Morphosyntactic features and the scope of contrast[*]

Elizabeth Cowper	**Daniel Currie Hall**	**APLA 38**
University of Toronto	Saint Mary's University	UNB Fredericton
cowper@chass.utoronto.ca	daniel.hall@utoronto.ca	1 November 2014

## 1 Background: The contrastive hierarchy in phonology

How things work in phonology (Dresher et al. 1994; Dresher 2009; Hall 2007, 2011; Mackenzie 2009, 2013; etc.):

- Features are assigned by recursively dividing the phonemic inventory.

- No feature is assigned unless it is contrastive (i.e., divides at least one phoneme from at least one other phoneme).

- The scope of features (order of divisions) can vary from one language to another, giving different specifications for similar inventories.

- An example: Laryngeal features in Ngizim and Hausa (Mackenzie 2013)

  (1) Variation in scope of [±voice] and [±constricted glottis]

    a. Ngizim: [±c.g.] > [±voice]   b. Hausa: [±voice] > [±c.g.]
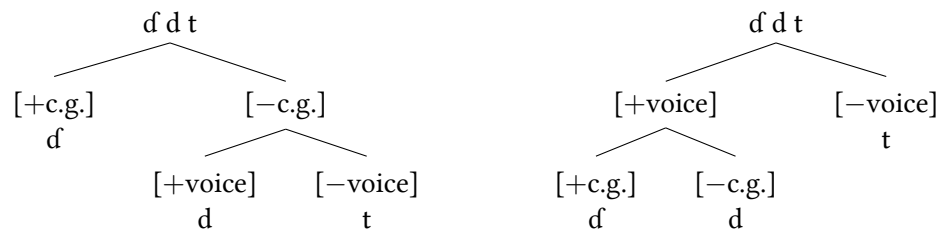
  Ngizim: [−c.g.] obstruents, as a class, show voicing harmony (*t…d);
  voicing of implosives is ignored (✓t…ɗ).

  Hausa: [+voice] obstruents, as a class, show c.g. harmony (*ɗ…d);
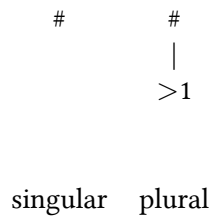 pulmonicity of voiceless Cs is ignored (✓ɗ…t).

2 Looking for parallels

- Can the same idea be applied to morphosyntax? We know that:

  - Morphosyntax uses features.

  - Morphosyntactic features show hierarchical organization (Harley 1994; Harley & Ritter 2002a,b; Ritter & Wiltschko 2009; Cowper 2005a; Cowper & Hall 2014; etc.).

  - Contrast matters for the interpretation of morphosyntactic features.

(2) Variation in number systems (Cowper 2005b: 446)

   a. Two-way number system

```
      #        #
      |        |
     >1
```
     singular   plural

   b. Three-way number system

```
      #        #        #
               |        |
              >1       >1
                        |
                       >2
```
     singular   dual   plural

Two-way system: >1 means plural.
Three-way system: >1, unless further specified with >2, means dual.
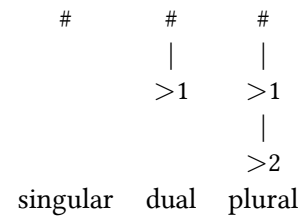
- Morphosyntactic features have semantic content, parallel to the phonetic content of phonological features.[1]

- On the other side, morphosyntactic features get spelled out by vocabulary items (VIs). This has no obvious parallel in phonology.

3   What is the inventory?

- In phonology, the contrastive hierarchy divides the phonemic inventory; terminal nodes are phonemes.

- What are the phonemes of morphosyntax? Functional lexical items (LIs), considering only the Lexicon in the narrow sense and not the Encyclopedia (Marantz 1996).

- An example: Nominal number in English and Mandarin (Cowper & Hall 2014)

   – English has three kinds of nominals:

    (3) a. Mass: *The floor was covered with **carpet**.*
         b. Singular: *The floor was covered with **a carpet**.*
         c. Plural: *The floor was covered with **carpets**.*

   – Mandarin has two kinds of nominals (Cheng & Sybesma 2005):

    (4) a. Mass:

        *Hufei he-wan-le   **tang**.*
        Hufei drink-finished-PRF soup

        'Hufei finished the soup.'

        b. Count:

        *Hufei mai **shu** qu le.*
        Hufei buy book go PARTICLE
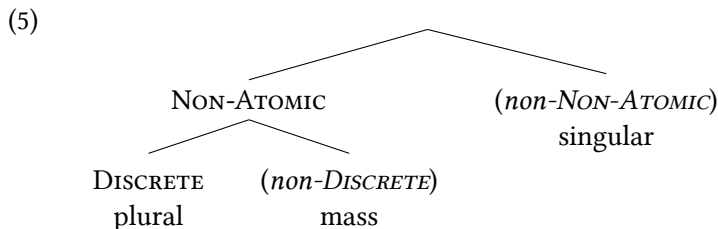
        'Hufei went to buy { a book / books }.'

   – Features (privative):

   Non-Atomic: the nominal does not denote a single indivisible entity
   **Discrete:** the nominal denotes one or more discrete entities

---

[1]In each system, there are some features, like [finite] or [sonorant], whose interface-level content is hard to identify.

– Dividing the English inventory:

(5)

```
                    _____
                   /           \
              Non-Atomic    (non-Non-Atomic)
             /        \         singular
        Discrete  (non-Discrete)
         plural       mass
```

* Giving wider scope to Non-Atomic identifies plural and mass nominals as a natural class. When indefinite, they are unbounded and take ∅/*sm̩* rather than *a(n),* in contrast to singulars.
* Discrete is spelled out by VIs like *-s, these, those.* Because it takes narrow scope here, mass and singular nominals pattern together in lacking Discrete.

– Dividing the Mandarin inventory:

(6)

```
            _____
           /         \
      Discrete   (non-Discrete)
        count        mass
```
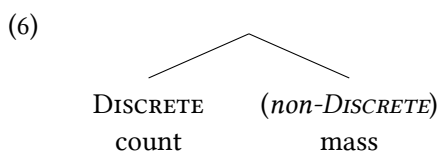
* Here, there is only a two-way distinction, and it is made by Discrete.
* Discrete takes wide scope, and once we've specified it, we're done; there's no role for Non-Atomic.

4 Natural classes

- One of the main things features do in phonology is define natural classes. (This is also one of the main kinds of evidence we have for identifying the relative scope of features in the contrastive hierarchy.)

- Do we also have natural classes in syntax?

    – Certainly we do within syntactic categories—e.g., plural and mass nominals are a natural class in (5).
    – But what about across categories? Are there natural classes that encompass, e.g., some nominals and some clauses?

- Maybe syntactic categories are like the major classes C and V in phonology.

- The categories C and V play a major role in determining how segments fit into larger (e.g., syllabic) structures. (See Levin (1985), Ritter (1995), etc., for explicit parallels between syllabic and syntactic structure.)

(7) The syllable as a projection of the nucleus (Levin 1985: 75)

```
        N″
        |
        N′
       /|\
      / N \
     /  |  \
    k   a   l
```
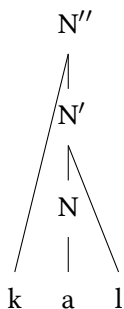
– nucleus = head
– coda = complement
– rhyme = X′
– onset = specifier
– syllable = XP

- There are proposals (e.g., Clements & Hume 1995; Harris & Lindsey 1995) that use the same features for consonants and vowels, but phonological patterns more often involve natural classes within C or V than natural classes that cut across C and V.

- Parallels between C and V are analogous to parallels between syntactic categories or domains:

  - Number in the nominal domain and aspect in the verbal domain:
    * Atomicity in nominal number (many authors):
      Cowper & Hall (2014) argue that in English, mass and plural nominals bear Non-Atomic, with singular count nominals interpreted contrastively as atomic (*non-Non-Atomic*).
    * Atomicity in Japanese Inner Aspect (Clarke 2013a,b):
      · [+Atomic] as a root modifier, characterizing the set of "instantaneous" verbs.
      · [+Atomic] as a contrastive feature of Asp below Voice. In the *-te iru* construction, derives the experiential perfect reading instead of the progressive reading.
    * Atomicity in Viewpoint Aspect:
      · In English (Cowper 2005a), imperfective viewpoint aspect is characterized by Interval, whose meaning is essentially the same as Non-Atomic.
      · In modern Greek (Kyriakaki 2006), perfective viewpoint aspect is characterized by Moment— the complement of Interval; thus atomic.
  - Plural for nominals, and for iterated events (many authors)
  - Deixis and definiteness in T and D:
    * Proximate vs. distal:
      · Commonplace for demonstrative systems; also used to account for the proximate–obviative contrast in Algonquian.
      · For tense systems (Iatridou 2000): Past tense is analysed as carrying an exclusion feature Excl, which specifies that the Topic time excludes the Utterance time.
    * Definiteness:
      · Commonplace in nominal systems. Generally, Definite combines properties of familiarity and uniqueness (Kyriakaki 2011), identifying a referent known to both speaker and hearer.
      · For tenses, Partee (1973) has argued that semantically, tenses should be analysed like pronouns and bound variables, not as sentential operators.
    * Clausal determiners:
      Zaring (1992) treats *ce* in (8a) as a determiner (rather than as a pronoun, as in (8b)).

      (8) a. *Je veillerai   à ce qu'il   se couche   de bonne heure.*
             I will.watch to ce that=he self puts.to.bed of good   hour

             'I'll see to it that he goes to bed early.'

          b. *C'est important que mon fils se   comporte comme il faut.*
             ce=is important that my   son self behave   as   it is.necessary

             'It's important that my son behave as he should.'

      She assumes a null N taking the CP as a complement, but one could also argue that the determiner *ce* takes CP directly.

- Cross-domain similarities have been known for years. Is this merely a reflection of the cognitive categories human beings use, or is there a more formal relation that should be captured by positing the same features used across domain? How could one decide?

- A research question: Are there natural classes that cut across domains? Are the features, as used across domains, really the same features, grammatically speaking?

    - To show that it is truly a single feature used across domains, rather than two features with similar meaning, we need to provide a denotation for the feature, and show how any differences in interpretation can be made to follow from the different contexts in which that feature appears.

        * In Haitian and in Fongbé, (Lefebvre 1998, drawing on Lefebvre & Massam 1988), the definite determiner appears in C, T, Asp, and D, with consistent morphosyntactic behaviour and semantic effects. Semantically, it always contributes something like [+Definite] and/or [+Anaphoric]. It would be worth exploring this more formally, to see whether exactly the same semantic content might be posited in all four positions.

    - To show that a feature defines a natural class across domains, we need to show a process that applies to elements bearing that feature, regardless of the domain.

        * A promising possibility (Craioveanu 2014): Partitive case on objects in Finnish and Estonian agrees with unboundedness (Non-atomicity) on any of the object (plurals and mass nouns), the *v*P (atelicity), the Asp head, (imperfective viewpoint aspect, and PolP (Negation).

        * Alternatively, we could show that the same vocabulary item spells out the feature in question in both domains, as with clausal determiners in French (Zaring 1992) or Haitian and Fongbé (Lefebvre 1998).

5 Non-contrastive 'features'

5.1 In phonology

Hall (2007, 2008, 2013) discusses cases (Czech, Yowlumne) where non-contrastive features seem to need to be present in phonological representations, even though they aren't phonologically active.

- For example, Yowlumne has the phonemic four-vowel inventory /i a o u/, which can be fully distinguished using the contrastive features [±high] and [±round].

- Contrastive [±high] and [±round] are phonologically active in vowel harmony and long vowel lowering.

- But some other, non-contrastive property must also be represented to account for the fact that when long /i/ lowers, it does not become identical to /a/. (Instead, it becomes [e].)

- Hall (2013) proposes that /a/ has a redundant, phonologically inert specification as [+back].

- Such "prophylactic" redundant specifications must be present during the phonological derivation, because they would otherwise be unrecoverable. (If /a/ is not already [+back], then there is no way to sort out which [−high, −round] vowels should be [e] and which should be [a] after lowering has applied.)

- However, prophylactic features don't need to be visible to the phonology itself; they only need to be visible for phonetic implementation.

5.2 In morphosyntax

Is there an analogous role for non-contrastive features in morphosyntax?

- Wiltschko (2008) describes the "non-inflectional" status of plural marking in Halkomelem:

- Halkomelem plural marking is non-contrastive in the sense that it is optional; its absence does not force a singular interpretation:

  (9) Optionality of Halkomelem plural marking (Wiltschko 2008: 642)

  a. *te   lhíxw swíweles*
      DET three boy
      'the three boys'

  b. *te   lhíxw swóweles*
   DET three boy.PL
      'the three boys'

- Halkomelem plural marking is also not morphosyntactically active, in that it does not trigger agreement. Plurality can be marked on the noun, on the determiner, on both, or on neither. If it is marked anywhere, the nominal receives a plural interpretation; if there is no plural marking, the normal interpretation is singular, but a plural reading is not impossible (and can be triggered by other elements such as quantifiers or numerals).

  (10) Independence of plural marking on N and D (Wiltschko 2008: 643)

  a. *t'ílém ye   s-í:wí:qe*
      sing   DET.PL man.PL
      'The men are singing.'

  b. *t'ílém te   s-í:wí:qe*
      sing   DET man.PL
      'The men are singing.'

  c. *t'ílém ye   swíyeqe*
      sing   DET.PL man
      'The men are singing.'

  d. *t'ílém te   swíyeqe*
      sing   DET man
      'The man is singing.'

- Plural marking can also appear inside compounding and derivational affixes.

- Wiltschko (2008: §5) argues that the Halkomelem plural marker is a root modifier:

  (11) Halkomelem nominal structure (Wiltschko 2008: 674)
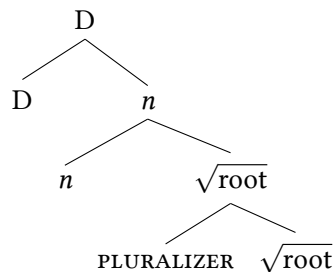
Modifier features like plural in Halkomelem are non-contrastive in a different sense from prophylactic features in Yowlumne and Czech: it's not that they're predictable, but rather that their absence does not signify. But they are similar in that they're not part of the contrastive hierarchy.

5.3   Are non-contrastive features really features?

- There are many properties that are grammatically active in one language but not in another. Where they are not grammatically active, they are generally not thought to be encoded as features.

    Evidentiality: Some languages (e.g., Turkish, Korean, Quechua, Tuyuka) have obligatory, inflectional evidential marking:

    (12)   Inflectional evidentiality in Korean (Papafragou et al. 2007: 262)
    - a. *Toli-ka   mantwu-lul   mek-ess-e.*
         Toli-NOM dumpling-ACC eat-PAST-DECL.DIRECT
         'Toli ate dumplings.' (Speaker has direct evidence of this.)
    - b. *Toli-ka   mantwu-lul   mek-ess-tay.*
         Toli-NOM dumpling-ACC eat-PAST-DECL.HEARSAY
         '(I heard that) Toli ate dumplings.' (Hearsay)

    Others, like English, have adverbs (*patently, evidently, apparently, supposedly, reputedly,* etc.) that specify the evidential basis of an assertion, but which are not organized into a grammatical paradigm, and whose use is optional.

    Temporal precedence: Some languages, like English, obligatorily mark the distinction between past and nonpast, while others, like Mandarin, do not. Mandarin nonetheless has adverbial elements meaning things like *yesterday* and *long ago*, just as English has adverbial elements with evidential meaning.

- Even within a single language, the same property can appear both as a grammatically active feature and as part of the meaning of an element with no grammatical consequences.

    - The property of semantic modality is active in English, French, and Spanish clausal morphosyntax.
    - In English, it is spelled out by the class of modal verbs, which have a well-defined set of syntactic properties. (They must be finite; they select a bare verb as their complement; they cannot be marked with *-s* to agree with a third-person singular subject.)
    - English thus has in its set of formal features something like MODALITY.
    - But the same semantic property is found in many lexical items: adverbs like *possibly* and *probably*, adjectives like *likely* and *illegal*, and even *red* (Hall 2001: 7):

    (13)   a. *This piece of plastic can reflect light that has a wavelength of 700 nm.*
           b. *This piece of plastic is red.*

    - These elements have none of the morphosyntactic properties associated with the feature MODALITY.

- Perhaps Halkomelem plurality belongs to the Encyclopedia, not the Lexicon—and perhaps prophylactic 'features' are encyclopedic phonetic information about segments in Czech and Yowlumne.

- We therefore hypothesize that non-contrastive properties, like backness on Yowlumne /a/ and plurality in Halkomelem, are not features at all, but rather non-featural phonetic or semantic properties belonging to the (phonetic or semantic) Encyclopedia.

- From this, we predict that such properties should never participate in grammatical processes like agreement. The hypothesis would be falsified by a language identical to Halkomelem with respect to plural marking on nominals, but in which plural nominals triggered number agreement on the verb.[2]

- We may be wrong. But if we are right, we can make the very strong claim, in the tradition of Trubetzkoy (1939), that **all formal features in natural language are contrastive**.

---

[2]Wiltschko (2008) makes a similar prediction by assigning different structural positions to modifier features and head features.

References

Cheng, Lisa Lai-Shen & Rint Sybesma. 2005. Classifiers in four varieties of Chinese. In Guglielmo Cinque & Richard S. Kayne (eds.), *Handbook of comparative syntax*, 259–292. Oxford: Oxford University Press.

Clarke, Sarah. 2013a. *Aspectual scope and contrast in English and Japanese*. Ph.D. thesis, University of Toronto.

Clarke, Sarah. 2013b. Features across domains: The nominal–aspectual parallel. Presented at the Conference on Features in Phonology, Morphology, Syntax, and Semantics, University of Tromsø.

Clements, G. N. & Elizabeth Hume. 1995. The internal organization of speech sounds. In John Goldsmith (ed.), *The handbook of phonological theory*, 245–306. Oxford: Blackwell.

Cowper, Elizabeth. 2005a. The geometry of interpretable features: Infl in English and Spanish. *Language* 81.1: 10–46.

Cowper, Elizabeth. 2005b. A note on number. *Linguistic Inquiry* 36.3: 441–455.

Cowper, Elizabeth & Daniel Currie Hall. 2014. The features and exponence of nominal number. *Lingue e Linguaggio* 13.1: 63–82.

Craioveanu, Radu. 2014. Levels of aspect in Finnish and Estonian. Ms., University of Toronto.

Dresher, B. Elan. 2009. *The contrastive hierarchy in phonology*, vol. 121, Cambridge Studies in Linguistics. Cambridge: Cambridge University Press.

Dresher, B. Elan, Glyne Piggott & Keren D. Rice. 1994. Contrast in phonology. *Toronto Working Papers in Linguistics* 13: iii–xvii.

Hall, Daniel Currie. 2001. The featural semantics of English modal verbs. Ms., University of Toronto.

Hall, Daniel Currie. 2007. *The role and representation of contrast in phonological theory*. Ph.D. thesis, University of Toronto.

Hall, Daniel Currie. 2008. Prophylactic features and implicit contrast. In Peter Avery, B. Elan Dresher & Keren Rice (eds.), *Contrast in phonology: Theory, perception, acquisition*, 35–54. Berlin: Mouton de Gruyter.

Hall, Daniel Currie. 2011. Phonological contrast and its phonetic enhancement: Dispersedness without dispersion. *Phonology* 28.1: 1–54.

Hall, Daniel Currie. 2013. Redundant features in a contrast-based approach to phonology. In Paula Caxaj (ed.), *Proceedings of the 2012 annual conference of the Canadian Linguistic Association*, 11 pp. Toronto: Canadian Linguistic Association. Published online at `http://cla-acl.ca/?p=909`.

Harley, Heidi. 1994. Hug a tree: Deriving the morphosyntactic feature hierarchy. *MIT Working Papers in Linguistics* 21: 289–320.

Harley, Heidi & Elizabeth Ritter. 2002a. Person and number in pronouns: A feature-geometric analysis. *Language* 78.3: 482–526.

Harley, Heidi & Elizabeth Ritter. 2002b. Structuring the bundle: A universal morphosyntactic feature geometry. In Horst J. Simon & Heike Wiese (eds.), *Pronouns: Grammar and representation*, 23–39. Amsterdam: John Benjamins.

Harris, John & Geoff Lindsey. 1995. The elements of phonological representation. In Jacques Durand & Francis Katamba (eds.), *Frontiers of phonology*, 34–79. Harlow: Longman.

Iatridou, Sabine. 2000. The grammatical ingredients of counterfactuality. *Lingustic Inquiry* 31.2: 231–392.

Kyriakaki, Maria. 2006. *The geometry of tense, mood and aspect in Greek*. M.A. thesis, University of Toronto.

Kyriakaki, Maria. 2011. *DETs in the functional syntax of Greek nominals*. Ph.D. Thesis, University of Toronto.

Lefebvre, Claire. 1998. *Creole genesis and the acquisition of grammar: The case of Haitian Creole*. Cambridge: Cambridge University Press.

Lefebvre, Claire & Diane Massam. 1988. The DP and Haitian Creole. *Journal of Pidgin and Creole Languages* 3.2: 213–243.

Levin, Juliette. 1985. *A metrical theory of syllabicity*. Ph.D. thesis, MIT.

Mackenzie, Sara. 2009. *Contrast and similarity in consonant harmony processes*. Ph.D. Thesis, University of Toronto.

Mackenzie, Sara. 2013. Laryngeal co-occurrence restrictions in Aymara: Contrastive representations and constraint interaction. *Phonology* 30.2: 297–345.

Marantz, Alec. 1996. 'Cat' as a phrasal idiom: Consequences of late insertion in Distributed Morphology. Ms., MIT.

Papafragou, Anna, Peggy Li, Youngon Choi & Chung-hye Han. 2007. Evidentiality in languae and cognition. *Cognition* 103: 253–299.

Partee, Barbara H. 1973. Some structural analogies between tenses and pronouns in English. *Journal of Philosophy* 70.18: 601–609.

Ritter, Elizabeth & Martina Wiltschko. 2009. Varieties of INFL: Tense, location, and person. In Jeroen van Craenenbroeck (ed.), *Alternatives to cartography*, 153–202. Berlin: Walter de Gruyter.

Ritter, Nancy. 1995. *The role of Universal Grammar in phonology: A Government Phonology approach to Hungarian*. Ph.D. thesis, New York University.

Trubetzkoy, N. S. 1939. Grundzüge der Phonologie. *Travaux du Cercle Linguistique de Prague* 8.

Wiltschko, Martina. 2008. The syntax of non-inflectional plural marking. *Natural Language & Linguistic Theory* 26.3: 639–694.

Zaring, Laurie. 1992. French *ce* as a clausal determiner. *Probus* 4.1: 53–80.