to the verb, an ErgP head must *not* be generated, as no element would be present in the derivation to check the ergative case feature. Below, I develop an analysis according to which it is possible to eliminate this unexplained co-occurrence pattern, under the assumption that case is not the motivation for the movement of DP prior to VP-remnant fronting for VSO transitive clauses represented in (8).

Given (8) and (9), Massam is able to unify the predicate-initial Niuean data under the hypothesis that the EPP feature (Chomsky, 1995b) is specified for [predicate] in Niuean. In the next two sections, I explore to what extent a VP-remnant movement analysis is appropriate for

the Hawaiian data, again comparing Hawaiian with Niuean with respect to PNI and VOS word order more generally.

2.3. VSO and VOS in Hawaiian

While Niuean and Hawaiian share the property of being predicate-initial in addition to having VSO word order in pragmatically neutral transitive clauses, Hawaiian patterns with Niuean with respect to Pseudo-Noun-Incorporation (PNI) (Massam 2000, 2001). According to Otsuka (2005), presence of PNI is one crucial diagnostic that may distinguish a VP-remnant derivation from a V-raising derivation for Polynesian VSO.[4]

　　Like Niuean, Hawaiian grammar permits VOS word order, in which the object has the semantic status of a direct object, but in this construction the VO sequence also has properties expected under an incorporation analysis. As with Niuean, no intervening material is allowed between the verb and object, resembling PNI. (10a) shows a VSO clause which has not undergone PNI, while (10b) shows its grammatical PNI counterpart, with the object marker *i* absent from (10b).

(10)　a. Inu　*(ana ʻo)　Noelani　i　ke kope huʻihuʻi.　　　　　Hawaiian
　　　　　drink　DIR SUBJ　Noelani OBJ　the coffee cold
　　　　　'Noelani is drinking the cold coffee.'

　　　　b. Inu　kope　　huʻihuʻi　ʻo　　Noelani.
　　　　　drink coffee　　cold　　SUBJ　Noelani
　　　　　'Noelani is drinking cold coffee.'

As with Niuean, a noun and its modifier appear to the linear right of the verb with no object (accusative) case marking in the VOS example. Since Hawaiian has nominative-accusative case marking, nominative subject marking on the subject in both (10a, b) is fully expected. (10a) shows that no such incorporation is possible for the subject of the sentence (also providing evidence that verbs and their objects form a constituent at some level of representation in Hawaiian). (10c,d) show that case markers and articles not allowed in PNI constructions, regardless of whether or not an adjective modifies the direct object.

(10)　　c. *Inu　　i　ke　kope huʻihuʻi　ʻo　　Noelani.
　　　　　　drink OBJ　the　coffee cold　　SUBJ　Noelani
　　　　　　'Noelani is drinking the cold coffee.'

　　　　d. *Inu　　i　ke kope　　ʻo　　Noelani.
　　　　　　drink　OBJ the coffee　SUBJ　Noelani
　　　　　　'Noelani is drinking the coffee.' (FN)

_____

[4] There is a fair amount of literature on PNI in Polynesian, which includes debate on whether or not real incorporation is at play. In addition to Massam's seminal work, some recent work in this domain includes Ball's (2005) and Otsuka's (2005) (conflicting) discussion of Tongan, Chung and Ladusaw's (2004) analysis of Maori (in comparison to Chamorro), discussed below, and Pearce's (2001) paper on Maori.

PNI is not restricted to main clause contexts, and is allowed in embedded clauses as well, as shown in (11).

(11) Noʻonoʻo ʻo   Kekoa ke   ʻai poi nei ʻo   Noelani.
      think   SUBJ Kekoa PRES eat poi DIR SUBJ Noelani
      'Kekoa thinks that Noelani is eating poi.' (FN)

Returning to (10b), the noun plus modifier is allowed to undergo (apparent) incorporation. This suggests that whatever process yields Hawaiian (10b, 11) is the same as that in Niuean, namely, PNI. (As I will discuss in greater detail in section 3.2, I follow Chung and Ladusaw (2004) and view these examples as involving incorporation, pace Massam (2001); I maintain the label PNI for descriptive purposes).

While PNI is generally discussed in terms of instances in which NP (not just N°) is closely associated with V, the analysis offered in this paper is relevant for any instance of VOS word order in Hawaiian and Niuean. While (10) involves NPs with nominal modifiers, the same facts regarding suppression of case markers and articles carry over to bare NPs without modifiers. (12a) represents a baseline VSO example, with (12b-d) illustrating V-NP-S word order and also including sentential modifiers (12c,d).

(12)   a. ʻOlelo ʻo   Noelani i   ka ʻolelo   Hawaiʻi.
          speak SUBJ Noelani OBJ the language Hawaiian
          'Noelani speaks Hawaiian.'

       b. ʻOlelo Hawaiʻi ʻo   Noelani.
          speak Hawaiian SUBJ Noelani
          'Noelani speaks Hawaiian.'

       c. Kekahi manawa ʻolelo Hawaiʻi   ʻo   Noelani.
          some   time   speak Hawaiian SUBJ Noelani
          'Noelani sometimes speaks Hawaiian.'

       d. ʻOlelo Hawaiʻi ʻo   Noelani me ka   awiwi.
          speak Hawaiian SUBJ Noelani with the quickness
          'Noelani speaks Hawaiian quickly.' (FN)

Elbert and Pukui (1979, p. 125) also include examples patterning with (12), although they refer to these as simply "verb + noun sequences," which they claim are "not compounds because the meaning becomes obvious on examination of the parts." While Elbert and Pukui offer no examples in complete sentences, they illustrate the pattern with the examples in (13).

(13)   a. hoe   waʻa
          paddle canoe

       b. kalaiwa kaʻa

drive   car

    c. ʻai kanaka
      eat human-beings

While (13) provides little evidence for syntactic analysis, I include these here to better illustrate the range of verb types that can occur in VOS word order.

        Before offering an analysis of Hawaiian PNI, it is useful to examine how PNI interacts with other elements in the syntax, for example pre- and post-verbal particles and adverbs. This is especially true because examples of PNI are not well represented in published grammars on Hawaiian (e.g. Elbert and Pukui 1979), mirroring what is apparently the situation for Niuean; for instance, Massam (2001) notes that in Niuean, PNI "appears somewhat sparingly in texts, but it is easy to elicit, and it appears to be a robust phenomenon in the language." For example, when asked about different ways to translate the English sentence 'Noelani is drinking the coffee/Noelani drinks coffee,' a first-language native speaker offered the following three sentences as possibilities (as discussed above, recall that all apparent instances of noun incorporation to V may count as PNI, even when no nominal modifier is present, e.g. (6b)). As with Niuean, case markers and articles are prohibited when PNI applies (14a,b) but required when not (14c).

(14)   a. Ke   (*i   ka) inu kope maila ʻo   Noelani.
           PRES OBJ the drink coffee DIR SUBJ Noelani
          'Noelani is drinking coffee.'

        b. E   inu   (*i   ka) kope   ana ʻo   Noelani.
         IMPERF drink OBJ the coffee DIR SUBJ Noelani
         'Noelani is drinking coffee.'

        c. E   inu ana ʻo   Noelani *(i ke) kope.
         IMPERF drink DIR SUBJ Noelani   OBJ the coffee
         'Noelani is drinking the coffee.' (FN)

Discussion with the native speaker consultant confirmed that object NPs in PNI constructions are non-specific (14a, b) as expected given discussion in Massam (2001) and Chung and Ladusaw (2004).

        These examples show that a post-verbal particle such as *ana* (discussed also below) appears after the fronted VP in (14b), an example of PNI, but between the verb and subject in the VSO (14c); *maila* in (14a) is comprised of the "directional *mai* plus *la* ['that']," which I gloss here as a directional (Pukui and Elbert, 1986). The same speaker confirmed this pattern with the post-verbal particle *nei* (15), parallel to (10b); sentences both with and without *nei* were given.

(15) E   inu   kope huʻihuʻi (nei) ʻo   Noelani.
     IMPERF drink   coffee cold   (DIR) SUBJ Noelani
     'Noelani is drinking cold coffee.' (FN)

PNI also interacts with adverbials. Prepositional phrases which function as adverbials are generally sentence final (fronting to sentence initial position (12c) is also possible) in Hawaiian, both with VSO (16) and PNI (17) constructions.

(16) Inu ʻo Noelani i ke kope huʻihuʻi i na manawa apau.
    drink SUBJ Noelani OBJ the coffee cold PREP PL time all
    'Noelani is drinking the cold coffee every day.' (FN)

(17) Uhai manu ʻo Kekoa i na la apau.
    hunt bird SUBJ Kekoa PREP PL day all
    'Kekoa hunts birds everyday.' (FN)

However, a word like *mau* 'always, persist' can also function as an adverbial (18a) (see Cook, 1999 for discussion) while Hawkins includes data showing that this is not limited to *mau* (18b). These arguably head adverbial phrases. In non-PNI constructions, the relevant adverbs appear immediately after the verb (18), and always before the subject.

(18)   a. Holoholo mau ʻo Kehau ma ke kaona.
        cruise always SUBJ Kehau in the town
        'Kehau always cruises in town.' (Cleeland, 1994)

        b. ʻAi hoʻonuʻu iho la lakou i ka malolo.
        eat relish DIR DIR they OBJ the malolo(fish)
        'They relishingly ate the malolo.' (Hawkins, 1979)

In PNI constructions, *mau* follows the fronted verb plus its complement (19), but may not intervene (20).

(19)   a. Inu kope mau ʻo Noelani.
        drink coffee always SUBJ Noelani
        'Noelani always drinks coffee.'

        b. ʻOlelo Hawaiʻi mau ʻo Noelani.
        speak Hawaiian always SUBJ Noelani
        'Noelani always speaks Hawaiian.' (FN)

(20)   a. *Inu mau kope ʻo Noelani.
        drink always coffee SUBJ Noelani
        'Noelani always drinks coffee.'

        b. *ʻOlelo mau Hawaiʻi ʻo Noelani.
        speak always Hawaiian SUBJ Noelani
        'Noelani always speaks Hawaiian.' (FN)

These data provide further evidence that the verb and its complement form a syntactic constituent in PNI examples, such that the V+NP sequence cannot be broken up by intervening adverbials or directional markers.

2.4. The syntax of T and C in Hawaiian

In this section, I extend another proposal from Massam's (2010) analysis of Niuean to Hawaiian, arguing that features of T° move to C° in the derivation of standard VSO and VOS clauses. As a result, information concerning both tense and complementation are encoded in C° by the time the derivation is complete. While TAM may not be cross-linguistically sensitive to properties of complementation, the Hawaiian data indicate that preverbal TAM markers do encode both properties of tense/aspect/mood and complementation. Given the somewhat unexpected dual function of these TAM markers, I argue that a head movement analysis for TAM markers along the lines of Massam (2010) is appropriate for Hawaiian as well as Niuean.

 This analysis, if also on track for Hawaiian, provides an additional strong argument for VP-remnant movement (as opposed to V-T or V-T-C head movement), because features of T° move to C° independently of the status of V, as would be expected under a VP-movement analysis of verb initial word order, according to which V is in fact located in a specifier position (as part of VP or a VP-remnant), and not a head position. The analysis of Hawaiian T° presented here will also be relevant for the cyclic linearization model developed below.

 Massam (2010) adopts a theoretical position advanced by Bury (2010) and especially Jouitteau (2007), such that no language allows verbs (V° or v°) to be truly initial; i.e. some element in the syntax must c-command and precede the verb. Superficially, this claim is not problematic for many Hawaiian sentences, since pragmatically neutral Hawaiian clauses generally begin with a TAM marker such as *ua*, *ke*, or *e* (21).

(21) E hoʻi ana au.   Hawaiian
  IMPREF leave DIR I
  'I'm leaving.' (Elbert & Pukui 1979)

If we assume that sentences without preverbal TAMs begin with a null TAM, then Hawaiian clauses are indeed not V-initial. However, this may be problematic given the structure of the Hawaiian clause assumed above; if the VP or VP-remnant raises only as far as Spec, TP, why does TAM appear to the left of the verb when it would presumably be in T? Massam's (2010) solution to the same problem in Niuean is T-C movement for TAM markers. I suggest that this analysis is on track also for Hawaiian, such that preverbal TAM markers undergo T-C movement, or more precisely that tense features on T move to C, affecting the morphological realization of C. Under this analysis, preverbal TAMs should be sensitive to properties of complementation, independent of properties of VP, which is taken to be in Spec, TP. Data below suggests that this is indeed the situation for Hawaiian.

 Before proceeding, some preliminary remarks on the Hawaiian TAM system are in order. While TAM markers in this language are not well understood, it is uncontroversial that information regarding tense/aspect/mood can involve not only preverbal particles such as *ua* and *e* but also these preverbal particles' interaction with postverbal directional markers (Elbert and Pukui (1979), Hawkins (1979, 1982, 2000)). For example, in main clauses, while *ua* alone

represents perfective aspect with stative verbs (22), present tense clauses generally begin with *ke*, while their aspect is represented by interaction between the preverbal particles such as (23a) *nei* (completed) or (23b) *ana* (incomplete), which are both postverbal.

(22) Ua   ala   au.
    PERF awake I
    'I am awake.' (Hawkins 1982)

(23)   a. Ke   ʻike   nei au.
      PRES know DIR I
      'I know.'

      b. E   ʻauʻau   ana au.
        PRES bathe   DIR I
        'I'm bathing.' (Hawkins 1982)

Given these data, while it is conventional to gloss postverbal particles as wholly independent directional markers and preverbal particles as TAM markers (as I have also done above), this almost certainly represents an oversimplification.

      Crucially however, Hawaiian preverbal (but not postverbal) TAM marker morphology is sensitive to syntactic context; most research in this domain has focused on the behavior of TAM markers in relative clauses. Hawkins (1982, 2000) discusses this in Hawaiian, and Otsuka (2006) demonstrates that TAM sensitivity to independent/relative clause status is a property of Eastern Polynesian languages, such as Hawaiian, in general. Massam (2010) argues that the relevant distinction is operator versus non-operator context. I include a table representing Hawaiian TAM markers based on Otsuka (2006), which references Hawkins' (2000) study of Hawaiian relative clauses.

Table 1: Hawaiian TAM markers (Otsuka 2006, Hawkins 2000)

Tense	Aspect	Matrix	Embedded/Operator
	Perfect	ua	i
Present		ke...nei	e...nei
	Imperfect ongoing	e...ana	e...ana
	Imperfect unstarted	e	e

      TAM forms listed as embedded/operator allomorphs in Table 1 can be observed in some embedded sentential complements and all relative clauses. For example, consider the relative clauses in (24).

(24)   a. Ka hale   ana   [e   kukulu nei].   Hawaiian
      the house POSS.3.S IMPERF build DIR
      'The house he is building.' (Hawkins 1982)

b. ka wa   a   Paka'a [i   ha'alele aku   ai   ia   Waipi'o]
   the time POSS Paka'a PERF leave   DIR RESPR PREP Waipi'o
   'The moment when Paka'a left Waipi'o.' (Hawkins 2000)

While relative clause formation in Hawaiian involves several independent processes characteristic of pseudo-clefts (Polinsky and Potsdam (2007), Herd et al. (2011), Otsuka (2010)), (24) shows that the morphology of TAM markers in Hawaiian is sensitive to whether or not the clause is embedded in null-operator contexts. For instance, in (24a), the TAM sequence *e verb nei* occurs when *ke verb nei* would be expected in an independent clause. Likewise, *i* occurs in (24b) instead of *ua*.

  Evidence that TAM alternation is not solely dependent upon an embedded/unembedded distinction comes from sentential complements which arguably do not involve null operators, namely CP complements of verbs of saying, thinking, etc. For instance, if embedded CPs can begin with *ua* or *ke*, this would suggest that it is null-operator embedding, and not embedding alone, that accounts for the alternation. (25) and (26) provide evidence that embedding alone does not condition the alternation.

(25) No'ono'o 'o   Kekoa ke   'ai nei 'o   Noelani i   ka poi.
     think   SUBJ Kekoa PRES eat DIR SUBJ Noelani OBJ the poi
     'Kekoa thinks that Noelani is eating poi.' (FN)

(26) Ua   ha'i mai ka haumana ua   hala ke manawa.
     PERF say DIR the student PERF pass the time
     'The students said that the time had passed.' (Hawkins 1979)

These data suggest that analyses which characterize Eastern Polynesian TAM alternation as conditioned by (only) the embedded/matrix distinction incorrectly conflate embedding with null-operator contexts.

  Given the sensitivity of preverbal TAM markers to embedded contexts in which there is arguably a null operator (e.g. relative clauses), I follow Massam's (2010) analysis of Niuean TAMs in claiming that preverbal TAM markers in Hawaiian are portmanteau TAM and complementizer morphemes (see also Massam and Otsuka (2003)), whereby tense features on T move to C, affecting the morphological realization of C. This analysis explains the sensitivity of preverbal TAM markers in Hawaiian to embedding in null-operator contexts and also the fact that these preverbal TAMs convey information about tense. This analysis also yields the correct word order within the VP-remnant hypothesis, with predicates following TAM markers.

  This analysis therefore suggests a clause structure in which VP (as a remnant or as a (pseudo) incorporated V+NP complex) undergoes phrasal movement to Spec, TP, with the syntactic features in T undergoing head movement to the head position of C. Although several crucial aspects of Hawaiian syntax remain to be discussed, consider (27) an initial hypothesis for the structure of a Hawaiian VSO clause; the position of subjects and especially DP objects are discussed at length below.

(27) [CP C+T [TP [vP v+V [VP tv   tobj]] tT [vP Subj   Obj   tvP]]]

Crucially, T-C head movement of the sort argued for here is possible if V° raises to Spec, TP by phrasal movement of VP; if V° were taken to move to the head position of T, we would instead expect to see evidence of V-T-C head movement (as in e.g. French), contrary to fact. With a syntactic analysis of VP-remnant movement and T-C head movement in place, I now turn to the position of subjects in Hawaiian, the status of incorporation for VOS clauses, and finally the formation of VP-remnants.

3. Syntactic analysis of Hawaiian subjects and objects

In this section, I formalize additional aspects of Hawaiian syntax, before turning to an analysis of VP-remnant formation in section 4. If we assume an underlying SVO word order, following Kayne (1994) and much subsequent literature (e.g. Chomsky 2000, Chung 2005), and if we assume that subjects first enter the structure in their thematic position in the specifier of a verbal projection, several issues immediately arise. These include the position of the subject in a VSO clause, and the relationship between V and O in VOS clauses. Most importantly, I address the motivation for the direct object to leave the VP in the derivation of a VSO clause, arguing below that it is not just direct object DPs but complements of V° more generally (e.g. CPs) which vacate VP in clauses with V-S order; this suggests, contra Massam, that case is not the motivation for remnant formation.

Setting aside the more complex issue regarding the movement of the direct object for the moment, I will follow the model of VP-remnant movement developed in a series of papers by Massam (2000, 2001, 2005, 2010; see also Chung 2005 and Chung and Polinsky 2009), according to which the predicate moves to Spec, TP, straightforwardly yielding the predicate-initial word orders for languages such as Niuean (3, 4), and which I extend to Hawaiian here.

Following Massam's (2001) account of Niuean, I assume that the EPP feature (Chomsky, 1995b) on T is valued in Hawaiian by the feature [predicate], and not [D], as in e.g. English. While assuming such an EPP feature accounts for the predicate-initial syntax of Hawaiian, several difficulties remain importing Massam's (2001) analysis of Niuean to Hawaiian; crucially, Hawaiian has a consistent nominative/accusative system, as opposed to the ergative/absolutive case marking system of Niuean.

Adopting the framework outlined in Chomsky (1995b, 2000, and subsequent work), I assume that languages with nominative/accusative alignment have verbal structures that are headed by vP. Under that assumption, a first approximation of a Hawaiian PNI sentence like (10b) would then be as in (28), following Massam (2001) as closely as possible, although this will be revised below (putting aside CP for now).

(28) [$_{TP}$ [$_{VP}$ [$_V$ drink [$_{NP}$ coffee cold]]] T° [$_{vP}$ SUBJ Noelani [$_{v'}$ ...]]]

In the following sections, I discuss different aspects of the derivation of Hawaiian VSO and VOS, starting with the placement of the subject.

3.1. Subjects may stay in-situ in Spec, vP

In (28), I have assumed that the subject, case marked nominative, may stay in-situ in Spec, vP. Because there is no overt evidence of subject raising, it is theoretically attractive to assume such an analysis, although this is not uncontroversial. For example, Chung (2005) and Chung and Ladusaw (2004) point out that a structure in which the subject remains in the verbal projection should exhibit no specificity requirement, given standard views on the relationship between subject positions and specificity (Keenan 1976, Diesing 1992). This issue is relevant for Hawaiian and the structure proposed in (28), considering for instance that the closely related Maori does require subjects to be specific (therefore, Maori subjects cannot remain in Spec, vP, if the semantic analysis is on track). While Maori subjects may be headed by the indefinite *tetahi* (29a), they may not be headed by the indefinite and non-specific *he* (29b), which has obligatory narrow scope (Chung and Ladusaw 2004, Chung 2005).

(29)　　a. E　korero ana tetahi wahine.　　　　　　　　　　Maori
　　　　　　TAM speak DIR　a　　woman
　　　　　　'A (particular) woman was speaking.'

　　　　　b. *E　　korero ana　he　　wahine.
　　　　　　　TAM　speak　DIR　a(ny)　woman
　　　　　　'A (any) woman was speaking.' (Chung & Ladusaw 2004)

　　　In Hawaiian, however, there is no such restriction on subjects headed by *he*. While to my knowledge there has been no formal study on the scope of indefinites in Hawaiian, the *kekahi*/ *he* distinction in Hawaiian mirrors the distinction between *tetahi* and *he* in Maori; according to Hawkins (1982), "whereas *he* refers to no specific object ... *kekahi* refers to one object from the noun class being modified." Significantly, subjects in Hawaiian, unlike Maori, can be headed by *he*, i.e. "a *he*-phrase acting as subject may also follow the verb" such as in (30) (Elbert and Pukui, 1979).

(30) Hele　mai　he　　　ʻelua wahine.　　　　　　　　　　　Hawaiian
　　　　come DIR INDEF.ART two women
　　　　'Two women came.' (Elbert & Pukui 1979)

He can also introduce subjects in other predicate types, such as stative (31) and passive (32).

(31) Aia　　　　he　　　　hale kuʻai naʻau kake　i　　Kailua.
　　　　there-is INDEF.ART　　store　　sausage　PREP Kailua
　　　　'There is a sausage store in Kailua.' (Hawkins, 1982)

(32) Ua　　malama ʻia　　　　he　　　　halawai...
　　　　PERF conduct PASS　INDEF.ART　　meeting
　　　　'A meeting was held...' (Hawkins, 1982)

Since Hawaiian does not restrict subjects in the same way as Maori, I maintain that the subject can remain in Spec, vP as in (28).

3.2. NP objects: Apparent PNI involves incorporation

Massam's (2001) analysis crucially takes the view that PNI does not involve incorporation. Rather, PNI is the result of the generation of an NP complement to V; because there is no motivation for NP to vacate VP (i.e. NP does not raise to Spec, AbsP to check case), the entire VP raises to Spec, TP, giving only the superficial impression of incorporation. However, the claim that incorporation does not take place at all has been challenged. In particular, Chung and Ladusaw (2004) argue that incorporation does indeed take place; for them, PNI is a descriptive term for the special case of incorporation in which NP (as opposed to N°) incorporates into V, yielding a V° element. While both positions provide reasonable interpretations of the data, I ultimately adopt Chung and Ladusaw's (2004) position that incorporation does take place in VOS constructions. Crucially, the incorporation analysis will allow for a unified account to be given for VP-remnant formation in section 4 (although I explore a possible alternative to the incorporation analysis in ft. 10, below).

  Due to the scope of this paper, I put aside a detailed discussion of noun incorporation more generally, and focus on some relevant morpho-syntactic arguments based on Polynesian data; see Chung and Ladusaw for semantic arguments as well.[5] In Niuean (as discussed above), PNI can apply not only to bare nouns (6b), but also to nouns plus modifiers, such as adjectives (7). If fact, the NP involved in PNI can be quite complex, and may include conjoined NPs or even certain types of relative clauses (33) (entire PNI NP in brackets).

(33) ... ke   kumi [motu   ke   nonofo ai].   Niuean
  ... SBJNCTV seek island   SBJNCTV   settle there
  '...they would seek an islands where they could settle.'
  (Niue: 1982, cited by Massam 2001)

Given data such as (33) and numerous additional examples, Massam concludes that even complex NPs can appear in the fronted verb phrase, and this point is certainly not under dispute. However, Massam claims that the verb and the NP in the fronted VP do not undergo incorporation, not forming a morphologically complex V°.

  Massam argues that incorporation does not take place on the following grounds. First, she notes that the observed NP incorporation cannot be accounted for given most accepted analyses of incorporation (e.g. Baker 1988), which are designed only for noun (not NP) incorporation into the verbal structure, although Massam discusses two analyses which would allow full NPs to incorporate, namely those proposed by Chung (1988) and Sadock (1991). More importantly, Massam disallows true incorporation based on a conservative approach to X-bar theory, in which maximal projections are barred from head positions, such that "a head is distinct from a phrase ... and a head cannot contain a phrase."

  Chung and Ladusaw (2004) take a different approach with respect to PNI. Based on evidence from Maori, which, like Hawaiian, has PNI that patterns with Niuean, they argue that Massam's evidence "is consistent with an incorporation analysis...consequently, we believe that Niuean *does* have incorporation" (Chung and Ladusaw, 2004, original emphasis). Maori also

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[5] Massam (2001, section 5) also provides a detailed account of various approaches to incorporation developed prior to the publication of her paper, and I refer the reader to that paper for further discussion.

allows full NPs to appear in a fronted position with the verb. (34) illustrates a simple case of noun plus adjective in the VP, but more complex modifiers and conjoined elements may appear as well.

(34) E rukuruku [koura nunui] ana ia.   Maori
     TAM dive   crayfish big   DIR she
      'She is diving for big crayfish.' (Bauer 1997)

Because "nothing, not even pro forms" such as *ia* or tense/directional particles such as *ana* can separate the verb from the incorporated object in cases such as (34), Chung and Ladusaw (2004) conclude that the verb and NP constitute one morphological word (they also offer additional syntactic and semantic evidence from Chamorro). Under Elbert and Pukui's (1979) analysis that 'framing' by pre- and post-verbal particles is "diagnostic for verbs" in Hawaiian, the morpho-phonological evidence suggests that incorporation does indeed take place in PNI constructions.

 Given the overt evidence for incorporation in languages like Maori and also recent theoretical developments which suggest that phrase structure need not follow rigid X-bar schema (Chomsky 1995a and much subsequent work), I suggest that the argument for 'real' V+NP incorporation in languages such as Niuean, Maori, and Hawaiian is at least as strong as those against incorporation. Putting aside further details regarding how this incorporation takes place (see again Chung and Ladusaw (2004) and Massam (2009) for discussion), I suggest that PNI structures in these languages are bona-fide instance of incorporation (i.e. forming a complex V°), and may be represented as in (35), as argued by Chung (1988) for Chamorro incorporation.

(35)
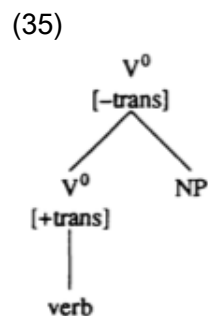
Furthermore, a structure such as (35) provides exactly the kind of representation that is justified by the linearization-based account of VP-remnant formation developed in the following sections. This is because the NP in (35) is dominated by an X° element, i.e. 'below' the word level and therefore invisible to the linearization process which feeds PF from the syntactic representation. In addition to the theoretical arguments above, I would argue that the overt morpho-syntactic evidence strongly suggests an incorporation analysis such as (35); in particular, the obligatory suppression of articles in VOS word order strongly indicates incorporation. Note that in what follows I continue to use PNI as a term for superficial VOS word order in Hawaiian as a labeling convention.

3.3. Object movement prior to VP-(remnant) movement - is case the motivating factor?

A more complicated issue for the proposed VP-remnant movement analysis concerns the motivation for the object to vacate VP prior to VP-remnant raising in the derivation of a VSO clause. For Niuean, Massam (2001, 2010) proposes that whenever an NP is generated as a complement of V, this NP fronts with the V, resulting in a structure which only appears superficially to involve incorporation (although I argued above that this does involve incorporation). When a DP is generated, this DP complement raises without the V to check the case feature of AbsP in a spec-head configuration, leaving a remnant of VP to raise to Spec, TP.

Adopting Massam's model of VP-remnant *formation* for Hawaiian is problematic for at least three reasons. One issue is that Hawaiian lacks the absolutive case marking which is, at some level, the cause for complement DPs of V to leave their base position in Massam's (2001, 2010) derivation of a Niuean VSO sentence. Recall that in Massam's representation of VSO word order (8), the case head Abs° c-commands the minimal phrase which contains the lexical verb and its complement, and the direct object must raise to the specifier of Abs° in order to satisfy case properties. In other words, V° is not able to check or value the case feature of a DP direct object under Massam's analysis, and VP-remnant formation is derived under the assumption that DP direct objects must raise to Spec, AbsP prior to VP-remnant movement.

Importing Massam's analysis of VP-remnant formation to a nominative/accusative language such as Hawaiian would therefore require a rather unconventional understanding of accusative case marking, according to which DP direct objects would have to raise out of VP in order to check/value accusative case. Although this could be achieved by postulating a case-marking head independent of VP, such as ArgO°, no independent evidence suggests the presence of an Agr head in Hawaiian. If Massam's VP-remnant movement account of predicate-initial word order is to be maintained for Hawaiian (and I argue that it should), then I suggest that an alternative analysis of VP-remnant formation needs to be developed, according to which direct object DPs vacate VP for reasons other than case.

A second (somewhat theory-internal) problem for Massam's account of VP-remnant formation concerns recent proposals by Chomsky (2000, 2008), who suggests that case and phi-agreement can take place via long-distance Agree; under Chomsky's proposal, the spec-head configuration is not a necessary condition for agreement. Therefore, in a long-distance Agree system, phrasal movement to specifiers must either be due to (general) EPP features, a somewhat stipulative solution, or be otherwise independently motivated. If long-distance Agree is adopted, then there is little motivation for DPs to raise to AbsP even in Massam's system.

Finally, the case-motivated account of VP-remnant formation fails to predict V-S-CP word order in both Niuean and Hawaiian.[6] In particular, it is not just DP complements of V that vacate VP prior to VP(-remnant) raising to Spec, TP, but complements of V generally, including e.g. CPs, which under standard assumptions do not need case (see e.g. Davis 1986 for early discussion). For example, subjects intervene between V and CP complements to V, yielding V-S-CP word order. Under standard assumptions that complements of V, whether DP or CP, originate in the same position (i.e. as a sister to V°), these data suggest that CP must also

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[6] I thank two anonymous Lingua reviewers for their discussion of these data.

vacate VP within the VP-remnant movement hypothesis. For example, consider (2), repeated here as (36), and (37,38).

(36) Ua noʻonoʻo ʻo   Kekoa [ke ʻai nei ʻo   Noelani   i   poi].
    PERF think   SUBJ Kekoa   PRES eat DIR SUBJ Noelani OBJ the poi
    'Kekoa thought that Noelani is eating poi.' (FN)

(37) E   ninua maila ʻo   Kekoa [ina ʻolelo   Hawaiʻi ʻo   Noelani].
    IMPERF ask   DIR SUBJ Kekoa if   speak Hawaiian SUBJ Noelani
    'Kekoa is asking if Noelani speaks Hawaiian.' (FN)

(38) Ua   haʻi mai ka haumana [ua   hala ka manawa].
    PERF tell   DIR the student   PERF pass the time
    'The student said that the time had passed.' (Hawkins, 1979)

In (36-38), the CP complement to the verb (in brackets) appears after the subject, similar to DP complements of V.

At least two other lesser-understood predicate types demonstrate the same property as (36-38); these include modals such as *hiki* 'can' and *pono* 'should,' and also impersonal verbs such as *maopopo* 'clear, known'. While the nature and structural position of the subject in clauses with these predicates is unclear (possibly null expletive), the verbal complement of such predicates must appear sentence finally (I include literal translations in brackets for (39,40)).

(39) Pono   i   ke keiki [ke   haʻi mai i   ka moʻolelo].
    should PREP the child PRES tell DIR OBJ the story
    'The child should tell the story.' [It is necessary for the child that (he) tell the story.]
      (Hawkins, 1979)

(40) Hiki   ia   lakou [ke   hula].
    can   to   them PRES dance
    'They can dance.' [It is possible for them that (they) dance.] (Hawkins, 1979)

(41) Maopopo ia Noelani [e   hele mai ana ʻo   Kekoa].
    known   to Noelani IMPERF go DIR DIR SUBJ Kekoa
    'It is clear to Noelani that Kekoa is coming.' (FN)

In (39-41), the bracketed CPs are complements to the matrix verbs. In order to maintain a VP-fronting analysis for Hawaiian, these CP complements must vacate VP prior to VP-remnant fronting, in order to derive the correct word order.

Finally, (42) illustrates a complex example in which the matrix verb *ninau* 'ask' takes the modal verb *hiki* as a complement, which itself takes a verbal complement. Within the VP-remnant movement hypothesis, (42) suggests recursive application of VP-remnant formation.

(42) Ninau ana   ʻo   Kekoa [ina hiki ana Noelani [ke   ʻolelo   Hawaiʻi]].
    ask   DIR SUBJ Kekoa if can DIR Noelani PRES   language Hawaiian

'Kekoa asked if Noelani speaks Hawaiian.' (FN)

These data are significant, because they suggest that non-NP complements of V generally, and not only DPs, which must vacate VP prior to VP-fronting. CP complements of V must also vacate VP in the VP-remnant analysis of Nuean (43); i.e. this issue is not limited to the analysis of Hawaiian.

(43) Ne manatu e Mataginifale [ko e mena fai mata-fohi   haku hiapo]...
     PST think ABS Mataginifale PRED ABS thing have blade-scraper scratch tapa-plant
     'Mataginfale remembered that she had the blade of the tapa plant scraper...'
        (Niue: 1982, cited by Massam 2001)

        Although I do not discuss these in detail, possible PP complements (44) and double objects (45) also follow subjects, patterning with CP.

(44) Ua   lawe aku ‘o Kaipo i ka-na wahine [i   ka hale ola].
     PERF take DIR SUBJ Kaipo OBJ his wife   PREP the hospital
     'Kaipo took his wife to the hospital.' (Hawkins, 1979)

(45) Ke ha‘awi aku nei au [i   keia ipu]   [ia   ‘oe].
     PRES give   DIR DIR I OBJ this gourd IN.OBJ you
     'I am giving this gourd to you.' (Hawkins, 1979)

If CPs in Hawaiian (and Niuean) do not need case (and I assume they do not), then a unified explanation for DP/CP raising is not immediately forthcoming. This is to say that if case motivates DP raising, then some independent motivation must be found for CP raising.
        XP raising out of VP is also not likely due to a specificity requirement. Whereas NPs in PNI constructions are likely non-specific (if Hawaiian patterns with Niuean (Massam 2001) and Maori (Chung and Ladusaw 2004)), CP complements and (possibly) DP complements to V need not be specific even in VSO constructions. For example, the non-specific determiner *he* can introduce non-specific embedded predicates (46) and also non-specific objects (47), although the latter construction is not common (see Hawkins 1982 for discussion and further examples).

(46) E   kuhi ana au [he   koali   ka lanalana].
     IMPERF guess DIR I DET morning-glory the rigging
     'I am guessing that the rigging is morning glory vine.' (Hawkins 1982)

(47) Ua hanau mai ‘o   ia he keiki kane.
     PERF bear DIR SUBJ she DET child male
     'She bore a son.' (Hawkins 1982)

In order to offer a unified analysis of verb-subject-object and verb-subject-CP word orders, I propose that raising of verbal complements out of VP is not motivated by case in Hawaiian, even for DP complements of V. Without recourse to case, some alternative account of VP-

remnant formation must be developed if the VP-remnant movement analysis is to be maintained at all. Therefore, in the next section I develop an analysis that depends on properties of the syntax-phonology interface, formalized in terms of cyclic linearization.

4. Cyclic linearization and shape conservation

As discussed above, there are strong theoretical and empirical reasons which suggest that a VP-remnant movement analysis cannot be maintained for Hawaiian unless some independent, non-case related explanation can be given to motivate the formation of VP-remnants. In particular, any non-incorporated sister to V°, including DP, CP, and possible PP complements, must vacate VP prior to VP-remnant movement, raising to a position higher than VP but lower than the subject. The result of the relevant movement operation therefore yields a strict linear ordering between the subject and any non-incorporated sister to V°. If incorporation is assumed for VOS, then the precedence relationship between subjects and non-subjects in Hawaiian is exactly as expected given Chung's (1998) discussion of the related Maori, in which "subjects precede non-subjects," although Chung does not offer a formal account of the asymmetry. In this section, I account for these word order facts in Hawaiian and Niuean in terms of a syntax-phonology interface model that directly references the linear output of the syntactic structure in a highly derivational fashion.

Specifically, I propose a model of cyclic linearization that develops key intuitions already discussed by Fox and Pesetsky (2005) and Müller (2007), who account for word order properties (particularly in Germanic) in the tradition of 'shape conservation' analyses. Generally speaking, shape conservation has been taken to demand that the 'shape,' usually taken to be a property of linear order, of some syntactic domain must be preserved throughout a derivation. Researchers have advanced shape conservation analyses in a number of different frameworks, including Optimality Theoretic-Lexical Functional Grammar (Sells 2001), Head Driven Phrase Structure Grammar (Kathol 2000), Representation Theory (Williams 2003), and Minimalist Grammar (Fox and Pesetsky 2005, Müller 2007).

Shape conservation is sometimes thought to apply to predicates only (Müller 2000), meaning in particular material within VP or vP but excluding the subject, although the analysis developed below crucially includes the external argument (i.e. the subject), such that this enters ordering relationships with elements within the predicate. The key for the Hawaiian data will be to develop a model in which subjects and objects maintain their base linear order (assuming underlying SVO), while the verb may raise past the subject; intuitively, V-DP$_{obj}$-S reverses the underlying word order while V-S-DP$_{obj}$ preserves it. Under the proposed analysis, verbal complements can only raise past subjects if incorporation has taken place, such that (only) NP complements to V escape the shape conservation effect under incorporation.

In order to show that the proposed analysis is not simply an ad-hoc solution for the Hawaiian and Niuean data, I will also apply the model to Scandinavian object shift, which is the primary empirical domain discussed by Fox and Pesetsky (2005), as well as successive-cyclic VP-fronting in English. To account for the Hawaiian and Niuean data, I also consider several key intuitions from Müller (2007), whose relativized cyclic linearization model includes a relativization algorithm which, I argue, can be exploited in a way not discussed by Müller to account for cross-linguistic variation between Hawaiian and Niuean on the one hand and

Germanic languages on the other. In particular, in Hawaiian and Niuean the predicate moves to satisfy the EPP feature on T (i.e. A movement) and the subject remains in-situ in Spec, vP, whereas in Scandinavian (and Germanic more generally) the subject values T's EPP feature and instances of VP movement are taken to be A-bar movement.

In order to clarify the relevant issues, I first present a brief summary of the cyclic linearization models proposed by Fox and Pesetsky (2005) and Müller (2007). Following that, I will propose the formal machinery necessary to account for the Hawaiian and Niuean data. Next, I show how the system can account for Scandinavian object shift as well, given the relativization algorithm. Finally, I discuss some desirable consequences of the proposed model.

4.1. Shape conservation as cyclic linearization

Fox and Pesetsky (2005) argue that word order facts in Scandinavian object shift can be reduced to shape conservation effects. To see why this is so, consider Holmberg's Generalization (Holmberg, 1986), in which object shift can optionally apply only when the lexical verb raises in various Scandinavian languages, including Swedish, exemplified in (48).

(48)   a. Jag kysste henne inte [$_{VP}$ t$_V$ t$_O$].
           I   kissed her   not
           'I didn't kiss her.'

       b. *Jag har henne inte [$_{VP}$ kysst t$_O$].
           I   have her   not   kissed
           'I have not kissed her.'

In (48a), the lexical verb *kysste* 'kissed' and the object *henne* 'her' maintain their base order, while this is reversed in (48b). Therefore, only (48a) preserves the 'shape' of the underlying order verb-object order, if linear order is taken to follow from asymmetric c-command (Kayne, 1994). Crucially, the object movement of *henne* 'her' in (48a) is not obligatory, suggesting that this movement is not motivated by case or phi-feature checking (rather, Scandinavian object shift is likely triggered by an information-related feature such as focus (see Diesing (1996) for early discussion)). The optionality of this movement is expected under the shape conservation account; whether or not the object moves, the underlying order is preserved whenever the lexical verb raises. Therefore in Scandinavian, shape conservation should not be taken to trigger object shift in (48a); rather shape conservation blocks illicit object shift (48b).

In the tradition of shape conservation analyses, Fox and Pesetsky (2005) offer an explanation of a heterogeneous set of movement phenomena, including Holmberg's Generalization, based on syntactic spell-out domains, which roughly correspond to Chomsky's (2000) notion of phase (CP and VP, the latter possibly parameterized to vary with vP). Ungrammaticality occurs when contradictory ordering statements are generated at different spell-out domains (although contradictory statements can be deleted, allowing e.g. island-violation amelioration under ellipsis). Their system of cyclic linearization is conceptually elegant because constraints on movement are explained by appeal to independently motivated phonological requirements, i.e. linearization. This approach may be considered a PF interface analysis of certain movement phenomena.

Müller (2007), however, shows that Fox and Pesetsky's system is "both too strong ... and too weak," because it rules out grammatical constructions including non-object initial verb-second in SOV languages (e.g. German). Further, Fox and Pesetsky (2005) cannot derive shape conservation effects between subjects and objects, which are arguably as strong or stronger than those between objects and verbs in Scandinavian (this is especially relevant because I have argued that subject/object ordering in Hawaiian and Niuean is even stronger than in Scandinavian, an intuition that I account for below). While considerations of space limit discussion of these points, see also Williams (2005), Sells (2005) and Svenonius (2005), and other replies to Fox and Pesetsky in *Theoretical Linguistics* volume 31 (2005).

Müller (2007) therefore proposes that cyclic linearization should be relativized, much like minimality relations were relativized within the Government and Binding theory (Rizzi 1990), thereby weakening Fox and Pesetsky's system. Müller also argues that vP, not VP, need be the Spell-Out domain if external arguments are to be accounted for in a system of cyclic linearization (thereby strengthening the system), and he adopts a Phase Impenetrability Condition (Chomsky 2000) approach to Phasal domains.

4.2. A relativized approach to cyclic linearization

I will develop a system here which incorporates aspects of both Fox and Pesetsky's and Müller's systems. First, I suggest that Fox and Pesetsky's system be strengthened by re-defining Spell-Out domains. This is crucial, because Fox and Pesetsky's (non-relativized) system cannot account for the Hawaiian and Niuean facts discussed in section three; in particular, subject/object shape conservation effects are lost if VP is set as a spell-out node, while verb-initial word order would be prohibited if vP were set as a spell-out node. Therefore, I suggest that every transformational rule application results in Spell-Out, and reject (contra Müller) the notion of opaque syntactic domains which follows from Phase theory. Crucially, this means that the system proposed here will not have to stipulate spell-out domains to properly account for the data. As with Fox and Pesetsky, I argue that contradictory linearization statements result in ungrammaticality.

Second, I weaken the effects of cyclic linearization by adopting aspects of Müller's relativization algorithm. Müller achieves relativization by reference to *Merge Status*, a property of categories which is completely recoverable from syntactic context and may change throughout the course of a derivation (note that I will amend Müller's characterization of Merge Status below). While Merge Status is locally recoverable and a changeable property of categories, it is useful for exposition purposes to identify one type of Merge status as [-ψ] and the other as [+ψ]; crucially Merge Status is not an unchanging property of a particular syntactic constituent, including terminal nodes, but instead encodes information regarding whether or not some syntactic element is in a position to locally satisfy a syntactic feature (versus being in an 'intermediate' landing site). Müller formalizes this notion as (49) (which I amend below).

(49) *Merge status (Müller 2007), to be amended*
a. A category γ in a position P has Merge status [-ψ] iff (i) or (ii):
      (i) γ is merged in P, and γ is required in P by a non-local Merge inducing feature.
      (ii) γ is dominated by (a segment of) a category with Merge status [-ψ].
b. A category γ in a position P has Merge status [+ψ] iff (i) or (ii):

(i) γ is merged in P, and γ is not required in P by a non-local Merge inducing feature.

(ii) γ is not dominated by (a segment of) a category with Merge status [-ψ].

The crucial aspect of Müller's system which I will retain concerns the notion 'Merge inducing' feature. As the name implies, 'Merge inducing' encodes the fact that certain movements must locally satisfy the feature which triggered the movement. This concept therefore encodes various notions from previous and current models of syntax, such as feature 'strength' (Pollock 1989), the distinction between intermediate and non-intermediate landing sites, and (to a lesser extent) the A/A-bar distinction. For example, a category (DP in Germanic, VP in Niuean) which has moved to Spec, TP locally satisfies the EPP feature on T, and is thereby [+ψ] in that position according to Müller.[7] Further, a category in an intermediate landing site is always [-ψ], as this category does not locally satisfy a feature in any obvious way. Given Müller's formalization, a category in its final landing site (including certain A-bar positions) is always [+ψ], since such a category cannot be (by definition) required in its position by some (higher) non-local feature.

I suggest that the principle in (49) can be simplified by stating the condition under which elements have [-ψ] status (i.e. required by a non-local feature) and then letting [+ψ] define the 'elsewhere' condition. Following Müller, I continue to let Merge status define either X° elements (covering head movement) or XP elements (covering XP movement, including pied-piping), a point which will become relevant as we consider the movement of large categories such as VP. This revised and arguably less complex notion of Merge status is formalized in (50).

(50) *Merge Status, final version*
An X° γ in a position P has Merge Status [-ψ] if X° or the XP category that contains it is required in P by a non-local Merge inducing feature; otherwise it has Merge Status [+ψ].

Essentially, (50) means that all terminal elements which are in 'intermediate landing sites' have Merge Status [-ψ].[8] Müller addresses the potential look-ahead problems inherent in (49) in terms of derivational access to the numeration.[9]

The principle (50) yields a typology of different syntactic positions and category types based on Merge Status. Complements to heads are always [+ψ] in their base position, as these satisfy subcategorization features. Syntactic heads are only [+ψ] when they are in their final position, as their presence in non-final positions is not required by local features in any obvious way (this simplifies Müller's system somewhat, but with no empirical consequences for the

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[7] Why T has an EPP feature and why this feature requires local satisfaction is an important and unresolved issue, but well beyond the scope of this paper.

[8] A reviewer notices that what makes some element [-ψ] is in fact an anti-locality relationship. This point is briefly discussed by Müller (2007), who notes that "whenever a complement β of a head α ... undergoes feature driven movement to the specifier of α, ungrammaticality arises because of two conflicting linearization statements."

[9] I believe that it may be possible to deduce Merge Status from properties of agreement (considering also Matushansky's (2006) agree-based approach to head movement), without derivational access to the numeration. I leave consideration of this for future research.

current presentation; Müller in fact argues that V never participates in linearization, as V is 'defective' and dependent upon v°).

The status of external arguments is somewhat more complicated in Müller's system (which assumes string vacuous subject movement within vP). I take these to be [+ψ] in their base position at least in Hawaiian and Niuean, since both Massam (2001)'s analysis of Niuean and the analysis of Hawaiian presented above maintain that subjects stay in their position at Spec, vP; according to (50), any element which stays in-situ in the position it entered the structure is [+ψ], since this position is not an intermediate landing site (or more formally, the element is not required by some non-local feature). Looking ahead to the discussion of Germanic in section 4.4 below, I argue that the Merge Status of external arguments is a crucial point of variation between the VP-fronting Polynesian languages and Germanic languages, resulting from the different EPP properties in the two language types; while VP must raise to satisfy the EPP with the subject staying in-situ in Niuean and Hawaiian, the reverse occurs in Germanic. For this reason, Spec, vP in Germanic patterns with intermediate landing sites (i.e. [-ψ]), whereas the converse holds for subjects in Spec, vP in the relevant Polynesian languages.

Also departing from Müller, I posit that only items with [+ψ] status are visible for the linearization algorithm. Intuitively, this means that syntactic elements in intermediate landing sites are not subject to linearization *in that position*; crucially, all elements will ultimately achieve [+ψ] status in their final landing site if the derivation is to converge. In other words, because (50) forces all elements required in a position by a non-local feature to be valued [-ψ], all syntactic elements in their final position are (by definition) [+ψ]; i.e. all syntactic elements eventually undergo linearization in (at least) the final derivational step.

Following Fox and Pesetsky (2005), I make the following assumptions. I assume that successive-cyclic movement proceeds through each specifier in at least the verbal domain, while object-shift is not successive-cyclic. In addition, the syntax is built bottom up, and Spell-Out applies periodically throughout the derivation; conflicting ordering statements between non-trace, word-level (terminal) nodes with phonological content induces ungrammaticality. Contra Fox and Pesetsky, I assume that every transformational rule application triggers Spell-Out, resulting in a highly derivational and simple Spell-Out algorithm. I adopt (51) to formalize the linearization procedure, which includes the relativization algorithm according to Merge status.

(51) *Relativized Linearization*
      a. Generate a linear ordering statement after every application of Merge (contradictory ordering statements induce ungrammaticality at PF).

      b. Linearization generates for categories x, y an ordering statement <x,y> iff x and y have [+ψ] Merge status.

Relativizing linear order statements according to the principles (50,51) is desirable since it allows the system to distinguish between final landing sites and intermediate landing sites, even if the precise feature content of individual syntactic heads is unclear, as is sometimes the case with less studied languages such as Hawaiian. Instead, we only need to know which features require local satisfaction (e.g. the EPP feature on T or subcategorization features). As I show in the next section, these principles are all that is needed to derive the shape conservation effect which forces sisters of V° to vacate VP prior to VP-movement in Hawaiian and Niuean.

Following the discussion of the relevant Polynesian languages, I will show that these principles also allow for cross-linguistic variation with respect to shape conservation; while shape conservation holds as a general principle, the Merge status of particular categories (e.g. subjects in Spec, vP) can vary according to language specific properties.

4.3. VP-remnant formation motivated by linearization

Data presented in section 3.3 suggests that adopting Massam's (2001, 2010) analysis of VP-remnant *formation* poses empirical and conceptual difficulties for Hawaiian, since it is not just DP but also CP sisters of V° that vacate VP in V-S-O and V-S-CP orders; at the same time, data in section 2 show that Massam's VP-remnant *movement* model can account for a range of data in Niuean and also extends to Hawaiian. The analytical challenge is therefore is to develop a system that preserves the VP-remnant movement framework while finding alternative motivation for VP-remnant formation. If, as I argued above, VOS (PNI) word orders involve bona-fide incorporation, then an attractive solution to the VP-remnant formation problem presents itself. If VOS is in fact Verb[+incorporated NP]-Subject word order, the obligatory DP-object/CP movement out of VP may be motivated by shape conservation effects, such that S and DP/CP verbal complements are strictly ordered in this language.

The model of cyclic linearization developed above derives these shape conservation effects straightforwardly. The formal burden for the current proposal (which maintains VP-remnant movement) is to show that V+XP fronting is disallowed whenever XP≠NP (i.e. whenever incorporation does not apply). This assumes that object NPs (but not DP or complement CP) undergo incorporation along the lines discussed above, and that the result of this incorporation yields a X° category (i.e. a morphologically complex word)[10]; I further assume that X° elements are only linearized with respect to other X° elements (also excluding affixes and other elements 'below' the word level).[11]

Empirically, the goal is to derive the obligatory movement of verbal complements out of VP, thereby yielding a VP-remnant. If V+XP fronting (barring incorporation) can be shown to

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[10] While I maintain that incorporation is crucial for keeping NP sisters of V° 'invisible' to the linearization algorithm, it may be possible to capture the relevant empirical distinction between DP and NP sisters of V° without recourse to an incorporation analysis, under an understanding of subcategorization distinct from the one adopted in this paper. In particular, given Niuean's erg/abs case marking pattern, it is clear that case marking in PNI constructions behaves intransitively (6b), and therefore it may be possible to understand the external merge of NP in PNI constructions as not being induced by subcategorization features in the same way as DP or CP sisters, rendering their Merge Status [-ψ] within VP, but [+ψ] in Spec, TP (by virtue of (50)). If this line of argumentation could be further substantiated, it might render the choice between Chung and Ladusaw's (2004) and Massam's (2001) understanding of PNI structures insignificant.

[11] Note that the linearization model assumed here does not preclude independent word order parameters with the syntactic or morphological components of the grammar; e.g. while I assume Hawaiian has underlying SVO word order, this need not be a cross-linguistically universal underlying word order. Müller (2007) in fact argues for underlying SOV for modern German, but assumes underlying SVO for English. Linearization-independent parameters may also be taken to be responsible for determining the order of incorporated elements in Hawaiian (i.e. V+NP but not NP+V). See Massam (2009) for review of theories of incorporation more generally.

violate the shape conservation principle formalized within the proposed linearization model, then this provides motivation of the strongest sort for XP-movement out of VP within the VP-remnant movement analysis, namely that XP-shift is obligatory in the derivation of a well-formed PF representation.

In order to see how (50) and (51) account for the data, consider first how (50) sets the Merge Status for the relevant syntactic terminals in the following positions (52) (recall that the Merge status of various elements refers to properties that may vary cross-linguistically (resulting from possibly different specifications of features for the same category across languages); Merge status within Germanic is discussed in the following section).

(52) *Merge Status of terminal elements by position in Hawaiian*
      a. XP sister to V: [+ψ], as this is required locally subcategorization feature of V
      b. XP movement out of VP, forming the VP-remnant: [+ψ], as this is not required by a
          non-local feature (i.e. this is a final landing site)
      c. V in base position: [-ψ], as this is not required by a local syntactic feature, but will
          satisfy EPP$_{pred}$
      d. v in base position: ø, because v° is null
      e. v+V in v°: [-ψ], as this is not required by a local syntactic feature
      f. v+V and VP in Spec, TP: [+ψ], as this is required by EPP$_{pred}$
      g. Subject in base position: [+ψ], since this does not raise, and is therefore not required
          by a non-local feature

Given (52) and assuming that linear order follows from asymmetric c-command, consider first a derivation, like that proposed in Massam (2001), in which VP fronts to Spec, TP. Under my analysis, this should only be possible if NP incorporates with V or if any sister to V first moves out of VP prior to VP(-remnant) movement. In this derivation I assume that T is null (possibly a set of features which undergo T-C movement as in Massam (2010); see section 2.4).

(53) represents a derivation in which the ungrammatical V-DP-S word order is blocked, such as (10c) (*_Inu i ke kope huʻihuʻi ʻo Noelani_ 'Noelani is drinking the cold coffee.').

(53) *Derivation of *[$_{TP}$ [$_{vP}$ V DP/XP] T [$_{vP}$ S ...]: VP moves to Spec, TP*
      a. [$_{VP}$ V   XP] → ∅   (read 'no ordering,' here due to lack of asymmetry and the
          [-ψ] [+ψ]   presence of only one [+ψ] item in the derivation)

      b. [$_{vP}$ v [$_{VP}$ V   XP]] → ∅ (v° is null and therefore not marked for ψ-status)
              [-ψ] [+ψ]

      c. [$_{vP}$ S   v [$_{VP}$ V   XP]] → S < XP *(S and XP share [+ψ] status; S c-commands XP)*
         [+ψ]   [-ψ] [+ψ]

(53c) derives the central empirical generalization discussed in section 3, namely that subjects precede objects in Hawaiian.

Continuing with the derivation started in (53), the next derivational step is merger of T (53d), followed by VP movement to Spec, TP in (53e). Crucially for this ungrammatical

derivation, an intact VP (i.e. not a VP-remnant) moves to Spec, TP in (53e). Because VP is required in Spec, TP by T's EPP feature (valued for [PRED]), both V and XP contained in V have [+ψ] status according to (50).

(53) d. [$_{TP}$ T [$_{vP}$ S   v [$_{VP}$ V   XP]]] → ∅
              [+ψ]   [-ψ] [+ψ]

  e. [$_{TP}$ [$_{VP}$ V   XP] T [$_{vP}$ S   v [t$_{VP}$]]]] → *XP < S *(compare to (53c); VP asymmetrically*
          [+ψ][+ψ]   [+ψ]   *c-commands S, forcing XP<S order)*

  f. *[$_{CP}$ C [$_{TP}$ [$_{vP}$ V   XP] T [$_{vP}$ S   v [t$_{VP}$]]]] → C < V
          [+ψ]   [+ψ] [+ψ]   [+ψ]

(53e) introduces an ordering contradiction, correctly predicting ungrammaticality. A VP-fronting derivation such as (53) can then only be grammatical if either XP=NP, such that incorporation occurs, or if XP moves to some position external to VP but lower than S.
      In addition to (53), another possible derivation must be considered, namely one in which the minimal vP dominating v raises to Spec, TP. A derivation of this sort is proposed for Niuean by Massam et al. (2006) and Massam (2010).[12] Consider then (54), in which V raises to v early in the derivation (following Massam et al 2006 and Massam 2010).

(54) *Derivation of *[$_{TP}$ [$_{vP}$ v+V [$_{VP}$ t$_V$ DP/XP] T [$_{vP}$ S ...]: minimal vP dominating v moves to Spec, TP*
      a. [$_{VP}$ V   XP] → ∅
          [-ψ] [+ψ]

    b. [$_{vP}$ v+V [$_{VP}$ t$_V$ XP]] → ∅
        [-ψ]   [+ψ]

    c. [$_{vP}$ S   v+V [$_{VP}$ t$_V$ XP]] → S < XP
        [+ψ] [-ψ]   [+ψ]

    d. [$_{TP}$ T [$_{vP}$ S   v+V [$_{VP}$ t$_V$ XP]]] → ∅
              [+ψ]   [-ψ]   [+ψ]

    e. [$_{TP}$ [$_{vP}$ v+V [$_{VP}$ t$_V$ XP]] T [$_{vP}$ S   t$_{vP}$]]] → *XP < S
          [+ψ]   [+ψ]   [+ψ]

    f. *[$_{CP}$ C [$_{TP}$ [$_{vP}$ v+V [$_{VP}$ t$_V$ XP]] T [$_{vP}$ S   t$_{vP}$]]] → C < V

[12] For Hawaiian, this may be ruled out on phrase-structural grounds, given that the relevant minimal vP would be a bar-level projection; note that Massam (2010) does not need to postulate bar-level movement for Niuean, since the ergative and absolutive projections are higher in the structure than vP, but lower than TP. Nevertheless, certain formulations of bare phrase structure may permit such movement even in Hawaiian.

$$[+\psi] \qquad [+\psi] \qquad\quad [+\psi] \qquad [+\psi]$$

Crucially, a structure in which VP-movement applies, but without conflicting ordering statements, can be derived if XP-movement applies, such that XP escapes the minimal vP dominating v but is in a position asymmetrically c-commanded by S, not unlike the type of movement generally assumed to apply in Scandinavian object shift. I propose then that the structure of a grammatical Hawaiian V-S-DP$_{obj}$/V-S-CP clause corresponds broadly to (55).

(55) [$_{CP}$ C [$_{TP}$ [$_{vP}$ v+V [$_{VP}$ t$_V$ t$_{XP}$]] T [$_{vP}$ S   XP   t$_{vP}$]]]
           Inu   *'o Noelani*   *i ke kope...*

In (55) there may be different options regarding the exact phrase-structural status of XP. The landing site may be an inner specifier of vP, as in (55), or perhaps some additional head μ intervenes between VP and vP, such that XP shift targets the specifier of μP. Additional data may be needed to distinguish between these two structural possibilities.

      In this section I argued that a shape conservation effect holds between subjects (in their base position) and objects (in their base position), and that this shape conservation effect can be formalized within a cyclic linearization model. In particular, the linearization model adopted as (51), along with relativization along the lines of Merge status (50), derives the observation that subjects precede non-subjects in at least the Polynesian languages under discussion in this paper. Specifically, because subjects stay in-situ in Niuean (Massam, 2001, 2010) and Hawaiian (section 3, above), subjects enter the derivation with [+ψ] status, generating an ordering relationship with DP/CP complement of V° as soon as the subject enters the derivation (53c, 54c). I will show in the next section that subjects may also enter ordering relationships with verbal complements in Germanic, but that this ordering is delayed until the subject moves to Spec, TP, such that complements of V or VP itself may escape the shape conservation effect altogether, just in case they move successive-cyclically prior to subject raising to Spec, TP.

4.4. Extending the model to Scandinavian object shift and Germanic VP movement

In this section I will discuss both Scandinavian object shift (the primary empirical concern of Fox and Pesetsky (2005) and Müller (2007) and Germanic VP movement, in which VP may move fully intact in e.g. English. With respect to VP-movement, we want to show that VP may move 'intact' in English, whereas VP can only move in Niuean and Hawaiian following remnant formation or V+NP incorporation. Given that the Merge status of the relevant syntactic elements can vary with respect to language specfic properties, the model developed here correctly allows VP movement in English in addition to deriving Holmberg's Generalization for Scandinavian.

      Turning now to object shift, the syntactic position which targets object shift and the placement of adverbs in the structure is a matter of debate. However, the model developed here, like that of Fox and Pesetsky, can accommodate different structural analyses that are relevant for this paper, given that object shift is understood as a shape related (and not e.g. case or minimality) phenomenon. The most basic observation to be discussed is that object shift is only allowed (in some languages, obligatory) when the verb also raises, i.e. Holmberg's Generalization (Holmberg 1986), although Holmberg (1998) shows that in fact any category base-generated in VP can act as an intervener for object shift. The model developed above can

also account for these data, adopting the assumptions of Fox and Pesetsky regarding object shift, but dispensing with stipulated Spell-Out domains.

Two crucial, language specific differences between Hawaiian and Niuean, on the one hand, and Germanic on the other, involves the status of the external argument in its base position and the predicate (i.e. VP), which is required to value T's EPP feature in Niuean and Hawaiian but not in Germanic. In terms of the current proposal, Merge of the subject into Spec, vP is required in Germanic by a non-local feature, specifically the EPP$_{[D]}$ feature of T, meaning that Germanic subjects have [-ψ] status in-situ in vP (setting aside the issue of expletive constructions in this paper). On the other hand, EPP satisfaction involves the predicate in Niuean and Hawaiian, meaning that the subject in-situ in Spec, vP is in the 'elsewhere' condition according to (50), such that it is visible to linearization within vP, as suggested by the lack of specificity requirement for subjects in Hawaiian (30-32). While the Merge Status of subjects is less relevant for the derivations of object shift below (56-57), it is crucial for the derivation of successive-cyclic object and VP movement (59) in Germanic, because subjects in Germanic attain [+ψ] status only after raising to Spec, TP, at which point VP or VP-internal elements can escape shape-conservation effects via successive-cyclic movement to intermediate landing sites.

Turning now to Scandinavian object shift, in (56) and (57), which model (48a) and (48b) respectively, the crucial difference involves the ordering of the verb with respect to the object. (56) represents the grammatical sentence (=48a), in which the ordering between V and O happens 'late' in the derivation due to the [ψ] marking of the verb. For reasons of space, I only model crucial steps in the derivation.

(56)   a. [$_{VP}$ V   O] → ∅
            [-ψ] [+ψ]

        b. [$_{vP}$ v+V [$_{VP}$ t$_V$ O]] → ∅   *(v+V will undergo further raising, suggesting it is*
            [-ψ]   [+ψ]   *required in this position by a non-local feature)*

As some point in the derivation, *inte*, a negative adverbial enters the structure; naturally one wonders what the [ψ] status of such an element may be. Here I follow Müller's analysis, who suggests the following: "It is often assumed that adverbial categories do not enter syntactic derivations as a result of feature-driven Merge operations since it does not seem plausible to assume that the discharge of a subcategorization feature ... can be involved here; in fact, it is sometimes postulated that adverbial categories do not enter phrase markers by Merge in the first place, but by some alternative structure-building operation (Adjoin; cf. (Chomsky 2001, 2001b), Adger (2003)." Therefore, adverbs have neither Merge status [+ψ] or [-ψ] (as long as they stay in-situ" (Müller 2007). Again following Müller, I assume *inte* is low within vP.

(56)   c. [$_{vP}$ NEG v+V [$_{VP}$ t$_V$ O]] → ∅
                        [-ψ]   [+ψ]

        d. [$_{vP}$ S [$_{vP}$ NEG v+V [$_{VP}$ t$_V$ O]]] → ∅ *(S and v+V do not order due to [-ψ] status)*

$[-\psi]$ $\quad$ $[-\psi]$ $\quad$ $[+\psi]$

       Finally, the object shifts to a position higher than VP (and Neg) but lower than TP. This can be achieved within vP either by 'tucking in,' as shown here (56e) or, just as easily, by first moving O before Merge of the subject (somewhat reversing the steps in (56d) and (56e) shown here).

(56)   e. [$_{vP}$ S [$_{vP}$ O[$_{vP}$ NEG v+V [$_{VP}$ t$_V$ t$_O$]]] → ∅   (O maintains [+ψ] status, as this is not
         $[-\psi]$ $[+\psi]$ $\quad$ $[-\psi]$ *an intermediate landing site)*

      f. [$_{TP}$ S T[v+V] [$_{vP}$ t$_S$ [$_{vP}$ O[$_{vP}$ NEG t$_{v+V}$ [$_{VP}$ t$_V$ t$_O$]]]] → S<v+V, v+V<O
        $[+\psi]$ $\quad$ $[+\psi]$ $\quad$ $[+\psi]$

At (56e), the basic generalization regarding object shift is derived, since the object and verb have not yet entered into an ordering relationship, and the verb is free to raise to T; however, if the object were not to raise in (56), the shape would also be preserved, correctly predicting optionality with respect to the availability of movement. The object and verb did not enter an ordering relationship since the verb maintains [-ψ] status early in the derivation, because it will further raise. Note also that in (56f), S moves to Spec, TP, acquiring [+ψ] status, yielding the observation that subject/object orderings are (generally) observed in Germanic.

       The current system also accounts for (48b), the illicit example of object shift. This is so because the lexical verb achieves [+ψ] status early in the derivation, since it cannot raise to T due to the presence of AUX in that position. (57) quickly shows this.

(57)   a. [$_{VP}$ V $\quad$ O] → ∅
         $[-\psi]$ $[+\psi]$

      b. [$_{vP}$ v+V [$_{VP}$ t$_V$ $\quad$ O]] → v+V < O
        $[+\psi]$ $\quad$ $[+\psi]$

(57b) establishes V < O order, any reversal of which is not allowed. For example, if O undergoes object shift, the V<O word order is reversed (57c) (higher structure in vP in (57c) and the representation including TP (57d) are included for concreteness).

(57)   c. [$_{vP}$ S [$_{vP}$ O[$_{vP}$ NEG v+V [$_{VP}$ t$_V$ t$_O$]]] → *O < v+V
        $[-\psi]$ $[+\psi]$ $\quad$ $[+\psi]$

      d. *[$_{TP}$ S $\quad$ T$_{aux}$ [$_{vP}$ t$_S$ [$_{vP}$ O[$_{vP}$ NEG v+V [$_{VP}$ t$_V$ t$_O$]]]] → S < T, T < O, O < v+V
        $[+\psi][+\psi]$ $\quad$ $[+\psi]$ $\quad$ $[+\psi]$

In (57c) the object moves past the verb, despite the fact that the v+V complex does not raise to T in subsequent steps. The contradictory ordering generated at (57c) correctly rules out object shift in this context, deriving Holmberg's Generalization.

Finally, I will consider VP-movement in Germanic, to show that the proposed system does not prohibit O<S or VP<S word orders cross-linguistically. For example, successive-cyclic wh-movement is allowed under the assumption (adopted also by Fox and Pesetsky (2005) and Müller (2007)) that objects move to Spec, VP before moving to Spec, vP; once the object moves to Spec, VP, it has [-ψ] status, and is therefore invisible to the linearization algorithm presented in this paper (under Müller's analysis, successive-cyclically fronted objects also have [-ψ] status, but are able to generate ordering statements with other [-ψ] elements). Turning now to Germanic VP-movement, both V° and its complement will have [-ψ] status if VP moves successive-cyclically to Spec, vP, since VP is required in this position only by some non-local feature (presumably a topic or focus related feature that will enter the derivation associated with C°). Given that VP-movement in Germanic can create long distance dependencies and is sensitive to island effects, I assume (as is conventional) that VP-fronting in Germanic does indeed apply successive-cyclically.

For concreteness, consider VOS word order in English (58).

(58) Read the book, John did.

(58) is allowed under the current model, considering the definition of Merge status (50) as this relates to successive-cyclic movement contexts. As with successive-cyclic object movement, successive-cyclic movement of VP to Spec, vP is required only by a non-local feature, and therefore all elements within VP will have [-ψ] status once VP moves to Spec, vP.

(59a) represents the structure (including [ψ] status) of an English vP prior to VP movement in the derivation of (58). As with Scandinavian, the subject has [-ψ] status in its base position; this is crucial, since if the subject were to have [+ψ] status within vP, a S<O order would be established early, incorrectly ruling out successive-cyclic object movement to left-peripheral positions (although successive-cyclic object movement is apparently prohibited in VP-fronting languages, a result correctly predicted by the proposal in this paper - see also discussion and references in section 4.5 below). The verbal element v° is null and therefore has no [ψ] status and V° also has [-ψ] status since it is not required by a local feature in any obvious way. Given the obligatory do-support in (58), I assume that V° does not head-move to v°.

(59)   a. [$_{vP}$ S   v [$_{vP}$ V   O]] → ∅
            [-ψ]   [-ψ] [+ψ]

Successive-cyclic VP movement would then yield a structure such as (59b) in the vP cycle, while the final representation of (58) is shown in (59c).

(59)   b. [$_{vP}$ $_{VP}$[V   O] [$_{vP}$ S   v t$_{VP}$]] → ∅
                [-ψ][-ψ]   [-ψ]

        c. [$_{CP}$ $_{VP}$[V   O] C [$_{TP}$ S T [$_{vP}$ t$_{VP}$ [$_{vP}$ t$_S$ v   t$_{VP}$]]]]
                [+ψ] [+ψ]   [+ψ]
                Read the book, John did.

Since VP in (59b) is in an intermediate landing site, both elements within VP have [-ψ] status in this position. Therefore, no S<O is generated at either step of the derivation, and the absence of a shape conservation effect that would force VP-remnant formation in English is correctly derived.[13]

In this section I developed a model of relativized cyclic linearization that adopts the general principles of Fox and Pesetsky's system while including aspects of Müller's relativization algorithm. I suspect that properties of (50) could be deduced in future research, especially with respect to syntactic heads (e.g. upon adoption of Matushansky's (2006) agreement approach to head movement). The approach developed also avoids stipulations regarding Spell-Out domains, arguing that Spell-Out occurs with each rule application (see also Epstein and Seeley 2002, who come to the same conclusion for independent reasons). Further, while Scandinavian object shift and VP-remnant formation in Niuean and Hawaiian differ with respect to several crucial properties (most notably in that Scandinavian object shift is optional), the model of relativized cyclic linearization developed here can account for both constructions. More importantly for the current paper, I argue that this system accounts for the Hawaiian data (and possibly those Polynesian languages that pattern with Hawaiian) in a novel way, in that VP-remnant formation does not follow from case-properties.

4.5. Theoretical advantages of the linearization approach to VP-remnant formation

I would like to briefly conclude this section by noting ramifications for the analysis of Niuean, and also for syntactic 'micro-variation' between Hawaiian and Niuean. I take the analysis of VP-remnant formation to be fully consistent with the syntactic structures postulated by Massam (2001, 2010), with the crucial exception regarding NP incorporation, which I account for independently. From one perspective, the linearization approach to movement offered here lends additional motivation to the analysis of VP-remnant movement presented in Massam's papers. However, the approach taken here also allows alternative analyses of e.g. Niuean case marking, according to which morphology is inserted post-syntactically; see Legate (2008) for a concrete proposal regarding Niuean in this domain.

Further, recall that Massam's (2001) analysis of Niuean required that v° check ergative case only when DP is generated as a complement to V°. Massam (2010) elaborates this system with the inclusion of an ErgP head, which dominates vP. Therefore, there is an unexplained co-occurrence pattern in her system, namely that whenever an NP is sister to V°, an ErgP head must not be generated, since its case feature would go un-valued in this situation. Within the system proposed here, no phonologically null ergative (or absolutive) heads need be represented in the syntax (although they are permitted to be represented), since Spec-Head agreement is neither assumed nor needed to derive the word order facts.

A final theoretical advantage of the current proposal which I will only briefly mention concerns the unavailability of A-bar movement for VP-internal elements in VP-raising languages, which has been discussed in prior literature such as Chung (2005) and Aldridge

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[13] Note that the system as developed thus far makes a prediction regarding 'true' VOS languages, i.e. languages (unlike Hawaiian and Niuean) that allow V-DP$_{obj}$-S word order; this word order should be derivable via obligatory VP-fronting if the subject must also raise to some vP external position (as in Germanic). I leave testing of this prediction for future research.

(2004). While the scope of this paper prevents me from discussion of the data motivating this claim, I refer the reader to Oda (2005), Potsdam and Polinsky (2007), and Potsdam (2009) for further discussion. The relativized linearization algorithm developed here deduces this claim within a shape conservation analysis, since subjects and objects are ordered with respect to each other as soon as the subject enters the derivation. This effectively prohibits A-bar movement of overt objects to the left-periphery (but still allowing movement of null elements, such as null operators that may move in the derivation of e.g. relative clauses). On the other hand, the fact that subjects only achieve [+ψ] status after raising to Spec, TP in Germanic allows A-bar movement of objects in those languages.

5. Conclusions

This paper presented and analyzed data from Hawaiian, which suggested that a VP-remnant movement analysis may most accurately represent the range of predicate-initial structures observed in this language. Given these facts, I argued that Hawaiian is in many respects comparable to the better studied Niuean. However, both prior literature and new arguments suggest that case properties cannot motivate VP-remnant formation, a crucial aspect of the VP-remnant movement analysis as developed by Massam (2001). I argued that case may not be the motivating factor, and that a shape conservation analysis can motivate the exiting of DP and CP from VP, prior to VP raising, without recourse to case; this hypothesis forces an account of PNI, such that true incorporation is involved. In order to formalize the shape conservation account, I developed a relativized cyclic linearization algorithm, adopting aspects of Fox and Pesetsky (2005) and Müller (2007). Under this analysis, S<O and S<CP preserve the initial shape of the predicate, but O<S and CP<S reverses it. NP objects are capable of moving past the subject so long as they undergo incorporation, forming a V° element.

  Additionally, if the linearization analysis presented here is on track, this shows how so-called 'micro-variation' can be understood through more general principles. Alternative morphological analyses notwithstanding, it is clear that at least superficially Hawaiian and Niuean differ with respect to case marking patterns. Nevertheless, they share many grammatical properties, such as VSO and PNI, at least some of which may be properties of several Polynesian languages more generally. The linearization approach taken here unifies the two grammars with respect to VP-remnant movement, despite the overt case-marking differences between them.

Acknowledgements

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