This paper argues that the number of functional projections needed to account for clause structure can be significantly reduced if the elements of clausal inflection are analysed feature-geometrically. Specifically, Tense, Agreement, and Aspect can be straightforwardly accounted for within a single IP whose head is a dependency tree formally similar to those proposed for phonological segments. Each element in INFL has a consistent semantic interpretation, and its absence gives rise to a default interpretation. All logically possible structures are attested, and all verbal constructions in English are accounted for.

This paper argues that the elements of clausal inflection should be analysed feature-geometrically. Feature geometry is widely accepted as an approach to the structure of segments in phonology (Sagey 1986, Rice & Avery 1991); its use in syntactic analysis is still in its infancy (Harley 1994, Ritter 1997).

In recent years, several syntactic projections have been argued for in the clausal superstructure. Some of these are TenseP, AgrP (Pollock 1989, Chomsky 1989, 1993), Aspect Phrase (Travis 1991 Cowper 1997a), and Participle Phrase (Stowell 1995, Cowper 1995). These categories were argued for primarily on morphological or semantic grounds, with their heads receiving considerably more attention than their specifiers. Another set of projections has been motivated on more purely syntactic grounds, with arguments based on the properties of the occupant of their specifier position. Some of these are TopicP (Brunson 1992, Moorcroft 1995), FocusP (Zhang 1997, Koskinen 1998) and PolarityP (Culicover 1993). It is the first set of projections that lends itself to reanalysis in terms of a feature-geometric inflectional head.

The paper is organized as follows: Section 1 presents the proposed structure of Infl in English, with a discussion of each of its component parts. Section 2 shows all the possible Infls allowed by this structure, and relates them to English clause types. Section 3 discusses questions raised by the analysis, and suggests directions for further work.
1. The Structure of Infl

I propose (1) as the maximal expansion of the English Infl.

1. \[
\begin{array}{c}
\text{Infl} \\
\text{Proposition} & \text{Precedence} & \text{Event} \\
\text{Finite} & & \text{Interval} \\
\text{Deixis}
\end{array}
\]

Infl is merely a familiar label that, for the moment, serves to structurally unite all of the elements that make up the inflectional complex. The status of Infl as a syntactic category will be discussed in section 3.3. The structure in (1) is a dependency tree, formally similar to those proposed for segment structure in phonology. The various elements are unary features corresponding to elements of meaning, and in some cases also to particular inflectional morphemes. Thus, for example, the distinction between an event and a state is represented as the presence or absence of Event, not as a contrast between two specifications such as [+Event] and [-Event].

Let us now consider the elements making up the English Infl.

1.1 Proposition

English clauses sometimes denote propositions, and sometimes denote bare events. Davidson (1967) and Parsons (1990) give examples like those in (2) to illustrate the difference between the two types of clauses.

2. a. We saw that Mary was reading the book.
   b. We saw Mary reading the book.

The subordinate clause in (2a) is a proposition. The sentence as a whole means that we came to be aware of the truth of the proposition Mary is/was reading the book. The means by which we came to this understanding may or may not have been visual, since there is a cognitive sense of see, which may be the correct reading in (2a). In the second sentence, in contrast, the subordinate clause denotes an event rather than a proposition. The sentence as a whole means that we directly perceived the event of Mary reading the book. The cognitive reading of see is not available in (2b). In the system proposed here, the embedded Infl in (2a) contains Proposition, while the embedded Infl in (2b) does not.

As suggested by the structure in (1), not all propositional IPs are finite. Consider the sentences in (3) and (4):

3. a. We believe [the square root of four to equal two].
   b. As a result of the calculations given above, the square root of four can be seen [it to equal two].
4. a. *We saw [the square root of four equal two].
   b. *The square root of four can be seen [it equalling two].
The clause *the square root of four equal two* is used to test whether a clause can be interpreted as a proposition rather than as an event, since it is difficult to imagine a directly observable event of the square root of four equalling two. As we see in (3), infinitival clauses with *to* are readily interpretable as propositions. The sentences in (4), in contrast, show that bare infinitival complements of verbs like *see* cannot be taken as propositions, no matter how strongly the meaning of the complement suggests such a reading. We can therefore posit that in a non-finite clause, *Proposition* must be licensed by the infinitival marker *to*. If *to* is absent, the clause cannot denote a proposition, but only a bare event or state.

The term *license* is used informally here, to describe the cooccurrence restriction between the semantic element *Proposition* and the infinitival marker. I return in section 3.1 to the technical question of how this cooccurrence restriction might be captured.

### 1.2 Finite

*Finite* is a dependent of *Proposition*. It appears when the inflectional head of the clause licenses structural case on the subject. Both indicative and subjunctive clauses are considered to be finite. The difference between subjunctive and indicative clauses is encoded by the dependent element *Deixis*, which appears in indicative clauses and is absent from subjunctives. The meaning associated with *Deixis* are essentially the following: IPs bearing *Deixis* must be temporally situated relative to the temporal deictic centre, or discourse anchor, while IPs lacking *Deixis* need not be so situated. Essentially, *Deixis* corresponds to the property of realisness. This paper discusses only those finite clauses with *Deixis*, since there is reason to believe that the subjunctive is vestigial in English (Cowper 1997b). It appears, in fact, that the semantics of *Deixis* are in the process of being incorporated into *Finite* in English, thus reducing the number of possible expansions of *Infl*.

If *Finite* is a dependent of *Proposition*, then all finite clauses are necessarily propositional. In other words, *Finite* can appear in *Infl* only if *Proposition* is present. This claim is supported by the data in (5).

5. a. We saw that the children were playing in the yard.
   b. We heard that the fireworks started at 10:00.

In both of these sentences, the matrix verb has a cognitive rather than a sensory interpretation. This cannot be due to the nature of the events described by the subordinate clauses, since both children playing and fireworks starting are perceptible events. The sensory readings are readily available in the sentences in (6).

6. a. We saw the children playing in the yard.
   b. We heard the fireworks start at 10:00.

Let us therefore assume that all finite clauses in English are indeed propositional. When a clause is headed by an *Infl* containing *Finite, Proposition* no longer needs to be licensed by the infinitival marker *to*. Given the dependency structure in (1), the

---

1This is a standard use of the term finite, familiar from traditional literature. McCawley (1988) defines the term differently.
presence of the morphological reflex of *Finite* — case and agreement — is sufficient to force the presence of *Proposition*.

1.3 Event

Cowper (1997a) argued that the event element, corresponding to the Davidsonian ε, headed its own syntactic projection. The evidence for the syntactic independence of ε was tenuous, however, consisting only of a relatively subtle difference in the interpretation of clausal negation in eventive and stative sentences. Since non-structural means are available to account for the scope of clausal negation, the event element can as easily be treated as part of the inflectional structure heading IP.

Implicit in the structure in (1) is the claim that events are, from the point of view of the feature geometry of Infl, more complex than states. That is, clauses denoting events, or propositions about events, contain something that does not appear in clauses denoting states, or propositions about states. This is consistent with work in the semantics of states and events, but can also be motivated on formal grounds. In a dependency tree, if one member of a binary opposition (Event versus State) can be shown to have a dependent binary opposition (Interval versus Moment), that member can be taken to be the marked member of the opposition. Since it can be shown that eventive clauses come in two inflectionally distinct varieties, to be discussed directly, whereas stative clauses do not, I conclude that Event is the marked member of the Event/State opposition. Eventive clauses are thus characterized by the presence of Event, and stative clauses by its absence.

Interestingly, Event does not seem to correspond to any particular morphological element. It is argued in Cowper (1997) that the event/state opposition is independent of the choice of verb, the telicity of the clause, and the presence of a direct object with accusative case. In principle, any non-progressive clause can be interpreted as describing either an event or a state, although certain modifiers favour one or the other interpretation, as do certain verbs. This ambiguity is illustrated in (7).

7.  
   a. Madelyn wore a hat (as a child). (Stative, characterizing sentence)  
   b. Madelyn wore a hat (twice this week). (Eventive)  

8.  
   a. Katie was polite. (Stative)  
   b. Katie was polite three times this morning. (Eventive)

The (a) sentences in (7) and (8) are stative, while the (b) sentences are eventive.

If Event is not licensed by any particular morpheme, it might be thought that it should be optional in all sentences, and that all sentences would therefore be ambiguous between an eventive and a stative reading. Indeed, many sentences are ambiguous in this way, as we have just seen, but there are two specific circumstances under which only an eventive reading is possible. One of these, to be discussed in section 3.3, is when the clause in question is the bare infinitival complement of a perception verb, as shown in (9).

9.  
   a. They saw [the policeman be polite/?intelligent/?burly].  
   b. We heard [the students heckle/?dislike the teacher].
The sentences in (9) are sensible only to the extent that the embedded clause can be interpreted as describing some sort of event.

The second case of an obligatory event reading is when progressive -ing appears, as in the sentences in (10).

10. a. The children were playing in the yard.
    b. The heckler was being rude.
    c. ?The gymnast was being tall.

This second case follows immediately from the dependency structure in (1). The perfective/imperfective contrast is the grammatical encoding of the semantic distinction between moment and interval. That is, a perfective event, like a moment, or a temporal point, has no discernible temporal structure. Comrie (1985) describes a perfective event as having its beginning, middle and end all wrapped up into one. An imperfective event, like an interval, has temporal subparts. In English, an eventive sentence is interpreted as perfective unless it is overtly marked as imperfective. The marking associated with imperfectiveness in English is progressive -ing.

If Interval is a dependent of Event, and if progressive -ing obligatorily cooccurs with Interval, it follows that any containing progressive -ing must necessarily be eventive.2

A second consequence of the dependency structure in (1) is that stative sentences cannot manifest a perfective/imperfective distinction.

1.4 Precedence

The presence of Precedence in Infl signifies that IP is located temporally prior to its temporal anchor. The temporal anchor may be the temporal deictic centre (also known as the discourse anchor), or in some cases a higher IP. The term past is often used with this meaning, but is also often used to refer to a particular tense form. Precedence can be licensed by one of two different morphemes: the finite past tense marker, often called -ed, and the past participial suffix, usually called -en. The absence of Precedence means that the IP will be interpreted as simultaneous with its temporal anchor.

2. The Manifestations of Infl

Let us now examine the realization of the various elements of the feature-geometric Infl in the various tense forms of English. Assuming that all of the elements are optional, up to the dependency relations mentioned above, there are eighteen possible combinations. Of these, seventeen are attested in English, and it is possible to exclude the eighteenth on principled grounds. I will consider each in turn.

---

2We are dealing here with only one of the two morphemes in English realized phonologically as -ing. The other one is nominal, and has no consequences for the structure of Infl. See Cowper (1995) for a discussion of both of these morphemes.
11.  
   Infl  
   |  
   Event

The IP headed by the Infl in (11) is a bare event. It is perfective, since Interval is absent, and non-finite, since Finite is also absent. It will also not be infinitival, since there is no Proposition node. It will be interpreted as taking place at the same time as its temporal anchor, since it lacks Precedence. The embedded clause in (12) has these properties.

12.  We heard [the dog bark].

Adding Interval to an Infl consisting only of Event, we get (13).

13.  
   Infl  
   |  
   Event  
   |  
   Interval

Like (11), the Infl in (13) heads a bare event IP. The event in (13) is imperfective, as illustrated by the subordinate clause in (14).

14.  We heard [the dog barking].

If Event is absent, but Precedence appears, we get the Infl in (15). It is neither eventive nor propositional, but a bare state, situated prior to its temporal anchor by Precedence.

15.  
   Infl  
   |  
   Precedence

This, I claim, is the type of IP found in a perfect construction like (16).

16.  The Smiths have (always) [been rich].

The Infl in (17) differs from the one in (15) only in the presence of an Event node.

17.  
   Infl  
   |  
   Precedence  
   |  
   Event

The lower clause in a perfect construction such as (18) has this Infl.3

---

3The biclausal structure of perfect constructions are in English will be discussed in section 4.
18. The Smiths have [bought a new car].

The Infl in (19) has both Precedence and Interval, meaning that it must be both temporally anterior to its anchor point, and imperfective. However, it is not finite.

19. \[
\text{Infl} \\
\quad \text{Precedence} \quad \text{Event} \\
\quad \quad \text{Interval}
\]

The embedded clause of a perfect progressive such as (20) has the required properties.

20. The Smiths have [been looking for a house].

This completes the inventory of non-propositional IPs in English. The remaining attested Infls all contain Proposition, and will therefore be either finite or infinitival. The Infl in (21) is stative, non-precedent and non-finite, which characterizes the subordinate clause in (22).

21. \[
\text{Infl} \\
\quad \text{Proposition}
\]

22. We believe [the children to be intelligent].

The Infl in (23) is the eventive counterpart of (21).

23. \[
\text{Infl} \\
\quad \text{Proposition} \quad \text{Event}
\]

These are strange in ECM contexts like (24a), just as the simple present tense in (24b) is strange if it describes a perfective event. In contexts like that in (25), where the matrix verb places the subordinate clause in irrealis time, such infinitivals are unexceptionable.

24. a. We believed [the children to eat the popsicles].
   b. The children eat the popsicles.
25. We expect [the children to eat the popsicles].

The Infl in (26) differs from the one in (23) only in that it describes an imperfective event. An example is the subordinate clause in (27).

---

4 See Cowper (1998) for a full discussion of this issue.
26. \[ \text{Infl} \]
   \[ \text{Proposition} \quad \text{Event} \]
   \[ \text{Interval} \]

27. We believe [the children to be watching the movie].

The Infl structure in (28) heads a stative past infinitival, such as the subordinate clause in (29).

28. \[ \text{Infl} \]
   \[ \text{Proposition} \quad \text{Precedence} \]

29. We believe [Winston Churchill to have been a talented politician].

The Infl in (30) is just like the one in (28), except that it contains Event. The subordinate clause in (31) is headed by this Infl.

30. \[ \text{Infl} \]
   \[ \text{Proposition} \quad \text{Precedence} \quad \text{Event} \]

31. We believe [the children to have watched the movie].

The structure in (32) is the imperfective version of (30), and is illustrated in the sentence in (33).

32. \[ \text{Infl} \]
   \[ \text{Proposition} \quad \text{Precedence} \quad \text{Event} \]
   \[ \text{Interval} \]

33. We believe [the children to have been watching the movie].

The remaining Infls are finite, and will be illustrated with matrix clauses. The simplest possible finite Infl is shown in (34). This is a stative simple present, as in (35).

---

5Note that the bracketed material in (29) is a monoclausal construction, in contrast to the present perfect example in (16) above. This difference will be discussed in section 3.2.
34. Infl
   Proposition
   Finite
   Deixis

35. The children like ice cream.

The Infl in (36) is an eventive simple present. Such a clause must have either a futurate or a reportive reading, as discussed in Cowper (1998). An example is given in (37).

36. Infl
   Proposition
   Event
   Finite
   Deixis

37. The children eat the ice cream.

The Infl in (38) contains Interval, which is licensed by progressive -ing. It will therefore be progressive, as illustrated in (39).

38. Infl
   Proposition
   Event
   Finite
   Interval
   Deixis

39. The children are eating the ice cream.\(^6\)

The Infls in (40) and (42) are past tense clauses, stative in the case of (40) and eventive in the case of (42). They are illustrated in (41) and (43).

40. Infl
   Proposition
   Precedence
   Finite
   Deixis

\(^6\)Note that this is a simplex structure, with only a single Infl. See section 4 for discussion.
41. Winston Churchill resembled his father.

42. 

```
       Infl
      /   \
Proposition  Precedence  Event
     |       \
 Finite    Deixis
```

43. Winston Churchill won several elections.

The most complex Infl of all is shown in (44). It is finite, past and imperfective. This is the past progressive, illustrated in (45).

44. 

```
       Infl
      /   \
Proposition  Precedence  Event
     |       |
 Finite    Interval  Deixis
```

45. The children were eating the ice cream.

The one remaining logically possible Infl is shown in (46). It is simply an Infl node with no marked properties whatsoever.

46. 

```
Infl
```

Semantically, an IP headed by such an Infl would be stative, since Event is absent. It would be simultaneous with its temporal anchor, since it lacks Precedence. It would have to be a bare infinitival, lacking Proposition to license infinitival to. By analogy to the bare event Infl shown in (11) and exemplified in sentence (12), we might take the Infl in (46) as heading a bare state IP, that would presumably appear as the bare infinitival complement of a perception verb. Interestingly, though, such sentences seem not to exist, as we saw earlier in the sentences in (9). Before dealing with why a bare Infl node is impossible, however, we must address some more basic theoretical questions.

3. Issues Raised

3.1 Theoretical framework: the syntax/morphology interface

The representation of Infl just developed and exemplified is compatible with various views of how syntax, morphology and phonetic form interact. I assume that under
any view, semantic features such as Event, Proposition, and Precedence characterize a clause as a whole, not just a verb. The relation between these semantic elements that characterize IP and the morphological elements that, informally speaking, license them, must therefore be established somehow.

One possibility, compatible with the theory of Government and Binding, and with some early Minimalist approaches, is that the semantic elements are base generated in Infl, or selected as part of Infl at numeration, while the morphological elements -- the affixes, originate, via presyntactic morphology, on the various verbal elements. Syntactic movement, either overt or covert, then creates structures in which the affixes, or more properly their features, can check or license the elements in Infl.

A second possibility is that the semantic elements actually originate on the verb, along with the affixes that they cooccur with. Both the affixes and the semantic elements they occur with would thus be attached to the lexical items in a presyntactic morphological component. However, the semantic features, that is Precedence, Finite/Deixis, Proposition, and Interval, cannot be coherently interpreted except as features of IP. They therefore must move and attach to Infl. Under this view, Event alone would be an optional feature of Infl, since it appears freely without any licensing morpheme.

A third possibility, more in line with the currently popular view of postsyntactic morphology and vocabulary insertion (Halle and Marantz 1993), would have the semantic elements originating as features of Infl but lowering to V during the course of the syntax, so as to be spelled out later. Since nothing in this paper hinges on which of these models is adopted, I will leave the question open.

3.2 Monoclausal vs. biclausal periphrastic tenses

In section 2 above it was stated that the finite perfect tense forms are biclausal, while the progressives and the infinitival “perfects” are monoclausal. Let us consider each of these structures in turn.

3.2.1 Progressive tense forms

A priori, a progressive sentence has two possible structures, shown in (47).

47. Ann is reading the book.

```
        IP
       /\  
      /   \ 
     DP   VP
    /\    /\  
   Ann Infl VP
  /\   /\   /\  
 Proposition Event V is tDP
 /\   /\   /\   /\   /\  
 Finite Interval V is tDP VPreading the book
```

```
47. Ann is reading the book.
```
How might we choose between these two representations? It is important to note that nothing requires each inflected verb to have its own IP. It is true that in most discussions of syntax within the GB/Minimalist paradigm, the checking/licensing relationships between inflectional heads and the heads they govern are many-to-one, or one-to-one, but not one-to-many. Thus, in most derivations in the literature, a verb moves through a succession of functional heads, checking features as it goes. The other logical possibility is that a succession of verbs moves through a single functional head. Overt movement of this sort would be ruled out by standard assumptions about phrase structure and the recoverability of derivations. However, since what is involved here is not overt verb movement, but rather covert feature movement, nothing rules out such a scenario. Thus in (47a), Finite, along with Proposition, moves from the verb is to Infl, and Interval moves from the verb reading to Infl. The burden of proof thus seems to be on the biclausal structure in (47b), which is more complex. I know of no evidence that progressives are biclausal. The two VP’s cannot be assigned distinct temporal modifiers, as separate clauses generally can. There is no evidence of a CP between the auxiliary and the main verb. Semantically as well, English progressives seem to be simplex, in that they have essentially the same meaning as eventive sentences in the imparfait in French, the simple past in Hungarian, and the simple past in written German. All of these tense forms give an imperfective event situated prior to the discourse anchor. I will therefore assume, unless clear evidence is found to the contrary, that English progressives have the structure in (47a) above.

3.2.2 Finite perfect tense forms
As with progressives, there are two logically possible structures for perfects. These are shown in (48).
48. Ann has read the book.

    a. IP
       /   \\         
      DP    IP
     Ann   Infl
    /     /    \\
   Proposition Precedence Event
   /     \\     \\
   Finite  Deixis
   \\      \\
    VP
    /   \\    
   V     VP
   has    tDP
   /     \\     \\
   V     DP
   read  the book

b. IP
   /   \\         
  DP    IP
 Ann   Infl
 /     /    \\
 Proposition V     IP
 /     /     \\
 Finite   Infl   VP
    /     /         \\
   Precedence Event tDP
    /     \\
   V     DP
   read  the book

In this case, it can be demonstrated that the sentence must have a biclausal structure, as in (48b). First, notice that the Infl in (48a) is identical to the one found in a simple past tense sentence, such as (49).

49. Ann read the book.

   The problem, of course, is that the meaning of (49) is not the same as the meaning of (48). Specifically, (48) means that Ann is now in a state of having read the book at some earlier point, while (49) means that Ann read the book at some earlier point, saying nothing about her current state. The biclausal structure in (48b), with its two IPs, correctly captures the intuition that there is a present state and a prior event.

   A second reason for giving perfects a biclausal structure can be found in past perfects like (50).

50. Ann had read the book.

   There are two morphemes in this sentence that license Precedence: the past tense marking on had and the past participial marking on read. It is unclear how one would incorporate instances of Precedence into a single Infl. Feature geometry in phonology provides little guidance here, since various outcomes are possible. One is that the two instances of Precedence would fuse, following some version of the
Obligatory Contour Principle (Leben 1978). Another is that the two instances of Precedence might appear in two different places in the structure, as proposed for voicing by Avery (1996).

The first of these options can be ruled out immediately. Semantically, it is clear that there are two occurrences of Precedence, since the meaning of the sentence involves two backshifted relations: the relation between the time of the event of reading and the time of the resulting state of having read, and the relation between the time of the state of having read and the discourse anchor. The result of OCP-style fusion would leave only a single occurrence of Precedence. In other words, a sentence like (50) would end up receiving a temporal interpretation identical to that in (49). Avery’s option would make sense if it could be shown, as he does for voicing, that the interpretation of Precedence is non-uniform, and that the difference can be explained by allowing it to appear in different positions in the structure. However, there seems to be no evidence whatsoever for such a distinction.

A biclausal structure therefore seems more plausible in this case as well. Note also that only with two IPs can we capture the fact that the sentences in (48) and (50) each consist of both an event and a state. Under the analysis given here, a given Infl is either stative (lacks Event) or eventive (contains Event), but never both.

### 3.2.3 Perfect/past infinitives

Now consider the infinitival clause in (51a), and compare it to the finite counterparts in (51b) and (51c).

51. a. We believe the children to have eaten the ice cream (at exactly three o’clock).
   b. We believe that the children ate the ice cream (at exactly three o’clock).
   c. We believe that the children have eaten the ice cream (*at exactly three o’clock).

While the difference in meaning between (51b) and (51c), when the time adverbial is absent, is quite subtle, the time adverbial serves to highlight the difference. Specifically, a finite clause in the simple past tense can be modified by a point adverbial that identifies the time at which the event took place. In contrast, a finite clause in the present perfect cannot be modified by such an adverbial. The acceptability of the point adverbial in (51a) indicates that perfect infinitives behave more like the simple past than like the present perfect in this respect. The reason for this, I claim, is that perfect infinitives are actually structurally ambiguous. They can be biclausal, just like the finite perfects just discussed, or they can be monoclusal, with a structure just like the one in (48a), without Finite. The question, then, is why infinitival “perfects” can be monoclusal, while finite perfects must be biclausal. The only morpheme that licenses Precedence without also licensing Finite is the past participial suffix -en. The other morpheme that licenses Precedence is the finite past tense marker -ed, which cannot appear in an infinitive. Thus finite perfect constructions will always accommodate two Precedence-licensing morphemes, while an infinitive will only be able to accommodate one such element. The marked temporal semantic content of an infinitival clause will thus never exceed the geometric capacity of a single Infl node.
As we have just seen, any past infinitival will have to contain a past participle. However, infinitival to selects a bare verb as its complement. The past participle therefore cannot serve as the immediate complement of to, as in the ungrammatical sentence in (52).

52. *We believe Mary to eaten the ice cream.

Have thus appears, so as to satisfy the selectional requirements of to.

This is why a non-finite IP containing Precedence has the same morphological form as the perfect, i.e. have + past participle.

Note, however, that nothing prevents a biclausal perfect infinitive from being generated. Presumably, it would have the same meaning as the present perfect in the corresponding finite construction, and presumably a point adverbial would not be possible. But since the monoclausal structure is always available as well, it will be hard to demonstrate that the biclausal structure does, in fact, occur.

3.3 Bare States and the Categorial Status of Infl

Finally, now, we come to the question of the bare Infl node. If Infl were analogous to the ROOT node in some current phonological models, it should have status even without any dependent features, and should be interpreted as outlined earlier. On the other hand, if Infl is merely a label for a structure projected by marked elements like Finite, Event and Precedence, then we should expect that in the absence of any marked element, there should be no Infl, and thus no IP. Given the ungrammaticality of sentences such as (9), repeated here as (53), this second alternative seems to be closer to the truth.

53. a. They saw [the policeman be polite/?intelligent/??burly].
   b. We heard [the students heckle/?dislike the teacher].

Thus, I claim that Infl is not an independent syntactic head. It arises only when a marked feature appears. Where do marked inflectional features come from? Most of them originate on verbs, and move during the course of syntactic computation. In these cases, Infl can be seen as the result of merging a moved inflectional feature with VP. But there is one marked feature that has no morphological realization, that is, the Event node. It would be ad hoc and awkward to claim that this feature originated on a verb and then moved to the inflectional, position. Such a claim would amount to saying that every verb in the language is optionally specified with Event - a position argued against in Cowper (1997a). A more satisfactory generalization can be captured by saying that Event can appear in the numeration, and can merge with a VP.

What this means, then, is that the English IP is a projection of whatever marked inflectional features appear in the clause. The features are structured geometrically, with well-defined semantic values, and well-defined default interpretations when they are absent. But no default interpretation takes place if there is no IP, and no IP can appear except as a projection of an inflectional feature. Thus, there is no such thing as a bare Infl, and there are therefore no bare states. The label IP must therefore be seen as purely a label, with no theoretical status or semantic
content of its own. This conclusion is essentially the same as the one drawn by Koskinen (1998) for a variety of functional projections dominating non-finite constructions in Finnish.

3.4 A consequence for small clauses

The impossibility of a bare Infl node has an interesting consequence for the syntactic structure of small clauses. Over the years, analyses of small clauses have fallen into two main groups: those in which the small clause is headed by an empty functional element, and those in which the small clause is headed by its predicate. The foregoing discussion essentially rules out the first of these two approaches. If small clauses are to be seen as functional projections, there must be a marked feature of some sort heading the projection.

An analysis of small clauses goes beyond the scope of the present paper, but I would like to point out one interesting property they exhibit. Recall that verbal clauses that are neither finite nor infinitival cannot be propositional. Non-verbal small clauses, in contrast, are quite routinely interpreted as propositional. Consider the data in (54).

54. a. We consider the discussion inadequate.
   b. We consider the discussion to be inadequate.

There are two obvious avenues to pursue, in order to arrive at a propositional interpretation for a small clause. One is to propose a different type of Proposition element in Infl. This second element would not be licensed by infinitival to, and would only appear in non-verbal small clauses. A priori this approach seems ad hoc, given the lack of a licensing morpheme, the restricted distribution of the element, and the fact that the distribution is defined in categorial/syntactic terms rather than in semantic terms. A second approach would be to claim that the propositional nature of non-verbal small clauses is purely semantic, not part of the inflectional system of English. There is a great deal of precedent for allowing a given semantic property to be expressed both within and outside the inflectional system. For example, languages frequently express both grammatical and notional gender and number. Under this view, one could treat verbal small clauses as instances of secondary predication, and claim that in general, secondary predication receives a propositional interpretation. This line of thought is supported by the fact that depictives and resultatives do indeed seem to be interpreted propositionally, despite the lack of a propositional Infl.

4. Conclusion

I have shown that a wide range of English tense forms can be accounted for with the relatively simple dependency structure given in (1). I have also shown that a geometrically structured Infl can accommodate some of the periphrastic tense forms, and that periphrastic forms can be either monoclausal or biclausal. The success of this approach, at least for English, suggests that the independent syntactic projection
of elements such as tense, mood and event must be justified, not on morphological or semantic grounds, but rather on properly syntactic grounds.

The limits of crosslinguistic variation remain to be explored. It seems that some languages take *Interval*, or imperfective, as the marked event-type, while others take *MOMENT*, or perfective. Languages with a more richly articulated aspectual system, such as the Slavic languages, and languages with a larger variety of inflected tenses, such as the Romance languages, will provide a fertile testing ground for the general approach presented here. One would hope that all languages make use of essentially the same elements, and that these elements have, to at least some extent, a universally-determined dependency structure.

**References**


