1. Introduction
The purpose of the project was to address the phenomenon of adverbial verbs found in the aboriginal languages of Taiwan (the Formosan languages). In these languages, adverbial meanings of frequency, manner and duration are systematically realized as elements which are morphologically and syntactically verbal: they occupy typical verbal positions, and bear typical verbal morphology. They also normally prevent the lexical verb from realizing distinctive verbal morphology. This is illustrated in (1) with examples from the Atayalic language Seediq.

1 a. Ini=daha knnte-i m-ekan beras baso,
    NEG=3P.E often-PF.CNG AF-eat grain sago
    pcnga-un=daha m-ekan.
sometimes-PF=3P.E AF-eat

‘They don’t eat sago grain often, they eat it occasionally.’

1 b. M<n>hmet-an=mu beebu ka quyu kiya.
    <PST>at.will-LocF=1sG beat NOM snake that

‘I recklessly beat that snake.’

The main issue of this project was the question: why do some languages realize adverbial meanings with verbs, while others realize them as a separate word class (adverbs)? Why do these languages specifically use verbs to express these meanings? A follow-up question here is the extent to which word class membership is a linguistic primitive, and to what extent it can be predicted from other facts in a language. The most crucial question which summarizes

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the content of the entire issue is the following: are adverbial verbs simply adverbs which happen to look like verbs, or are they simply verbs which happen to encode meanings which we (from a Western point of view) consider to be adverbial? Three possible alternative accounts were initially proposed, each of them with theoretically interesting implications, and the purpose of the project became to evaluate these accounts against one another on the basis of a set of syntactic tests. Each hypothesis is outlined below.

1.1 Lexical analysis
Perhaps the simplest account, and the typologically least interesting, would be that it is simply a lexical fact that adverbial meanings are realized as verbs, and that it is meaningless to question why. According to this analysis, Formosan adverbial verbs are simply verbs with adverbial meanings, no less and no more, just as English motion verbs are verbs which encode manner and not path, cf. Talmy (1985). This answer simply sidesteps the issue in one respect, but it could be the optimal solution if the other two hypotheses prove to be untenable. One consequence of this solution is however that it must view word class membership is an independent primitive which can be subject to cross-linguistic variation, i.e. that word class membership of a word can not be predicted from its meaning.

1.2 Cinque adverbial heads
An alternative account suggests that adverbial verbs are the realization of the head positions of the adverbial phrases proposed by Cinque (1999). According to this analysis, a language can either realize its adverbial meanings in the specifier positions—in which case we get phrasal adverbs—or in the head positions, in which case we get either adverbial verbs (if the elements in these positions are free lexical items) or verbal affixes expressing typical adverbial meanings (if the elements in these positions are bound morphemes). The obvious analogy here would be the behaviour of the Finnish negation as a morphologically recognizable verb (2), a status which presumably derives from being the head realization of Neg°, intervening between V° and the inflectional levels of the clause.

2 a. Minä e-n puhu suomea.
   1s NEG-1s speak.CONNEG Finnish
   ‘I don’t speak Finnish.’
b. Sinä e-t puhu suomea.
   2s NEG-2s speak.CONNEG Finnish
   ‘I don’t speak Finnish.’

c. Minä puhu-n suomea.
   1s speak-1s Finnish
   ‘I speak Finnish.’

Note that this account is based in generative grammatical theory, and makes crucial reference to concepts such as functional heads, inflection positions in the clause and verb movement, and is presumably difficult to express in a non-generative paradigm.

2.3 Predication analysis

According to the third account, adverbial verbs are the obligatory predicative realization of clausal modifiers, in the same way as predicative quantifiers are the (in some contexts equally obligatory) predicative realization of NP modifiers (3a, b). According to this account, the surface word class realization of certain meanings can be affected by other facts in the grammar, in analogy with the fact that egu in (3a) is realized predicatively rather than attributively.

3 a. Egu ka preko m-eyah q<m>iyuc.
    many NOM mosquito AF-come <AF>bite
    ‘Many mosquitoes have come to bite.’
    (lit. ‘The mosquitoes who have come to bite are many.’)

b. *M-eyah hini egu preko.
    AF-come here many mosquito

Both phenomena are further suggested to be intimately connected with verb-initial word order, i.e. that the same mechanism which triggers verb-initial word order is that which causes the realization of adverbial meanings as verbs and of quantifiers as predicates. This gains some anecdotal support from the fact that similar phenomena also occur in some other verb-initial languages. The mechanism proposed for deriving these constructions, as well as verb-initial order, is assumed to be a mirror image of the mechanism which in subject-initial
languages selects one salient argument and makes it clause subject: the establishment of predication.

1.4 Typological and geographical background
Prior to examining in detail the methods and results of the research, we must first illustrate the basics of the grammar of the relevant languages investigated. The target of investigation was primarily the Tgdaya dialect of the Atayalic language Seediq, with which I have the greatest experience, and where my knowledge of the language is sufficient to design test examples. To remove any genetic bias the structures were tested against the Takituduh dialect of Bunun, which is spoken in areas to the south of the Seediq area. The field sites for the two languages are shown below.
Seediq and Bunun are both Austronesian, but given that the Formosan languages are genetically so diverse, there is more or less consensus that the two languages belong to two different primary subgroups of Austronesian. Typologically, they are to a certain extent similar, but it is generally assumed that the similarities reflect shared properties inherited from the earliest stages of Austronesian, rather than shared innovations. In other respects, Seediq and Bunun are quite different. We will address the typological features of the two languages below.

1.4.1 Typological features of Seediq

Seediq has basic VOS order (4a). It also displays a typical Austronesian voice system, with four different values for grammatical voice, referred to in Austronesianist circles as focus (although it has nothing to do with focus in the information structure sense). The four values are: Actor Focus (AF, cf. 4a), Patient Focus (PF, cf. 4b), Locative Focus (LF, cf. 4c) and Instrument Focus (IF, cf. 4d). These voice forms indicate the underlying grammatical role of the NOM subject. In this respect, the AF verb in (4a) could be seen as an “active” and the PF verb in (4b) as a “passive” – the LF and IF forms fall outside this binary analogy and are difficult to render in English. The clause-final position is normally occupied by the NOM subject, which thus can represent a variety of semantic roles. This element can optionally be marked by the NOM marker *ka*.

4   a. Q-m-n-ita huling (ka) Pawan.
    <AF>PST-see dog NOM Pawan
    ‘Pawan saw a dog.’

   b. Wada qyut-un huling (ka) Pawan.
    PST bite-PatF dog NOM Pawan
    ‘Pawan was bitten by a dog.’

   c. Tkan-an=mu beras (ka) duhung nii.
    pound-LF=1sE rice NOM mortar this
    ‘They pound rice in this mortar.’
The voice system implies that the NOM subject is sometimes an AGT, but often not. In fact, transitive contexts are more commonly realized by means of non-AF clauses, which is sometimes taken as evidence of ergativity in Seediq. We go as far as to treat Seediq and typologically similar languages as split-ergative, with the split conditioned by voice (and ultimately by the relative definiteness of the arguments). In non-AF, which represents the ergative pattern, the two core arguments are identified with NOM and ERG case respectively.

Word order facts are rendered somewhat less clear by the behaviour of clitic pronouns: clitics, both nominative and ergative (formally identical with genitive) obligatorily follow the first syntactic head in the clause: this is often a verb (5a), but could also be a negation (5b), a tense marker (5c) or a subordinator (5d). When nominative and ergative clitics cooccur, the order is always NOM-ERG (5c), although portmanteau forms seem to reflect a previous ordering which was ERG-NOM instead (5e, f).

5 a. M-n-ekan=ku bunga.
   AF-PST-eat=1sN sweet.potato
   ‘I ate sweet potato.’

b. Ini=daha mah-i sino kiya.
   NEG=3pE drink-PatF.CNG wine that
   ‘They don’t drink that wine.’

c. Wada=ku=na bbe-un.
   PST=1sN3sE beat-PatF
   ‘He hit me.’

d. Netun=su m-imah sino, bsukan=su dhenu.
   if=2sN AF-drink wine drunk=2sN consequently
   ‘If you drink wine you will get drunk.’
Both the declarative negation *ini* and the prohibitive *iya* require that the following verb be realized in a special form which is referred to here as the connegative, but which is identical in form to the imperative. It is realized as Ø-morphology in AF (6a), as the -*i* suffix in PF (6b) and LF, and as the -*ani* suffix in IF.

Further, the realization of one category of verbal morphology on one element in the clause precludes its use on any following verb. Thus, if T/A is expressed by a periphrastic element such as *wada* ‘PST’, it may not be expressed again on the main verb (7a). Similarly, if voice is distinctively expressed on a preverb, the lexical verb must be realized in AF, which is to be seen as a default form (7b). Finally, connegativity is only expressed on the verb immediately following the negation (7c). Therefore, the default form of the verb is AF, with no T/A marking and no connegative marking.
b. Hde-un=daha m-imah / *mah-un ka sino.
   finish-PatF=3pE ActF-drink drink-PatF NOM wine
   ‘They will drink up the wine.’

c. Ini=ku kela
   NEG=1sN know.ActF.CNG
   *rengo / mrengo kari mukan.
   speak.ActFCNG / ActF-speak language Taiwanese
   ‘I don’t speak Taiwanese.’

It follows that if the first verb with voice morphology is realized in AF, this is distinctive (since it contrasts with other voice forms), but subsequent forms can and must be treated as default forms, equivalent to an infinitive (in this report they will simply be referred to as non-finite). If there are two verbal elements in the clause, they both precede any arguments, i.e. there is not just one discrete clause-initial verb slot, but rather a series of them. This is shown in the word order pattern of the minimal pair in (8a, b).

8 a. M-eyah m-ekan bunga ka qolic.
   ActF-come ActF-eat sweet.potato NOM rat
   ‘The rat comes to eat sweet potatoes.’

   b. Yah-un m-ekan qolic ka bunga.
   come-PatF ActF-eat rat NOM sweet.potato
   ‘Rats will come to eat the sweet potatoes.’

Thus, the underlying ordering of elements in the clause seems to be as shown in the positional schema in (9)

9. COMP - T/A - NEG - Voice - V - AGT / OBJ - NOM.SUBJ

Finally, the distinction between PF and LF is gradually being eroded: thus, while LF still retains its locative meaning in some cases, it often just expresses non-AF, especially when realized in PST tense. Thus, the contrast between non-AF PST and non-AF FUT is most commonly expressed by the forms LF PST (10a) and PF PRS (10b). This point will prove to
be of crucial importance when it comes to the voice distinctions actually realized by the various elements of the clause.

10 a. Q<nt>a-an=mu laqi kiya.
     <PST>-see-LocF=1sE child that
     ‘I saw that child.’

     b. Qta-un=mu laqi kiya.
     see-PatF=1sE child that
     ‘I’ll see that child.’

1.4.2 Typological features of Bunun
The dialect described here is the Takituduh dialect spoken in the villages of Chungcheng and Wujie to the south-east of Puli in Nantou County. It differs considerably in some respects from the more commonly described Isbukun dialect, although it appears that these differences are not of crucial typological relevance.

Bunun is a VSO language, where ordering is determined, not by case, but rather by semantic function: thus the normal position for the AGT is following the verb, while the normal position for the PAT is final. This gives VSO order in AF (11a) and VAS order in non-AF (11b). Sometimes, VOS order can also be found (11c) - this seems to be restricted to inanimate patients. There are two case markers in Takituduh, the NOM ca and OBL is. The former is unproblematic, but the latter is interesting in that it indicates the object in an AF construction (11a) and an (ergative) AGT in a non-AF construction (11b). It further often attaches phonologically to the preceding word, in some cases causing phonological changes (11d). While ca appears to be more or less obligatory, there is a certain variation between speakers as to how obligatory is is: for some, it is completely obligatory, whereas for others, it seems to be an optional marker used for emphasis. Note further that this two-case system is not mirrored among the pronouns, which display a three-case distinction: NOM, ERG and OBL.

11 a. ma-baliv ca uva'az is haqil
     AF-buy NOM child OBL book
     ‘The child will buy books.’
b. b-in-aliv is tama ca acu dii
   <PF.PST>buy OBL father NOM dog this
   ‘My father bought this dog.’

c. matunu-s hutan ca tina
   roast-OBL sweet.potato NOM mother
   ‘Mother roasted sweet potato.’

d. asa-k-ak ma'u-s hutan (< ma'un is)
   want-LNK-1sN eat-OBL sweet.potato
   ‘I want to eat sweet potatoes.’

In Bunun, there appears to be a distinct single pre-subject verbal slot. Thus, a control verb occupies this slot and is obligatorily followed by an NP subject (12a), as does an adverbial verb (12b). This is exactly the same distribution as that found for NOM clitics (12c, d).

12  a. asa ca uva'az-inak mau-s hutan
    want NOM child-1sG eat-OBL sweet.potato
    ‘My child wants to eat sweet potatoes.’

b. qalmang ca uva'az maun-is madikla tu kakaunun
   wilful NOM child eat-OBL dirty ATTR food
   ‘The child ate dirty food without thinking.’

c. asa-kak mau-s hutan
   want-1sN eat-OBL sweet.potato
   ‘I want to eat sweet potatoes.’

d. tantitini-kak mu-lumaq
   alone-1sN go-home
   ‘I went home alone.’
Over and above elements which are verbal in that they can bear verbal morphology (i.e. lexical verbs and adverbial verbs), the negation can also occupy the same slot (13a, b). It is also open to certain adverbials which do not bear verbal morphology (13c, d), and even to the reflexive (13e). It is not, however, open to subordinators, cf. the fact that the clitic attaches to the main verb rather than to the subordinator (13f). The same possibly also holds for the FUT tense-marker *na* (13g), although this might be interpreted such that this marker is a prefix rather than a separate head.

13  

a. ni ca Alang ma'anak tama-nak  
   NEG NOM Alang AF.hit father-1sG  
   ‘Alang didn’t hit my father.’

b. ni-ak maqanciap malas-Bunun  
   NEG-1sN know.how speak-Bunun  
   ‘I don’t speak Bunun.’

c. amin azak manahip  
   also 1sN happy  
   ‘I am also happy.’

d. nanu'-ak manahip  
   indeed-1sN happy  
   ‘I am indeed happy.’

e. anak-anak ca tama-nak sadu haan tidanuman  
   REFL NOM father-1sG see LOC mirror  
   ‘My father saw himself in the mirror.’

f. maca muca'an-ak Taipei a, nanu na minbuqbuq  
   if go-1sN Taipei TOP certainly FUT get.lost  
   ‘If I go to Taipei, (I) certainly get lost.’
So far we have seen cases where the distribution of full NP subjects is identical to that of NOM clitics. There are exceptions to this, however. In negated contexts, we have seen that the NOM argument, whether full NP or clitic, can intervene between NEG and the main verb (14a, b). However, for full NP arguments, an alternative position is available (14c), with the NP subject immediately following the main verb, and NEG instead being linked to the verb by the complementizer tu. This is furthermore a very frequently occurring construction. While this has not been explicitly targeted for elicitation, we have found no such examples with NOM clitics. More crucially, perhaps, when the initial verbal position is occupied by a double element such as ni amin ‘neither’, a full NP (or heavy pronoun) follows the entire construction in what is presumably canonical subject position, since it precedes the lexical verb (14d), while a clitic pronoun obligatorily attaches to the first element of the construction (14e, f)

14 a. ni ca uva'az kuzakuza
   NEG NOM child work
   ‘The child doesn’t work.’

b. ni-ak kuzakuza
   NEG-1sN work
   ‘I don’t work.’

c. ni tu kuzakuza ca uva'az
   NEG COMP work NOM child
   ‘The child doesn’t work.’

d. ni amin azak maqanciap malas-Bunun
   NEG also 1sN able speak-Bunun
   ‘I can’t speak Bunun either.’
e. ni-ak amin maqanciap malas-Bunun  
   NEG-1sN also able speak-Bunun  
   ‘I can’t speak Bunun either.’  

f. * ni amin-ak maqanciap malas-Bunun  
   NEG also-1sN able speak-Bunun  
   (‘I can’t speak Bunun either.’)  

We have seen that NOM arguments can (or must, if they are clitic pronouns) occupy a  
discrete position following the first element of a set of words which includes verbs, some  
adverbials (both adverbial verbs and non-inflectable adverbials) and the negation (but which  
excludes e.g. subordinators). However, this does not imply that the afore-mentioned set of  
word classes is otherwise homogeneous with respect to cliticization: ERG clitics can attach to  
some of these, but not all: specifically, ERG clitics can never attach to negation, only to verbs  
(15a, b), defined as words which can bear verbal morphology, i.e. including adverbial verbs  
(15c).  

15 a. * ni-ku kaun-un ca hutan dii  
   NEG-1sG eat-PatF NOM sweet.potato this  
   (‘I didn’t eat this sweet potato.’)  

b. ni-tu kaun-u-ku ca hutan dii  
   NEG-COMP eat-PatF-1sG NOM sweet.potato this  
   ‘I didn’t eat this sweet potato.’  

c. qalmang-u-ku mahanat ca sanglav dii  
   wanton-PatF-1sG cook NOM vegetables this  
   ‘I wantonly cook these vegetables (without caring how I do it).’  

Thus, NOM clitics (and arguments in general) occupy positions further to the left in the clause  
than do non-NOM arguments. At the same time, recall that the word order, which is VSO in  
AF clauses, is predominantly VAS in non-AF (16b), showing that the ordering of NP  
arguments is the reverse of that of clitics. This is even clearer since a NOM clitic would  
precede the ergative argument (16c).
16 a. ma-baliv ca uva'az is haqil
ActF-buy NOM child OBL book
‘The child buys a book.’

b. b<in>aliv is tama ca acu dii
<PatF.PRF>buy OBL father NOM dog this
‘This dog was bought by (my) father.’

c. ludaqun-ak-is bananaz aiza
beat-PatF-1sN-OBL man that
‘I was beaten by that man.’

It follows that NOM arguments in affirmative non-AF clauses occur in different linear distributions (and arguably occupy different types of positions), depending on whether they are full NPs or clitics (17a), but that this difference is often neutralized when the clause is negated (17b). Potentially, these linear patterns could even allow cases where a full NP argument actually precedes an ERG clitic. However, I have found no such examples and, although I have not actually targeted this issue by elicitation, it may the case that hypothetical examples like (17c) could be filtered out by a linear restriction.

17 a. V-PF NOM.CLIT ERG.CLIT / ERG.NP NOM.NP
b. NEG NOM.CLIT NOM.NP V-PF ERG.CLIT / ERG.NP
c. ?- ni ca acu dii ludaq-u-ku
NEG NOM dog this beat-PatF-1sE
(‘I didn't hit this dog.’)

It therefore proves quite difficult to capture as a slot matrix the word order patterns of Bunun in the same way as we did for Seediq in the preceding section.

Another important difference between Bunun and Seediq is that Bunun tends to prefer AF forms in simple neutral clauses, whereas Seediq would instead prefer non-AF in most transitive contexts. To elicit non-AF in Bunun, it has proven easiest to relativize on the patient
to force the use of non-AF (in both Seediq and Bunun, as in other Austronesian languages, relativization is strictly subject-oriented). The ensuing non-AF form is perfectly acceptable in a matrix clause, but would tend to be less frequent than the corresponding AF form.

In section 1.4.1 we noted that Seediq preserves the full 4-focus system in its verbal morphology, although the distinctions themselves are being eroded and replaced by distinctions in tense/aspect. In Takituduh Bunun, interestingly enough, the 4-focus system is also being eroded, although in a slightly different manner: while the distinction between AF and non-AF is quite robust (18a, b), and while IF also occurs with its normal function of indicating that the NOM grammatical subject is an instrument (18c), the usual choice between original PF and LF forms as the standard non-AF form seems to be lexically determined (18d, e), although it appears that the PF form is always an option (18f). In fact, even in relativization constructions, which are usually the most robust way of eliciting different focus forms in Austronesian languages, a distinctive LF is usually not found. The verb may very well be realized in PF (18g), or the locative relation can be expressed by means of the invariant proform anian, which appears to incorporate the LF suffix –an (18h).

18 a. ma-baliv ca tama-k-inak is laihli’
   ActF-buy NOM father-LINK-1sG OBL car
   ‘My father bought a car.’

   b. b<in>aliv-is tama-k-inak ca haqil dii
   <PatF.PRF>buy-OBL father-LINK-1sG NOM book this
   ‘My father bought this book.’

   c. iica ca is-qulut-ku-s qasu a via?
   where NOM IF-cut-1sE-OBL meat REL knife
   ‘Where’s the knife I cut meat with?’

   d. panak-a-s bunun ca tama-k-inak
   hit-LocF-OBL person NOM father-LNK-1sG
   ‘My father was hit by a person.’
e. ludaq-u-s bunun ca tama-k-inak
   beat-PatF-OBL person NOM father-LNK-1sG
   ‘My father was beaten by a person.’

f. masamu panak-un ca vanis dii
   taboo hit-PatF NOM wild.pig this
   ‘It is taboo to hit this wild pig.’

g. i'ica ca na unda'u-ku-k-a lu'dun?
   where NOM FUT go.to-PatF-1sE-LNK-REL mountain
   ‘Where's the mountain I'm going to?’

h. i'ica ca ania-su qanup?
   where NOM LOC-2sG hunt
   ‘Where is the place where you hunt?’

On the basis of this background information on the two languages investigated, we can now proceed to the main content of the investigation.

2. Method
The purpose of the project was to evaluate empirically the three aforementioned hypotheses concerning the nature of adverbial verbs: namely a) that they are simply a lexical fact; b) that they are the head realization of the adverbial levels postulated in Cinque (1999); c) that they are the predicative realization of clausal modifiers. The languages investigated were primarily Seediq, or which I have the greatest experience and knowledge required to design test sentences, and secondarily Bunun. Bunun data was used to a lesser extent to see whether it confirmed the pattern proposed for Seediq. The main tool applied was to check which predictions each hypothesis made with respect to the grammaticality or ungrammaticality of certain test examples, and then to test these predictions in the field. A supplementary tool was the elicitation of spontaneous narrative (using the classic Frog Story and Pear Story stimuli), to generate further material which could contain the relevant kinds of adverbials.

The spontaneous narrative did give some illustrative examples, and provided some other spin-off data which will be very valuable in future work. However, it was the elicitation work
which proved particularly fruitful as far as the issue at hand was concerned. The issues tested are listed below, with brief comments: the actual results are presented and discussed in detail in section 3.

The Seediq information is based on interviews with seven consultants speaking the Tgdaya dialect, as well as one speaker of the Toda dialect and one speaker of the Truku dialect. The Bunun data is based on interviews with four speakers of the Takituduh dialect.

2.1 Can an adverbial verb occur as the single verb in a clause (without a lexical verb)?
Here we are testing more concretely whether or not adverbial verbs behave like prototypical verbs, and in particular whether they can be said to be have an argument structure of their own. The issue here is one of structure: do adverbial verbs behave like verbs because they are, lexically speaking, verbs, i.e. elements located in a V° position in the clause, just like any other verb, or do they behave like verbs for some other reason (which it is the purpose of this project to find)? Naturally, an adverbial verb could very well be lexically defined as a verb and still not display an argument structure of its own: it could also be a modal auxiliary, a raising verb, a restructuring verb, a control verb. On the other hand, if it does have an argument structure of its own, it would be more problematic to suggest that it is the result of some property of the syntax of the languages involved, since this would imply that the syntax can actually determine features within the word class assignation of single lexical items.

2.2 Do adverbial verbs display a full set of verbal morphology?
There are several relevant points with this issue: firstly, adverbial verbs are recognizable as verbs on the basis of displaying verbal morphology. If they are in any way defective in their morphological realization, this could be taken as evidence that they are less than prototypical verbs (cf. the fact that Finnish negation verbs are conjugated for person but not for tense). Further, the behaviour of Seediq and Bunun in this respect can allow us to see the limits of possible cross-linguistic comparison: in the Formosan language Tsou, the main verb retains full morphology, while the adverbial verb (or any coverb) is realized in one of two possible forms, either AF (Actor Focus "active") or UF (Undergoer Focus "passive"). If Seediq and Bunun display similar patterns of defectivity, it would indicate that data from Tsou can also be relevant for these languages, as well as giving us further clues about the grammatical status of both the adverbial verb and the main verb.
2.3 Can all kinds of adverbial meanings be encoded by verbs?
The rationale behind this issue was the following: single examples of what might be termed adverbial verbs occur in languages of different types, so for instance Swedish *bruka* ‘to do habitually’ is a verb, but corresponds to an adverbial meaning, e.g. the English adverb *often* (or the Swedish adverb *ofta*). If the Formosan languages behave like Swedish, but with a few more common adverbial verbs, then this suggests a lexical / coincidental solution – we would be hard pressed to propose an account which can capture the fact that it is more frequent for certain meanings to be expressed in a given word class. If, on the other hand, adverbials are systematically realized as verbs, or in fact the word class of adverbs is simply lacking, this instead suggests a typological account, or at least makes it likely that a typological account is possible.

2.4 Are adverbial verb constructions biclausal?
If we can show that adverbial verb constructions are mono-clausal (i.e. that the adverbial verb and the lexical verb are located in the same minimal clause), this would lend support to the hypothesis that adverbial verbs are the realization of heads of Cinque adverbial phrases. If, on the other hand, adverbial verb constructions are biclausal, this would instead lend some support to the view that these constructions are the adverbial construction corresponding to the predicative realization of certain NP quantifiers. A battery of tests was devised to identify clausal boundaries. These will be covered in detail in section 3.4, as will the results.

2.5 Co-occurrence restrictions
The predication process which extracts arguments to a subject position in a language like English is a mechanism which operates once per clause. If what causes verb-initial order is a mirror image of this mechanism, we would also expect it to operate once per clause. If, then, adverbial verbs and predicative quantifiers are also an instance of this same mechanism, we should expect to find co-occurrence restrictions between these phenomena. These can be divided into further sub-issues, as shown below.

2.5.1 Can adverbial verbs co-occur with verb-initial word order?
If it is a once-only application of a single mechanism which causes both adverbial verbs and verb-initial order, we should expect to find adverbial verbs and verb-initial order in complementary distribution. In one sense, of course, this is trivially true, since adverbial verbs always precede the lexical verb, so they preclude absolute verb-initiality. However, the issue
is still relevant, since we can test for relative verb-initiality by observing where the lexical verb is placed with respect to the arguments of the clause, and ignoring its position relative to the adverbial verb.

2.5.2 Can several adverbial verbs co-occur in the same clause?
Regardless of the relation between adverbial verbs and verb-initial order, if adverbial verbs represent the result of a syntactic mechanism operating once per clause, we should expect to find no more than one adverbial verb per clause. If, on the other hand, the Cinque-based model is correct, we expect no such co-occurrence restrictions. A follow-up issue, in case such adverbial verbs co-occur, concerns ordering: is the order fixed or flexible? In the former case, this could be seen as support for a Cinque-type analysis, with discrete positions responsible for hosting various types of adverbs, while the latter is inconclusive: a Cinque-type analysis is actually compatible with a certain amount of ordering variation.

2.5.3 Can adverbial verbs co-occur with relativization?
Predicative quantification in Seediq and other Formosan languages imply taking the quantifier which refers to the argument in question and realizing it as the primary predicate of the clause, while the notional (verbal) predicate is realized within a relative construction (19a), cf. (19b).

19 a. Egu ka sino [n-mah-an=mu].
much NOM wine PRF-drink-LocF=1sG
‘I have drunk a lot of wine.’
(lit. ‘The wine which I have drunk is a lot.’)

b. Malu mah-an ka sino [n-mah-an=mu].
good drink-LocF NOM wine PRF-drink-LocF=1sG
‘The wine which I drank was good to drink.’

If the adverbial verb construction is derived syntactically by means of the same process which derives predicative quantification, and if this process can operate once per clause, we should expect that adverbial verbs should be in complementary distribution with predicative quantifiers, and also with relativization in general. Therefore it becomes a relevant issue whether or not adverbial verbs can co-occur with either of these constructions.
3. Results
In this section, we will examine each issue in detail and show which test examples were used, what results were attained and how these results affect the issue at hand.

3.1 Can an adverbial verb occur as the single verb in a clause (without a lexical verb)?
One of the first points noted is that adverbial verbs can and do occur on their own as monadic predicates, both in declaratives (20a) and imperatives (20b, c). In this respect they clearly behave like lexical verbs.

20 a. M-urux=ku naq. [Seediq]
   AF-alone=1sN just
   ‘I’ll just do it by myself.’

   b. Iya m-hemuc! [Seediq]
      PROHIB AF-at.will
      ‘Don’t be wilful / careless!’

   c. Kaa-tu qalmang! [Bunun]
      PROHIB-COMP at.will
      ‘Don’t be wilful!’

However, it appears that adverbial verbs can not take arguments directly: thus, while an adverbial verb which normally occurs together with a lexical verb (21a), the entire VP pertaining to the lexical verb can be omitted (21b), but it is ungrammatical to omit only the verb (21c). Given that the use of non-AF morphology implies the existence of a patient, it is equally ungrammatical to use the adverbial verb alone in non-AF (21d, e). Nor can the construction be rescued even if a suitable context is given (21f). Thus, this restriction appears to be rather robust in Seediq.

---

1 Seediq mhemuc and Bunun qalmang are rendered in Mandarin as 隨便 suibian, which can be translated variously into English as wilfully, for no good reason, at will, at random. The exact meaning varies from context to context.
In Bunun, on the other hand, the restriction on the use of adverbial verbs without the lexical verb is somewhat less robust. Thus, while the normal construction requires the presence of a lexical verb (22a), at least one informant accepted, after some hesitation, the omission of the verb with the object retained (22b). Still, this is only available for some adverbial verbs, cf. (22c, d).
In general, we can therefore say that in both Seediq and Bunun, the use of an adverbial verb as the single verb of a transitive clause is marginal at best, and for the most part ungrammatical. The only context where an adverbial verb may surface as the single verb in a clause is when it appears as a monadic predicate, i.e. when the entire VP is omitted. This can only occur in AF, since non-AF suggests an implied patient. In practice, this implies that an adverbial verb can only occur in isolation when it is a proform for an entire VP. This behaviour is typical of auxiliaries in English, cf. (23).

3.2 Do adverbial verbs display a full set of verbal morphology?

In both Seediq and Bunun, the lexical verb in an adverbial verb construction is always realized in AF PRS, and can bear neither voice nor T/A-marking (shown for Seediq in 24a–c), nor can it (in Seediq) realize the connegative morphology which is used together with the
negation *ini* and in some other contexts (24d–f). The same morphological restriction is illustrated for Bunun in (24g, h), with the difference that Bunun has no category of connegative.

24  a. M<n>hmet-an=mu m-imah sino kiya.
    <PST>at.will-LF=1sE ActF-drink wine that
    ‘I drank that wine with no thought about the consequences.’

    b. N-mah-an=mu sino kiya.
    PRF-drink-LocF=1sE wine that
    ‘I drank that wine.’

    c. *M<n>hmet-an=mu mah-an / n-mah-an /
    <PRF>at.will-LocF=1sE drink-LocF PRF-drink-LocF
    m-n-imah sino kiya.
    AF-PST-drink wine that

    d. Ini=mu mah-i sino kiya.
    NEG=1sE drink-PF.CNG wine that
    ‘I didn’t drink that wine.’

    e. Ini=mu mhmet-i m-imah sino kiya.
    NEG=1sE at.will-PatF.CNG ActF-drink wine that
    ‘I didn’t drink that wine recklessly.’

    f. *Ini=mu mhmet-i / mhemuc
    NEG=1sE at.will-PatF.CNG at.will.ActF.CNG
    imah / mah-i sino kiya.
    drink.ActF.CNG drink-PatF.CNG wine that

    g. ni-tu qalmang-u-ku ma-baliv ca huluc dii
    NEG-COMP wanton-PatF-1sE ActtF-buy NOM clothes this
    ‘I didn’t just buy these clothes for no reason.’
h. *ni-tu qalmang-u-ku baliv-un ca huluc dii
   NEG-COMP wanton-PatF-1sE buy-PatF NOM clothes this

The Formosan language Tsou is unusual in that the lexical verb in such a construction retains
the morphological marking of voice. Thus, in (25a–c), the lexical verbs are realized in three
different voice forms. In contrast, however, the adverbial verb and the temporal coverb both
only realize a distinction between AF and non-AF (glossed UF). There is no corresponding
*a'ha'neni.

25 a. Ø-o-si-cu aha' - va eh-tothom-neni le-tothom-neni
   UF-PR-3-PF sudden-UF against-fight-BF hit-fight-BF
   na 'e eatatiskova
   ART DEM person
   ‘She suddenly attacked the man and fought him.’ (Szakos 1994:2)

b. m-oh-cu aha' o mi-hcihei ho mi-se'u to ti'nı
   AF-PRET-PF sudden.AF AF-teethbare & AF-grimace LOC cliff
   ‘Suddenly she bared her teeth and grimaced towards the cliff.’ (Szakos 1994:6)

c. Ø-i-si-cu nana aha' - va ait-i na...
   UF-PRES-3-PRF QUOT sudden-UF see-UF then
   ‘It was suddenly seen then...’ (Szakos 1994:82)

On the surface, therefore, we seem to have a crucial difference between Seediq and Bunun on
the one hand, and Tsou on the other. In the former type of language, we have the major
distinctions realized in the morphology on the adverbial verb or other preverb, whereas in the
latter, the relevant distinctions are instead realized on the lexical verb. The surface appearance
is illustrated in (26).

26
   1st PREVERB  2nd PREVERB LEXICAL VERB
   Seediq, Bunun   +   -   -
   Tsou defective   defective   +
This binarity would seem to indicate that the major difference between Tsou and other Formosan languages is simply the locus of voice morphology, whether or not it is realized on the highest element in the verb chain, or on the lowest. The syntactic mechanisms involved would be rather problematic, however, since it would entail that essentially the same morphological category is realized in two radically different syntactic positions in Tsou vs. the other Formosan languages. Further, it also leaves another asymmetry unaccounted for: why is it that the elements which do not bear the full voice contrast still realize defective morphology in Tsou, while corresponding elements in Seediq and Bunun realize no distinctive morphology at all? Could it be the case that the adverbial verb in e.g. Seediq is also subject to some restrictions reminiscent of those in Tsou?

Initially, this proposal does not look so promising: in Seediq, for instance, the adverbial verb can realize virtually the full set of morphology available to verbs: over and above typical voice morphology and connegative morphology, it can bear T/A (27a, b), mood (27c–f), and even causative (27g) and desiderative morphology (27h).

```
27  a.  M<n>hemuc=ku  m-imah  sino  cbeyo.
      <PST>-at.will=1sN  ActF-drink  wine  long.ago
      ‘I used to drink wine recklessly long ago.’

    b.  m-p-burux=ku  m-apa  qhuni  kiya
      ActF-FUT-alone=1sN  ActF-carry  tree  that
      ‘I will carry that tree alone.’

    c.  Mhmet-o=ta  m-imah  sino  nii
      at.will-PatF.HORT.=1pINCL  ActF-drink  wine  this
      ‘Let us just drink this wine.’

    d.  Bleq-i  mtahu  ka  hlama.
      well-PatF.CONNEG  ActF-kindle  NOM  steamed.rice
      ‘Make a good fire under the steamed rice.’
```
e. uka mhmet-an m-imah (ka) sino kiya
not.have at.will-LocF ActF-drink NOM wine that
‘That kind of wine can't just be drunk for no reason just like that.’

f. uka qbsyaq-an m-enaq alang m-sekuy kiya
not.have long.time-LocF ActF-stay village ActF-cold that
‘That cold village is impossible to stay a long time in.’

g. ini=mu p-hmet-i m-imah sino (ka) laqi=mu
NEG=1sG CAUS-at.will-PatF.CNG ActF-drink wine NOM child=1sG
‘I deliberately refrain from giving my child wine to drink.’

h. mk-suupu=mian m-ekan ido
DES-together-1pEXCL ActF-eat rice
‘We want to eat rice together.’

However, while Seediq does display a great variety of verb morphology on its adverbial verbs, IF seems crucially to be missing. In many cases, the realization of an IF construction is simply ungrammatical (28a). In other cases, the $s$-prefix may be realized, but does not seem to convey any instrumental meaning (28b). Similarly, while a form identical IF IMP can be used for imperatives on adverbial verbs (28c), the same imperative construction can also use the indicative IF marker $s$– (28d), which is otherwise never found on imperatives, or simply the root of the verb itself (28e).

28 a. *s-knteetu=daha m-ekan ido ka atak
InsF-often=3pG ActF-eat rice NOM chopsticks
‘They often eat with chopsticks.’

b. S-pcenga=mu m-ekan tmaku.
InsF?-seldom=1sG ActF-eat tobacco
‘I'll just smoke occasionally.’
c. Pcenga-ani hari m-ekan=su tmaku!
seldom-InsF.IMP a.bit ActF-eat=2sN tobacco
‘Smoke a little less often!’

d. S-pcenga hari m-ekan=su tmaku!
InsF?-seldom a.bit ActF-eat=2sN tobacco
‘Smoke a little less often!’ (more emphatic)

e. Pcenga hari m-ekan=su tmaku!
seldom.ActF.IMP a.bit ActF-eat=2sN tobacco
‘Smoke a little less often!’

More importantly perhaps, the s-prefix can also be realized together with the marker for PF IMP (29a), suggesting that it is simply an emphatic marker in contemporary Seediq, cf. the slightly less emphatic example (29b), where the s-prefix is lacking.

29  a. S-bleq-i pure damac=su! IF? + PatF
   InsF?-well-PatF.IMP cook food=2sG
   ‘Cook your food well!’ (emphatic)

   b. Bleq-i pure damac=su!
   well-PatF.IMP cook food=2sG
   ‘Cook your food well!’ (not so emphatic)

It appears from the above that IF morphology, when realized on an adverbial verb, is not actually a morphosyntactic marker of Instrument Focus, but only an emphatic marker, which may, but need not, be etymologically related to Instrument Focus – there are other cases of s-prefixes with entirely different functions.

Note that the lack of distinctive IF on adverbial verbs does not carry over to other cases of preverbs (30a, b), although cases like these are also generally very infrequent. Normally, IF is only found on lexical main verbs when they are the single verb of the clause.
30  a. Su-usa=daha m-angal qhuni mdengu.
    IF-go=3pE. AF-take wood dry
    ‘They went to fetch dry wood for it (to light a fire to heat it).’

    b. Su-usa=daha c<m>uwaq qcurux yayung ma ruru.
    IF-go=3pE. <AF>-sprinkle fish river & stream
    ‘They go to sprinkle with it over the fish in the rivers and streams.’

Therefore, the lack of distinctive IF morphology seems to be more specific of adverbial verbs rather than of a coverb as such. This could conceivably be attributed to adverbial verbs being a separate word class distinct from lexical verbs.

Similarly, while adverbial verbs are often realized in LF morphology (31a), this does not seem to entail any locative reading. Recall the fact that contemporary Seediq use LF PST to express simple non-AF past tense. Further, if a locative reading is forced by use of LF PRS, the result is ungrammatical (31b). It does not help to use LF PST for grammaticality, and to attempt to force a locative reading by means of the semantic context. While the result is grammatical, the meaning is aberrant: the locative reading is still not available (31c).

31  a. M<n>hmetan=mu beebu huling kiya.
    <PST>at.will-LF=1SG beat dog that
    ‘I just beat that dog for no good reason.’

    b. *bleq-an=daha t<m>inun ubung kiya
    well-LF=3PE <AF>weave loom that

    c. !b<n>leq-an=daha t<m>inun ubung kiya
    <PRF>well-LF=3PE <AF>weave loom that
    ‘!They wove that loom well.’ (!"on that loom")

The Seediq facts carry over to Bunun: given the lack of a semantically robust LF distinction in contemporary Takituduh Bunun, this can only be illustrated with the behaviour of IF. While an adverbial verb like dagaqanin ‘every day’ has a corresponding PF form (32a), attempts to elicit the cooccurrence of such an adverbial verb with an IF construction, e.g. by
means of relativizing on the instrument, led to the IF morphology being realized on the lexical verb instead (32b). When given a hypothetical form *is-daqaqanin-ku* ‘IF-everyday-1sE’ and asked to continue the utterance, the typical answer of the informant was, after a long hesitation, to repeat IF morphology on the lexical verb (33c), showing that a) the construction was unnatural to him; and b) he no longer attaches any meaning to the IF morpheme used in this manner.

32 a. daqaqanin-u-ku asu ma’anak
   every.day-PatF-1sE 2sN hit
   ‘I hit you every day.’

b. iica ca via daqaqan is-kulut-ku-s qasu-a
   where NOM knife everyday IF-cut-1sE-OBL meat-DEM
   ‘Where's the knife I cut meat with?’

c. ?iica ca via is-daqaqanin-ku is-kulut-is qasu-a
   where NOM knife IF-everyday-1sE IF-cut-OBL meat-DEM
   ‘Where's the knife I cut meat with?’ (forced)

It follows that adverbial verbs in both Seediq and Bunun, while they display a wide range of verbal morphology, crucially lack exactly the voice categories which are lacking in Tsou adverbial verb constructions. That they are not realized at all in Tsou, rather than being harnessed for other purposes, as in Seediq, is presumably due to the fact that Tsou realizes T/A/M by means of a host of clause-initial particles rather than as part of the verbal morphology per se, so voice morphology is less likely to become part of the T/A/M system. What crystallizes out of this is a surface difference between Tsou and Seediq which disguises an underlying similarity. Neither language allows adverbial verbs to express the semantic categories of IF and LF.

Incidentally, it is exactly these voice categories which are relevant for the behaviour of prototypical verbs (while the AF / non-AF distinction is in part an issue of prototypical transitivity and relevant for the entire clause, LF and IF are, in their original function, more semantically determined, and refer to the argument structure of individual verbs).
For present purposes of this project, this shows that data from Tsou and Seediq can be relevant for one another, as far as voice morphology is concerned. This is the relevant conclusion which we shall focus on here.

3.3 Can all kinds of adverbial meanings be encoded by verbs?

This issue is important to determine whether adverbial verbs are a typological property of the languages where they occur, or simply a lexical fact about certain word. For example, it can hardly be considered a typological feature of English that, beside the adverb often, habituality can also (in past tense) be expressed by a verbal construction, namely used to. Similarly, the existence of the habitual verb bruka ‘to use to’ in Swedish does not warrant an account of Swedish syntax which includes the generalized expression of adverbial meaning as verbs. It is only if the word class realization is systematic and consistent that it becomes interesting to try to find a typological account.

An important issue here is how we can recognize verbs: an obvious criterion is morphology: what can bear voice and T/A morphology must be considered morphologically verbal (33a). Further, in Bunun, which as we recall is a VSO language, the initial V slot can be occupied not only by morphologically recognizable verbs (adverbial or otherwise), but also by other elements, such as the negation ni (33a), amin ‘also’ (33b), which also can realize verbal morphology (33c), as well as the negated form ni amin ‘neither’ (33d). This slot can also be occupied by the reflexive anak-anak ‘oneself’ (33e).

33  a. ni ca Alang ma'anak tama-nak
    NEG NOM Alang hit father-1sG
    ‘Alang didn’t hit my father.’

    b. amin azak manahip
    also 1sN happy
    ‘I am also happy.’

    c. amin-u-ku sadu ca uva'az-un
    also-PatF-1sE see NOM child-DEM
    ‘I saw all the children.’
d. ni amin ca tina-k-inak maqanciap malas-Bunun bazbaz
   NEG also NOM mother-LNK-1sG able speak-Bunun language
   ‘My mother doesn’t speak Bunun either.’

e. anak-anak ca Alang malimaq
   REFL NOM Alang like
   ‘Alang likes himself.’

We also recall that the type of element in Bunun which can occupy the initial verbal slot is also the type of element which can attract NOM clitics (34a), while elements which do not occupy this position do not attract cliticization either (34b, c). It therefore follows that the ability to attract clitics is, if not a distinctly verbal property, a feature which is in some sense functionally related.

34. a. anak-anak-ak sadu ha'an tidanuman
   REFL-1sN see LOC mirror
   ‘I see myself in the mirror.’

b. *maca ca Alang muca'an Taipei...
   if NOM Alang go Taipei

c. *maca-ak muca'an Taipei...
   if-1sN go Taipei

We can, as the result of this, functionally categorize elements in the left margin of the clause in terms of increasing concretion, coupled with increasingly verbal properties (35). This functional ordering actually reflects the linear of these elements when they cooccur in the clause.
<table>
<thead>
<tr>
<th>NOM.CLITIC</th>
<th>VERB</th>
<th>VERB</th>
<th>ERG.CLITIC</th>
<th>ARGUMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOST</td>
<td>SLOT</td>
<td>MORPH</td>
<td>HOST</td>
<td>STRUCTURE</td>
</tr>
<tr>
<td><em>maca</em> ‘if’</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>ni</em> ‘NEG’</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>anak-anak</em> ‘REFL’</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>daqaqanin</em> ‘every day’</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td><em>ma'un</em> ‘eat’</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

All elements which are marked with "+" in the table in (35) can be considered to share some syntactic properties with verbs, even when they are unable to bear verbal morphology. Being a verb is not a question of either-or, but rather a question of degree, where prototypical lexical verbs such as *ma'anak* ‘hit’ are the most verbal, while the negation *ni* ‘not’ only shares some of the features typical to verbs.

In Bunun, verbal morphology such as voice must be especially targeted in elicitation, by means of relativization or other mechanisms, so it is often less straightforward in Bunun to identify in which category to place the realization of an adverbial meaning. Further, we often find patterns where the relevant voice morphology can be realized on either of two adverbial verbs in the clause (36a–d).

36

a. *uskun-u-ku mahanat ca qasu*
together-PatF-1sE cook NOM meat
‘I cook these pieces of meat together.’

b. *muskun-ak su'un panak-an=cia*
together-1sN 2sOBJ beat-PatF=3sE
‘I and you were beaten by him.’

c. *titini-k-ak ludaq-un-cia*
alone-1sN beat-PatF=3sE
‘I alone was hit by him.’
This type of behaviour is also attested in Kavalan and Puyuma (Chang 2006, Li 2007, respectively). In Seediq, however, the only alternation of this kind concerns clitic attraction, not voice morphology (37a, b), and is very infrequent.

37  a. Ncuin sa-an=daha m-ita, sa-adis=daha timu.

sometimes go-LocF=3pE ActF-see InsF-bring=3pE salt

‘Sometimes they go and see it (the cow), and bring it some salt.’

b. Ncuin=ku m-usa Taihoku.

sometimes=1sN ActF-go Taipei

‘Sometimes I go to Taipei.’

For these reasons, it is more straightforward to classify different types of adverbial meanings in Seediq. On the other hand, Seediq, being a VOS language, does not have a discrete subject position intervening between an initial verb and the remainder of the clause. It does, however, have (NOM and ERG) cliticization to the verb or other preverbal elements which shows a rather similar pattern to that in Bunun, the main difference being that, in Seediq, subordinators (but not conjunctions) are also potential clitic hosts (38).

<table>
<thead>
<tr>
<th>38.</th>
<th>CLITIC HOST</th>
<th>VERB MORPH</th>
<th>ARGUMENT STRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>anisa ‘but’</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ado ‘because’</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ini ‘NEG’</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>seung ‘of course’</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>mhemuc ‘wantonly’</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>mekan ‘eat’</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>
In Seediq, we find that adverbials of manner and frequency are regularly realized by elements which bear verbal morphology (39a). However, other types of adverbial meaning are morphologically invariant, although they still display clitic attraction (39b–e).

39  a. m-n-seung=ku s<me>elaq pngerax
ActF-PST-on.purpose=1sN <ActF>-destroy bowl
‘I broke the bowl on purpose.’

b. uxe=ku beyo maha Taihoku
NEG.NOM=1sN long ActF-go Taipei
‘I’ll soon go to Taipei.’

c. Hani=daha bale s<n>paq-an babuy nii.
just=3pE very <PRF>-kill-LocF pig this
‘They have just killed this pig.’

d. Tena=ku m-n-ekan ido.
already=1sN ActF-PST-eat rice
‘I’ve already eaten.’

e. maka=ta wada m-suupu m-imah sino
must=1pINCL PST ActF-together ActF-drink wine
‘We must have been drinking wine together.’

f. soo=ku hari uka pila
like=1sN a.bit not.have money
‘Apparently I don’t have money.’

Similarly, adverbials of comment attract pronominal cliticization, but do not bear voice morphology (40a–c).

40  a. Pgluwe=ku ba uka pila usa sapah.
pity=1sN very not.have money go house
‘It's a pity I have no money to go home.’
b. malu=ku ba niqan kingan rulu  
good=1sN very have-LocF 1 car  
‘It's fortunate that I have a car.’

c. Seung=su naq maha m-kela  
of.course=2sN just FUT ActF-know  
m-rengo kari seediq ka isu.  
ActF-speak language Seediq NOM 2sN  
‘Of course you speak Seediq.’

Finally, a wide variety of adverbial meanings are expressed by means of final particles, which do not attract cliticization, but which are arguably also heads, cf. Holmer (2005) for a discussion (41a–c).

41 a. Netun=su m-imah sino, bsukan=su dhenu.  
if=2sG ActF-drink wine drunk=2sN consequently  
‘If you drink wine, you will get drunk.’

b. Wada qyux-un alang Tongan sa.  
PST rain-PatF village Tongan QUOT  
‘It is said that it rained in Tongan.’

c. M-iicu m-oda habung seediq peni.  
ActF-fear ActF-pass grave person well.you.see  
‘You see, people are afraid of passing by a grave.’

If we compare the distribution of adverbial meanings across these types, we see that adverbial meanings are expressed by syntactic heads, rather than specifically verbs. Adverbial verbs seems to be primarily heads, and only secondarily verbs. Even more interestingly, it appears that adverbial meanings which are expressed by verbs which can be inflected for voice are typically low adverbs, i.e. of the type generally assumed to located structurally below inflection in generative models.
This can be captured very neatly in a syntactic structure as in (42) where certain adverbial elements are located in head position above Infl (simplified to a single position Adv1 in the structure), while other adverbial elements are located in head positions below Infl (similarly simplified to Adv2).

42. 

```
        Adv1P
       /      \       
      Adv1°  InflP   
           /      \    
          Infl      SUBJ
                   /      
                   Infl°   Adv2P
                              /  
                              Infl°   Adv2°
                                      /    
                                      Adv2°   VP
                                             /  
                                             V'    AGT
                                                  /  
                                                  V°    OBJ
```

An adverbial originating in Adv2° would, according to the Head Movement Constraint (Travis 1984), be the only possible candidate to receive relevant verbal morphology, leaving the verb uninflected, while an adverbial originating in Adv1° would, for the same reasons, not be inflected. This is exactly what would be predicted by the model which is based on Cinque (1999), and is discussed in more detail in Holmer (in press).

Subject to the caveats outlined above, similar facts obtain in Bunun. Adverbial heads which occupy the verbal slot include *laqua?* ‘when?’ (43a), *nanu’*indeed’ (43b) and *mupia?’how often?’ (43c).

43  a. laqua= su  sadu  zaku?
    when=2sN  see  1s.OBJ
    ‘When did you see me?’

b. nanu’ak  manahip
indeed-1sN  happy
‘I am indeed happy.’
c. mupiak-as mun-Qabizan?
   how-often-2sN go-Puli
   ‘How many times have you been to Puli?’

3.4 Are adverbial verb constructions biclausal?

The data so far would seem to indicate that the optimal analysis is that based on Cinque’s (1999) model where adverbials are located in hierarchical structures in the backbone of the clause rather than adjoined to various levels in the clause. Such a model would seem to predict that adverbial verb constructions would be mono-clausal. In contrast, the predication hypothesis crucially predicts biclausality in such context. Therefore it is important to determine whether adverbial verb constructions are monoclusal or biclausal.

Unfortunately, monoclusalitv and biclausality are difficult to recognize in a language like Seediq. First, Seediq has no overt complementizer. Second, subject position in Seediq is final, so its position can not serve as a clue to clausal boundaries (44a, b). Finally, Seediq allows optional clitic climbing from an embedded clause to a matrix clause (44c, d), so positioning of clitic pronouns is not a suitable clue either.

```
44 a. M-nhuwe [m-ekan hlama ka laqi=mu].
   ActF-slowly ActF-eat steamed.rice NOM child=1sG
   ‘My child eats steamed rice slowly.’

b. [M-nhuwe m-ekan hlama] ka laqi =mu.

c. kla-an=su=mu maha inu saya
   know-LocF=2sN=1sE go where now
   ‘I know where you are going now.’

d. kla-an=mu maha=su inu saya
   know-LocF=1sE go=2sN where now
   ‘I know where you are going now.’
```
There are, however, some rather robust tests we can make use of. Firstly, clitic climbing from clause to clause is only available for nominative pronouns: an ergative pronoun may not raise outside its clause (45a, b).

45  a. kla-an=su=mu  b<n>be-an=na  
  know-LocF=2sN=1sE  <PRF>hit-LocF=3sE  
  ‘I know that he hit you.’

b. * kla-an=su=mu=na  b<n>bean  
  know-LocF=2sN=1sE=3sE  <PRF>hit-LocF

Secondly, while nominative clitic climbing from clause to clause is optional, clitic raising (of both nominative and ergative clitics) to the highest head position within the minimal clause is obligatory (46a–c).

46 a. Uka hari qolic yqeyaq saya da,  
  not.exist very rat field now PRF  
  ado=daha cyaq-an iyu yqeyaq saya.  
  because=3pE pour-LocF chemicals field today  
  ‘There aren’t many fieldmice left today, because they use pesticides.’

  a’. * ... ado cyaq-an=daha iyu yqeyaq saya.  
  because pour-LocF=3pE chemicals field today

b. Wada=mu puq-un damac h<n>pray-an=su.  
  PST=1sE eat-PatF=1sE food  <PRF>cook-LocF=1sE  
  ‘I ate the food that you cooked.’

  b’. *Wada puq-un=mu damac h<n>pray-an=su.  
  PST  eat-PatF=1sE food  <PRF>cook-LocF=1sE

c. Netun=su muure, mhemuq naq skadi uq-un=su hini.  
  if=2sN hungry wanton just seek eat-PatF=2sG here  
  ‘If you are hungry, feel free to look for something to eat here.’
c'.  *Netun  muure=su...
    if  hungry=2sN

Taken together, obligatory raising of both the nominative and the ergative clitic indicates
mono-clausality, while optional raising of the nominative clitic with no corresponding raising
of the ergative clitic instead indicates biclausality of the construction. Adverbial verb
constructions regularly involve the obligatory realization of the ergative clitic on the adverbial
verb (47a, b), which suggests that the constructions are mono-clausal, as would be expected
under the analysis based on Cinque’s model.

47  a.  mnhmet-an=mu  s<m>ebuc  huling  kiya
    wanton.LocF.PRF=1sE  <ActF>-beat  dog  that
    ‘I wantonly hit that dog.’

   a'.  *m<n>hmet-an  s<m>ebuc=mu  huling  kiya
        <PRF>wanton-LocF  <ActF>beat=1sE  dog  that

   b.  m-urux=ku  m-imah  sino
    ActF-alone=1sN  ActF-drink  wine
    ‘I drink wine alone.’

   b'.  *m-urux  m-imah=ku  sino
        ActF-alone  ActF-drink=1sN  wine

Another possible clue of clausal status might be the fact that a clause can be defined as the
minimal level which contains an instance of predication, which in turn can straightforwardly
be recognized by the possibility of negation. In Seediq, we see that the ordering of adverbial
verb and negation appears to be subject to scopal variation (48a–d). This variation might be
taken as evidence suggesting biclausality for the constructions involved, contrary to the
conclusions we could draw from cliticization facts in the same examples. However, it should
be noted that what we see is not independent negation of each level, but rather variation in the
relative ordering of the elements involved. Thus, the negation can not occur twice, with any
reading (48e).
48 a. Kntte-un=daha ini qita ka hido
often-PatF=3pG NEG see.ActF.CONNEG NOM sun
‘They often don’t see the sun (they often miss it for some reason).’

b. Ini=daha kntte-i q<im>ita ka hido.
NEG=3pG often-PatF.CNG <ActF>-see NOM sun
‘They don't often see the sun (e.g. because the sun doesn't often come out).’

c. kntte-un=mu ini imah sino
often-PatF=1sG NEG drink.ActF.CNG wine
‘I often don't drink wine (but take something else instead).’

d. ini=mu kntte-i m-imah ka sino
NEG=1sG often-PatF.CNG ActF-drink NOM wine
‘I don't often drink wine.’

e. *ini=mu kntte-i ini imah (ka) sino
NEG=1sG often-PatF.CNG NEG ActF-drink NOM wine
(‘I don’t often not drink wine.’)

Thus, the data we have seen so far suggests that the constructions are mono-clausal. This is supported by the fact that only the adverbial verb in such constructions is finite enough to bear voice morphology which is distinctive (other elements being realized in AF by default).

Note that the ordering variation does not always obtain: thus, the adverb of manner mhemuc ‘wantonly, at will’ must follow the negation (49a), despite the fact that the opposite reading in (49b) would be semantically more felicitous. Instead, if one wishes to express the desired reading in (49b), a total rephrasing is required (49c).

49 a. ini=su mhemuc m-usa m-eepeah
NEG=2sN at.will ActF-go ActF-work
‘You don’t wantonly just go to work.’
(i.e. ‘You only work when necessary, otherwise you don't go.’)
b. *m-mhemuc=su ini usa m-eepah
   ActF-at.will=2sN NEG go.ActF.CONNEG ActF-work
   (‘You wantonly just don’t go to work.’)
   (i.e. ‘You wantonly / for no good reason just refuse to go to work.’)

c. m-bserux=su m-usa m-eepah
   ActF-lazy=2sG ActF-go ActF-work
   ‘You are lazy / reluctant to go to work.’

This difference between *mhemuc ‘wantonly’ and *knteetu / *kntteun ‘often’ is difficult to
account for in terms of semantic compatibility. However, it is easily expressed in terms of a
schema of ordered slots for different adverb, under the assumption that frequency adverbs can
be realized in two different slots, depending on whether or not they have scope over the
negation, while manner adverbs always have lower scope than negation (50).

50. FREQ - NEG - FREQ - MANNER - V

The same pattern is found with adverbs in English: while frequency adverbs can vary in scope
with respect to negation, manner adverbs generally must take lower scope than negation. It is
not, however, a typical feature of auxiliaries. While hierarchical ordering of auxiliaries can
vary cross-linguistically (51a, b), it is generally fairly strict within a given language (51b, c).

51. a. We should have bought the beer.

   b. Wir hätten das Bier kaufen sollen. (German)
      we had the.beer buy should.INF
      ‘We should have bought the beer.’

   c. *Wir sollten das Bier gekauft haben. (German)
      we should the.beer bought have

So far the picture is appearing of a mono-clausal structure with the kind of ordering variation
with respect to negation which is typical of adverbs in general, suggesting that adverbiai verbs
pattern with adverbs (excepting the crucial difference that they behave, morphologically and syntactically, like verbs). The question remains whether there is any evidence of biclausality in adverbial verb constructions.

One thing we notice is that while clitic raising is obligatory for indicatives (52a, b), it appears to be ungrammatical in imperatives (52c, d). The same pattern holds for ActF constructions (52e, f), a point which will become important presently.

52  a. knhwa-un=mu m-imah ka begu
    slowly-PatF=1sE ActF-drink NOM broth
    ‘I’ll drink the broth slowly.’

    b. *knhwa-un m-imah=mu ka begu
    slowly-PatF ActF-drink=1sE NOM broth

    c. *knhwa-i=su hari m-imah begu
    slowly-PatF.IMP=2sE a.bit ActF-drink broth

    d. knhwa-i hari m-imah=su begu
    slowly-PatF.IMP a.bit ActF-drink=2sN/E broth
    ‘Drink the broth more slowly!’

    e. *knuwe=su m-imah begu!
    ActF.IMP.slowly=2sN ActF-drink broth

    f. knuwe m-imah=su begu!
    ActF.IMP.slowly ActF-drink=2sN broth
    ‘Drink broth more slowly!’

The above data could be taken to suggest that while adverbial verb constructions in indicative mood are obligatorily mono-clausal, the corresponding constructions in the imperative are equally obligatorily biclausal. This is a rather strange pattern and deserves further comment.
Firstly, it should be noted that while this restriction holds for both ergative and nominative clitics, in the latter case this is only true in ActF constructions (such as 52e, f above). In PatF, NOM clitic raising is instead obligatory (53a, b). The same pattern holds for coverbs which are not adverbiaial verbs (53c). This shows that the restriction is not on a particular case form of a pronouns, but rather on a particular function, namely that of Actor: in an imperative construction, an Actor can not be realized in the canonical clitic position. In fact, in (53a, c), the Actor is not realize at all, and this is actually the general pattern with Seediq imperatives (53d, e), although counterexamples do seem to occur (53f).

53  
a. iya=ku mhmet-i beebu  
   PROHIB=1sN wanton-PatF.CNG hit  
   ‘Don’t hit me for no reason.’  

b. *iya mhmet-i=ku beebu  
   PROHIB wanton-PatF.CNG=1sN hit  

c. yahi=ku s<m>riyux k<m>ari cikuh  
   come-PatF.IMP=1sN <ActF>cooperate <ActF>dig a.bit  
   ‘Come help me dig a bit!’  

d. *mah-i=su ka sino!  
   drink-Patf.IMP=2sG NOM wine  
   (‘Drink the wine!’)  

e. bleq-i s<m>ino ka sama kiya!  
   well-PatF.IMP <ActF>-wash NOM vegetables that  
   ‘Wash those vegetables properly!’  

f. Iya=saku phlis-i!  
   PROHIB=2sE->1sN laugh-PF.IMP  
   ‘Don’t laugh at me!’²

² This example is quoted from a modern record track in the Truku dialect by the group Sedek. It might not be representative of colloquial Seediq. Alternatively, the ban on the overt realization of actors in imperatives might not hold for portmanteau forms.
A follow up question is why the Actor clitic is realized on the lower verb in examples like (52f), repeated here as (54a). What examples such as this illustrate is not the lack of clitic raising, but rather the splitting of the original structure into two separate clauses, along the lines of (54b). The purpose of this split is presumably to allow the Actor to be realized overtly, despite the ban outlined above.

54  a. knhuwe m-imah=su begu!
    ActF.IMP.slowly ActF-drink=2sN broth
    ‘Drink broth more slowly!’

    b. [knhuwe! [mimah =su begu]]
    Do it slowly! (when) [You drink broth]

In non-imperative contexts, where there is no ban on realizations of certain arguments, biclausal strategies can be more readily recognized when they occur. In such cases, the clitic pronouns are realized twice, once in each minimal clause. Degree of sufficiency is expressed in Seediq with the predicate *baka* ‘to be sufficient’ taking a nominalized clause as its single argument. In this construction, certain adverbials require an obligatory split into a biclausal structure (55a, b). Other adverbials allow monoclausal structures in the same construction type (55c, d), the difference apparently being lexically determined.

55  a. ini baka k<n>tngi-an=mu m-ekan=ku bunga
    NEG enough <PST>-full-LocF=1sG ActF-eat=1sN sweet.potato
    ‘I have not eaten my fill by eating sweet potatoes.’

    b. *ini baka k<n>tngi-an=mu m-ekan bunga
    NEG enough <PST>-full-LocF=1sG ActF-eat sweet.potato
    (‘I have not eaten my fill by eating sweet potatoes.’)

    c. ini baka b<n>leq-an=su s<m>malu sapah
    NEG enough <PRF>well-LocF=2sG <ActF>make house
    ‘You haven’t built the house well enough.’
d. ini baka p<n>skret-an=su m-ekuy quwaq salo
   NEG enough <PRF=tight-LocF=1sG ActF-tie mouth jar
   ‘You haven’t stopped up the opening of the jar tightly enough.’

One possible account for this difference might be the fact that the stem mtengi ‘full’ (of which knntngian ‘fullness’ in (55a) is a nominalization) is actually an adjective, as can be recognized by the fact that its connegative form bears the typical k–rq– prefix (56a), which indicates the connegative of an adjective, cf. (56b).

56  a. ini=ku ktengi na
    NEG=1sN CNG-full yet
    ‘I am not full yet.’

   b. ini ktanah ka phepah
      NEG CNG-red NOM flower
      ‘The flower is not red.’

Similarly, bsiyaq ‘for a long time’, which is also, morphologically speaking, an adjective (57a), also seems to prefer biclausality, cf. the fact that it has fully optional clitic climbing (57b, c). However, at the same time, bsiyaq also allows clitic raising of the ergative (57d, e), indicating that these constructions are monoclausal.

57  a. ini=ku qbsiyaq menaq hini
    NEG=1sN long.time stay here
    ‘I haven’t been here long.’

   b. bsiyaq=mian m-enaq Taiwan
      long.time=1pEXCL ActF-stay Taiwan
      ‘We have stayed in Taiwan for a long time.’

   c. bsiyaq m-enaq=mian Taiwan
      long.time ActF-stay=1pEXCL Taiwan
      ‘We have stayed in Taiwan for a long time.’
d. bsiyaq=mu p<n>ray-an ka sari
   long.time=1sE <PRF>cook-LocF NOM taro
   ‘I have been cooking the taro for a long time.’

e. Bsiyaq=mu ini spi-i sk-bubu=mu.
   long.time=1sE NEG dream-PatF.CNG late-mother=1sG
   ‘I haven’t dreamt of my deceased mother for a long time.’

The reader will have noticed that bsiyaq bears no verbal morphology in the preceding examples, the relevant morphology being realized on the following verb instead. This is particularly clear in (57d, e). Still, bsiyaq does at times display verbal morphology, sometimes in a purely verbal construction (58a), and sometimes in more specialized constructions which entail nominalization (58b, c). Note that such constructions are also available with distinctive voice morphology on the lexical verb, so that both bsiyaq and the lexical verb realize voice (58d), which constitutes clear evidence of biclausality.

58  a. Sari qlmuqun nii, ini=daha qbsyaq-i pure heya
   qlmuqun taro this NEG=3pG long.time-PatF.CONNEG (ActF).cook 3s
   ‘As for qlmuqun taro, they don’t cook it too long.’

   b. Ini baka q<n>bsyaqan pure=su siyang.
      NEG enough <PRF>long.time-LocF cook=2sN pork
      ‘You haven’t cooked the pork long enough.’

   c. Uka qbsyaq-an niqan alang msekuy kiya.
      NEG.EXIST long.time-LocF stay village cold that
      ‘It’s impossible to stay for a long time in that cold place.’

   d. Ini baka q<n>bsyaq-an pnrayan=su siyang.
      NEG enough <PRF>long.time-LocF <PRF>cook-LocF=2sG pork
      ‘You haven’t cooked the pork long enough.’

We have seen that the issue of mono-clausality vs. biclausality is not easily resolved for these constructions. In general, the structures tend to display more features which suggest
monoclusal, but it is clear that biclausality also occurs. In Holmer (in press) it is suggested that this apparent dual nature can most straightforwardly be captured under the assumption that adverbial verbs are restructuring verbs. This tallies well with Cinque’s (2001) analysis of restructuring verbs as the overt elements found in the heads corresponding to the adverbial specifier positions discussed earlier. In fact, the data from Formosan, which combines adverbial meaning with the syntactic properties of adverbial verbs, fits perfectly with the predictions of Cinque’s (1999, 2001) analyses.

3.5 Co-occurrence restrictions
The predication hypothesis outlined in section 1.3 predicts that adverbial verbs should preferably display some co-occurrence restrictions with respect to some other phenomena. In this section, we will investigate whether these predictions are confirmed empirically.

3.5.1 Can adverbial verbs co-occur with verb-initial word order?
In Seediq, an adverbial verb is immediately followed by the lexical verb, which in turn precedes both arguments of the clause, the only exceptions being clitic pronouns, which attach to the first head of the clause. Therefore, as far as Seediq is concerned, the presence of the adverbial verb does not affect the initiality of the verb.

In Bunun, on the other hand, there is one discrete pre-subject verbal slot, and this is occupied by the adverbial verb (59a). In this sense, one might argue that this is an instance of the adverbial verb being in complementary distribution with verb-initiality. However, if a negation is included which takes scope over the adverbial, it is this negation which occupies the pre-subject slot, while the adverbial verb still precedes the verb (59b). Adverbial verbs which take scope over the negation, such as sauqabasqabas ‘always’, occupy the pre-subject slot in their turn, relegating the negation to post-subject position (59c).

59 a. qalmang ca tama-k-inak qu-is davuc
    wanton NOM father-LNK-1sG drink-OBL wine
    ‘My father wantonly drinks wine.’

   b. ni ca tama-k-inak qalmang qu-is davuc
      NEG NOM father-LNK-1sG wanton drink-OBL wine
      ‘My father doesn’t drink wine wantonly.’
c. sauqabasqabas ca tama-k-inak ni tu qu-is davuc always NOM father-LNK-1sG NEG COMP drink-OBL wine
   ‘My father always refrains from drinking wine.’

Therefore, adverbial verbs remain adverbial verbs, and in pre-verbal position, even when they are excluded from the discrete pre-subject verbal slot.

3.5.2 Can several adverbial verbs co-occur in the same clause?
More seriously, perhaps, there is no restriction in either language on the cooccurrence of adverbial verbs with each other. When adverbial verbs cooccur, the order is furthermore usually determined by scopal considerations. This is illustrated in (60a, b) for Seediq and (60c, d) for Bunun.

60 a. Mhmet-un=daha knteetu m-imah ka sino.
    at.will-PatF=3pG often ActF-drink NOM wine
    ‘They never think of the consequences, just drink wine often.’

b. Knnte-un=daha mhemuc m-imah ka sino.
    often-PatF=3pG at.will ActF-drink NOM wine
    ‘They often drink wine for no reason.’

c. muti'un-ak daqaqanin laplaq
    thrice-1sN every.day fall.over
    ‘Three times I fell over daily.’ (e.g. three different instances of illness)

d. daqaqanin-ak muti'un laplaq
    every.day-1sN thrice fall.over
    ‘Every day I fall over three times.’

In some cases, only one order is felicitous. When this occurs, the restrictions are more or less the same as we find with the ordering of adverbs in English (61a, b).
3.5.3 Can adverbial verbs co-occur with relativization?

In both languages investigated, there are no restrictions whatsoever on the cooccurrence of adverbial verbs with relativization (62a – c). This is particularly salient in Bunun, where there are other cooccurrence restrictions on relativization, presumably stemming from the typological conflict between head-initial word order and pre-nominal relativization. In Bunun, constructions with a relative clause embedded inside another relative clause (e.g. the vegetables [which were cooked by the woman [who drank wine]]) are disfavoured: instead, either one relativization is replaced by an adjective (62d), or the head noun is omitted (62e). Either way, the structure is simplified and the double relativization is avoided. Crucially, however, no such avoidance mechanism is required for cooccurrences of relativization with adverbial verbs.

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3 In Holmer (submitted), it is argued that adverbial verbs in e.g. Seediq display the same kinds of ordering variation as in English, to the extent that it would be difficult, if not impossible, to capture them in a universal structure. Instead, it is proposed that semantic considerations, on the line of Ernst (2002), are responsible for ordering facts. Crucially, however, these ordering facts can not affect the fact that at least adverbial verbs must be heads in the backbone of the clause. In analogy, we claim that the problems pointed out by Ernst (2007) can not serve as evidence against the structure proposed by Cinque per se, only against Cinque’s account of the ordering.
From the above, it is clear that the verbal realization of adverbial meaning can not be the
once-only application of a syntactic mechanism, and that the predictions of the predication
hypothesis are thereby falsified.

4. Typology and word order

We have concluded that the predication hypothesis, as it stands, is untenable. At the same
time, it still appears to be the case that phenomena akin to adverbial verbs are overrepresented
in verb-initial languages (or languages which either have a verb-initial history or belong to a
phylum which is predominantly verb-initial). We are dealing with three different features which somehow seem to be interconnected: verb-initial word order, adverbial verbs and predicative quantification. There is no one-to-one correspondence, as can be seen from the following table of distributions (63) – certain positions have question marks, due to lack of data at present.

<table>
<thead>
<tr>
<th></th>
<th>Formosan</th>
<th>extra-Formosan</th>
<th>Nicobarese</th>
<th>Arabic</th>
<th>Maasai</th>
<th>Celtic</th>
<th>Nootka</th>
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</thead>
<tbody>
<tr>
<td>V-initial</td>
<td>+</td>
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<td>+/-</td>
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<td>-</td>
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<td>?</td>
</tr>
<tr>
<td>AdvVerbs</td>
<td>+</td>
<td>-</td>
<td>?</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
</tbody>
</table>

It is possible that we are dealing with two different correlates of verb-initial order. Predicative quantification could straightforwardly be derived by the same mechanisms which derive verb-initial word order, but this then begs the question of why it is not attested in Arabic, which does have adverbial verbs. However, as far as we can see, predicative quantification is truly predicative, which means that the objections raised to the predication model would not hold for them at any rate. Further, while a Celtic language like Scottish Gaelic does not have adverbial verbs, it does have a strong tendency to cleft adverbs (64). This would also be an instance of the same mechanism as envisaged for predicative quantification.

64. **Is tric [a bheothaich srad bheag teine mór].**
COP often REL kindle spark small.FEM fire big
‘A small spark has oft en kindled a great fire.’

The predication hypothesis attempts to capture the tendency that adverbial verbs, predicative quantifiers and verb-initial order tend to co-occur with verb-initial word order. If the hypothesis is falsified, as far as adverbial verbs are concerned, the question remains whether or not these facts can be explained in any other way. In the light of our conclusion that it is the Cinque model which is most correct, this would imply that languages with verb-initial word order are more likely to realize the heads of the Cinque functional projections than are languages with subject-initial word order. We have, to date, no satisfactory account or this generalization, if, indeed, it is statistically valid. However, we do have a tentative idea as to a diachronic path of development for adverbial verbs. One of the crucial clues comes from the

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4 One subject-initial language also displays this phenomenon, namely Ibibio (Mark Baker, p.c.). We have at present no account for the Ibibio facts, which will be deferred to future research.
Wakashan language Nootka, spoken in British Columbia. In Nootka, clause-initial adverbs regularly bear tense and agreement morphology (65a, b), data from Wojdak (2005:47).

65  a. čamaqƛʔiś  titiqs  Florence
   čamaqƛʔiiś  titiqs  Florence
   properly-3IND  dry  Florence
   ‘Florence is drying dishes properly.’

   b. wity’axits  waašiiƛ
   wity’ax-mit-s  wa†-[+L]-šiƛ
   slow-PST-1S.ABS  go.home-CONT-PERF
   ‘I was going home slowly.’

While these facts look quite similar to facts in Formosan languages, there is one crucial difference: in Formosan languages, the relevant lexical items are verbs, whenever they occur (unless subject to derivation). In Nootka, the word class membership of the word seems to play no important role. In a normal sentence, the lexical verb is the first element of the clause. It is also the verb which (trivially, it might seem) bears typical verbal morphology. However, adverbs often tend to precede verbs, and when this happens, they instead become the host of the verbal morphology. If, however, the same adverb follows the verb (which is often a case of optionality), the morphology is realized on the verb. As Wojdak shows, this also holds for clause-initial nouns, when they occur.

We see therefore that verbal morphology in Nootka is realized in a Wackernagel-like position immediately following the first lexical element of the clause. We recognize this behaviour from the distribution of clitics in Seediq (and, to a lesser extent, in Bunun). It is linearization, not lexical category, which is crucial for the realization of morphology in Nootka.

We can easily find an analogy between Nootka and the Celtic languages: both are verb-initial, and both tend to place adverbs in preverbal position (or at any rate, clefts are an unmarked stylistic option in Celtic languages). The crucial difference is that Nootka morphology is sensitive to linearization, while Celtic verbal morphology is sensitive to word class.
membership. Had this not been the case, Celtic languages may well have been of the same type as Nootka.

As the next step, if word order patterns become stricter in a language like Nootka, we would find certain sets of adverbs which are regularly or exclusively realized in preverbal position and which therefore always bear verbal morphology. If there is no longer any variation, we have no acquisitional evidence for linearization as the relevant factor for morphological realization. Instead, such elements would gradually come to be treated grammatically as verbs. We might even speculate that this development would go through two stages. The first stage would be that the relevant word is morphosyntactically verbal, but is still not semantically a verb, in that it has no argument structure of its own (a Bunun example being daqaqanin ‘every day’, cf. examples 22 c, d above). The second stage would imply gaining more verb-like properties, both morphosyntactic and semantic (cf. the behaviour of Bunun qalmang ‘wantonly’ in example 22b above, where it appears to have an argument structure of its own). In fact, as we recall from (35) above, there seems to be a cline of prototypical verbal properties found in Bunun preverbal elements, suggesting that different elements are not just either verbs or non-verbs, but rather display some, but not all, morphosyntactic properties of verbs. These facts would fit well with the present proposal. However, alternative accounts such as these are beyond the scope of the present project and are deferred to future research.

5. Summary and conclusion

To summarize the results briefly, it was shown that the Cinque-based model which proved to be empirically satisfactory. This is actually more relevant for syntactic theory than specifically for Formosan. Formosan simply happens to be the language group which provides the conclusive evidence.

It is easy to analyse adverbials in English as adjoined elements, if they are relatively high, or as elements within VP, if they are relatively low. To choose to do this differently, based on European evidence, is a bold step taken by Cinque, and might to the outsider, seem to be unmotivated. While it is possible to motivate theoretically why the Cinque model may be preferable, for various semantic reasons, these motivations still appear to be theory-internal. One potential empirical objection to Cinque’s model was hitherto that the ADV phrases outside VP was that the adverbials were always realized in the head positions, begging the question of the function of the head positions. In Cinque (1999) these positions are reserved
for certain types of verbal morphology, and in Cinque (2001) extended to restructuring verbs. Nevertheless, the connection to adverbials themselves remained somewhat diffuse. It could be, and was, accepted as part of a system to ensure theoretical economy.

Here we can safely say that the Formosan languages represent a crucial case where no alternative is possible: there is no way to account for the behaviour of adverbial verbs in Formosan languages unless we assume that they occupy positions intervening hierarchically between V and Infl (or the positions which are responsible for inflectional morphology). In Formosan, at least, Cinque’s system is visible in its entirety.

Further, in Holmer (submitted) it is shown that while the Cinque (1999) model accounts for the structures where adverbials are found, the ordering of adverbial verbs in Formosan languages is just as problematic for Cinque’s (1999) model as would be the case in English (cf. data from Ernst 2002, 2007). This implies that we find that even in languages where we can prove that the only possible structure is that proposed by Cinque, the ordering principles are still semantic (as in Ernst 2002), rather than based on universal structure. This being the case, it is clear that the issue of structure is orthogonal to the issue of ordering, contrary to what has previously been assumed in the ongoing debate between the Cinque camp and the Ernst camp. Instead, we have to find a way of reconciling the Cinque structure with semantically based ordering, and a suggestion is given in Holmer (submitted). The main thrust of this suggestion is that Cinqué’s structure represents a universal, not in categories themselves, but simply in a structure-building mechanism which can be motivated by considerations of structural economy, but which is, on the surface, virtually indistinguishable from the kinds of X’-structure traditionally assumed in generative syntax. This in turn has important implications for our view of universal syntactic principles, and this will be the topic of future research.

References


