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The End of Dichotomies?

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Problems addressed:

- What is a word class?
- Are word-classes sharp-edged categories?
- How to define word-classes:
 - distributional criteria?
 - lexical/notional definitions?
 - or something completely different?
- Is the age of dichotomies over?

Why word-classes are interesting from the viewpoint of dichotomies:

- Because most morphological, syntactic, diachronic, etc., analyses and processes refer to word-classes;
- consequently they raise problems of rules, generalizations, etc., involving word-class membership, i.e., apparently sharp-edged categories – cf. grammaticalization
- Note: ‘word’ taken for granted throughout – though various difficulties of definitions:
phonological, morphological, lexical, syntactic, etc., ‘words’, & subtypes depending on degrees of autonomy; cf., e.g., Kenesei 2007.

Proposal:

- **Word-class:**
 - a) status denied to **closed classes**
 - b) concept dissolved or reinterpreted as clustering of features/properties for **open classes**
- Consequences for classification of **affixes**
- Viewing 'word-classes' in wider context → circularity of definitions disappears.

How many word-classes are there?

- Well, pick your choice:
- **from EIGHT** – in traditional grammars from Τέχνη Γραμματική onward:
- surviving in modern times as Nouns, Verbs, Adjectives, Adverbs,
- then Pronouns (?), Prepositions, Conjunctions, Interjections(!) → grab bags.

- From **eight** to:
- **Indefinite numbers**, cf. from the 1960's:
- “as many classes are set up as words of different formal behaviour are found”
(Robins 1964)
- “a multitude of single member classes”
(Crystal 1967)
- “very few words have an identical formal behaviour, even in a given restricted grammatical environment” (ibid.).

Previous approaches 1: Early structuralists

The noun is a word-class; like all other form classes, it is to be defined in terms of **grammatical features** [...] When it has been defined, it shows a class-meaning which can be roughly stated as follows ‘object of such and such a species’; examples are *boy, stone, water, kindness*. (Bloomfield 1933, emphasis added)

Previous approaches 2: Later structuralists

- “[The pattern of interchangeability] defines a form-class which includes *she, he, it, John, Mary, the man at the corner, my friend Bill*, and so on endlessly, but which by no means includes all forms, since we can name many which are excluded: *her, him, them, me, yes, no, ripe, find her, go with us tomorrow.*” (Hockett 1958)
- Note: form-class = **words and phrases.**

Current approaches 1:

(cf. also Wälchli 2008)

- *Constructionists*: Croft 2005
- “Rigorous application of the distributional method would lead to a myriad of word classes, indeed, each word would probably belong to its own word class.” (cf. Robins & Crystal above)
- Parts of speech = linguistic universals, not language-specific word-classes
→ *to be questioned below*
- „Whatever identifying criteria we use for parts of speech – meaning, syntactic function, or inflection – the relationship between particular criteria and particular parts of speech is typically many-to-many.” (Anward 2000)

Current approaches 2:

- *Functionalists*: Dik 1989, Hengeveld 1992
- Classification according to head and/or modifier of predicate phrase or referential phrase:
→ **N, V, Adj, Adv**
- *Non-discreteness hypotheses*
Sasse 1993, 2001
- Word-classes are squishy, have fuzzy edges, are overlapping, etc.
- Arguments from equivocal use of N & V in Samoan, or identity of possessive (N) and subject-agreement (V) paradigms in Hungarian.

Current approaches 3:

- *Cognitivist* (Evans & Green 2006):
- Nouns often refer to entities, including people, and abstractions (like *war* and *peace*)
- Nouns typically take the inflectional plural affix -s (*cats, dogs, houses*) but there are exceptions (**mans, *peaces*) [!]
- Nouns also typically take the possessive affix -'s (*man's best friend*), and in terms of distribution, follow determiners like *your* and adjectives like *funny* (*your funny face*) [but cf. Hockett above]
- Nouns can be divided into two main subclasses: **common nouns** and **proper nouns**.

Current approaches 4:

- *Generative* (Aarts & Haegeman 2006)
- “Word classes can be viewed as abstractions over sets of words displaying some common property or properties.”
- „define word-classes in terms of their morphosyntactic properties, i.e., by using inflectional and distributional properties”

→ notional and/or distributional criteria throughout

→ problems of gradience recognized, but treated in terms of word-classes as ultimate categories (cf. Aarts–Croft debate, Traugott & Trousdale, eds., 2010)

Detour: Independent evidence for word-classes from psycho- and neurolinguistics 1

- a) Speech errors: word-class retention, from Fromkin (1971) onward, e.g.:
a laboratory in our own computer ←
a computer in our own laboratory
what are you incinerating? ← *insinuating*
the police liquidized him ← *liquidated*
- b) Broca aphasia: preserving word-classes (Grodzinsky 1990)

Independent evidence for word-classes from psycho- and neurolinguistics 2:

- c) Difference between processing open and closed class items (Biassou et al. 1997)
- “In contrast to the results of the normal subjects, the agrammatic Broca's aphasics demonstrate quite a different pattern of reaction time results. Whereas the normal subjects display no word class effect, the aphasics demonstrate a major effect for word class during sentence processing [...]. Thus, open class words are consistently responded to more rapidly than closed class words for these subjects.” (Swinney et al. 1980)
- d) Word-classes distinct in mental processes, shown by PET, fMRI, and ERP (= Event Related Potential): Nouns show larger negativity effects than Verbs. (Lee & Federmeier 2006)

Traditional word class definitions:

- centered around prototypical properties
- → hierarchy of features, fuzzy edges
- central properties determine syntactic information = paradigmatic characteristics
- Word class gradience results from one-dimensional representations,
- similar to clines in inflection vs. derivation:



Suppose we do have word-classes with sharp edges:

- Then: what's a word-class? – A set defined by the properties used as criteria.
- *Question:* Then what does it mean to belong to some word-class?
- *Answer:* To have those very properties or to be characterized by them.
- **But this is circular.**
- As soon as some word has a property derivative from its class membership, that very property will automatically serve as a criterion to define the word-class in question →
- **The circle is never broken.**

New proposal:

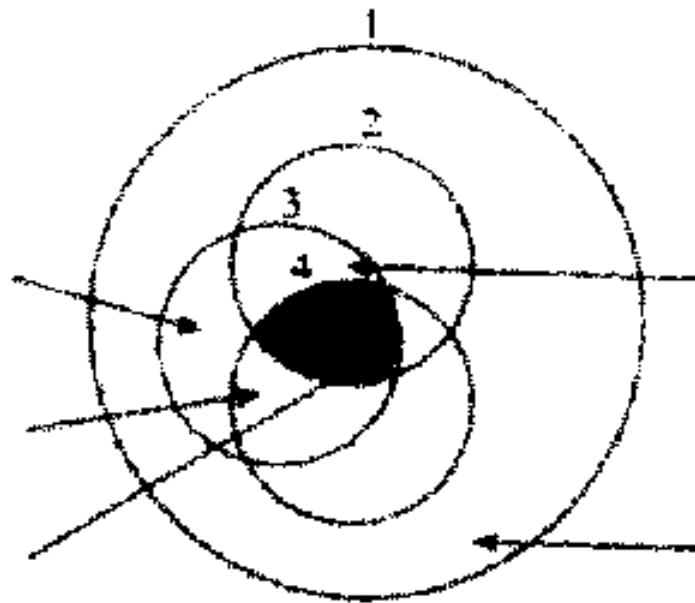
- Turn definitions upside down:
- Regard word-class criteria as information encoded in the word (morpheme, minimal lexical item, “listeme”, etc.)
- what is the nature of the information?
- anything that is relevant to what the item can cooccur with:
- → morphology (affixation: lists of derivational, inflectional, etc., affixes),
- → syntax (**V**: transitive, prepositional, complex transitive, ...; **A**: attributive, predicative, graded, intensification,...; **N**: \pm count, \pm def article, subjecthood, complement types: PP, CP, ...),
- → semantics (collocations, semantic constraints on derivational affixation, etc.)

New proposal (ctd.):

- Result: as many ‘classes’ as there are features – yes, Robins and Crystal again
- But: no longer circular, because these are features relevant at another/different level: syntax, affixation, etc.
- What we have called word-classes are but **instructions for the item as to what to combine with, i.e., how to behave in syntax**
- Classical word-classes are (equivalent to) sets or clusters of formal syntactic features
- Replace one-dimensional ‘word-classes’ with multidimensional approach via features.

Change to multidimensional analysis via features:
 we get something like Crystal's (1967) intersecting sets

+1
 -2 e.g.
 +3 'news'
 -4
 +1
 -2 e.g.
 +3 'information'
 +4
 central class
 +1
 +2 e.g. 'hardship'
 +3 'peroration'
 +4



1. May act as subject
2. Inflect for number
3. Co-occur with article
4. Morphological indication

+1
 +2 e.g. 'boy'
 +3 'girl'
 -4
 +1
 -2 e.g.
 -3 'phonetics'
 -4

Multidimensions in computational linguistics, cf. Maurice Gross' (1985) feature matrix and →

MGross_LexGram 1985.pdf - Adobe Reader

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	$N_0 = N$ hum	$N_0 = N$ pc	$N_0 = N$ -hum	$N_0 = N$ nr	$N_0 = V$ 0	$N_0 = V$ -n	$N_0 = N$ plur obl		N_0 V	N_0 est V-ant	N_0 est V pp	N_0 pc lui V	N_0 de N_0 pc		$N_1 = N$ hum	N_0 V Prép N pc de N_1	N_0 lui V Prép N_1 pc	N_0 V Prép N pc de N_0	N_0 V Prép N_0 pc	$N_1 = N$ -hum	$N_1 =$ le fait que P	Ppv	$N_1 = V$ -n	$N_1 = N$ plur obl	N_0 V de N_0 pc Prép N_1	N hum V sur ce point	N_0 est V-ant Prép N_1	il V N_0 0
dîner	+	-	-	-	-	-	-		+	-	-	-	-	de	-	-	-	-	-	+	-	-	-	-	-	-	-	+
éclater	-	+	+	-	-	-	-		+	-	+	-	-	ss	-	-	-	-	-	+	-	-	-	-	-	-	-	+
écoper	+	-	+	-	-	-	-		+	-	-	-	-	de	+	-	-	-	-	+	-	-	-	-	-	-	-	-
s'emparer	+	+	-	-	-	-	-		-	-	-	-	-	de	+	+	-	-	-	+	-	-	-	-	-	-	-	-
s'emporter	+	-	-	-	-	-	-		+	-	+	-	-	contre	+	+	-	-	-	+	+	-	-	-	-	-	-	-
l'emporter	+	+	+	+	+	-	-		+	-	-	-	-	sur	+	+	-	-	-	+	+	-	-	-	-	-	-	-
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festoyer	+	-	-	-	-	-	-		+	-	-	-	-	de	+	+	-	-	-	+	-	-	-	-	-	-	-	-
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fondre	+	+	+	-	-	-	-		-	-	-	-	-	sur	+	+	+	-	-	+	-	-	-	-	-	-	-	-
fuir	+	-	-	-	-	-	-		+	-	-	-	-	devant	+	-	-	-	-	+	+	-	-	-	-	-	-	+

Intransitive Verbs (From Boons, Guillet, Leclère 1976a)

8,50 x 11,00 in

Gross's subcategorized verb classes (N = 10k)

The screenshot shows a PDF document titled "MGross_LexGram 1985.pdf" in Adobe Reader. The document content is a table with two columns: the first column lists verb classes using N (Noun) and V (Verb) symbols, and the second column lists the corresponding counts. The table is enclosed in a hand-drawn black box. Below the box, the text "DISTRIBUTION OF OBJECTS" is centered. The Adobe Reader interface includes a menu bar (File, Edit, View, Document, Tools, Window, Help), a toolbar with icons for printing, navigation, and search, and a status bar at the bottom showing the page size as 8,50 x 11,00 in.

N₀ V	1,800
N₀ V N₁	3,700
N₀ V à N₁	350
N₀ V de N₁	500
N₀ V N₁ N₂	150
N₀ V N₁ à N₂	1,600
N₀ V N₁ de N₂	1,900
N₀ V à N₁ à N₂	3
N₀ V à N₁ de N₂	10
N₀ V de N₁ de N₂	1

DISTRIBUTION OF OBJECTS

Open vs. Closed

- But: some features/classes are more equal than others:
- Some extend over more items/have more members.
- More than that: some classes can have new members, others cannot
- → An age-old finding: the distinctions between open and closed classes
- But – with a difference:
- The 'usual' closed classes are rarely ever classes:
- seldom, if ever, are there two elements with identical distributions, i.e. feature combination.

Open vs. Closed: Examples

- If **Aux** is defined as a (subclass of) verb with no thematic role discharged → 3 Aux's in Hung.:
fog 'will'; *szokott* 'usually does'; *talál* 'happens to'
But: each has different complementation, affixation, etc., properties.
- **Articles**: *the, a/an, some, ZERO (?)* – different distribution by definition.
In fact, it is the 'articles' own edge features that determine their complementation
- **Pronouns** are notorious for being a 'non-class' – but it's convenient: related to one another by common properties of being referential by deixis or member of a paradigm, etc.

Bolinger's (1980) degrees of auxiliariness (after Heine 1993)

parameter	1	2	3	4	5	6	7	8	9
verb									
regret to									
try/want to									+
be going/have to							+	+	+
got/used/be supposed to					+	+	+	+	+
ought to		+	+	+	+	+	+	+	+
should/can/will/...	+	+	+	+	+	+	+	+	+

1. SAI
2. Neg contraction
3. Bare inf compl
4. Tagging
5. No subordinate to V
6. Conjugation defective
7. VP deletion
8. Epistemic, aspectual, modal meaning
9. *to* & *have* contraction

Zulu verbs and auxiliaries (after Heine)

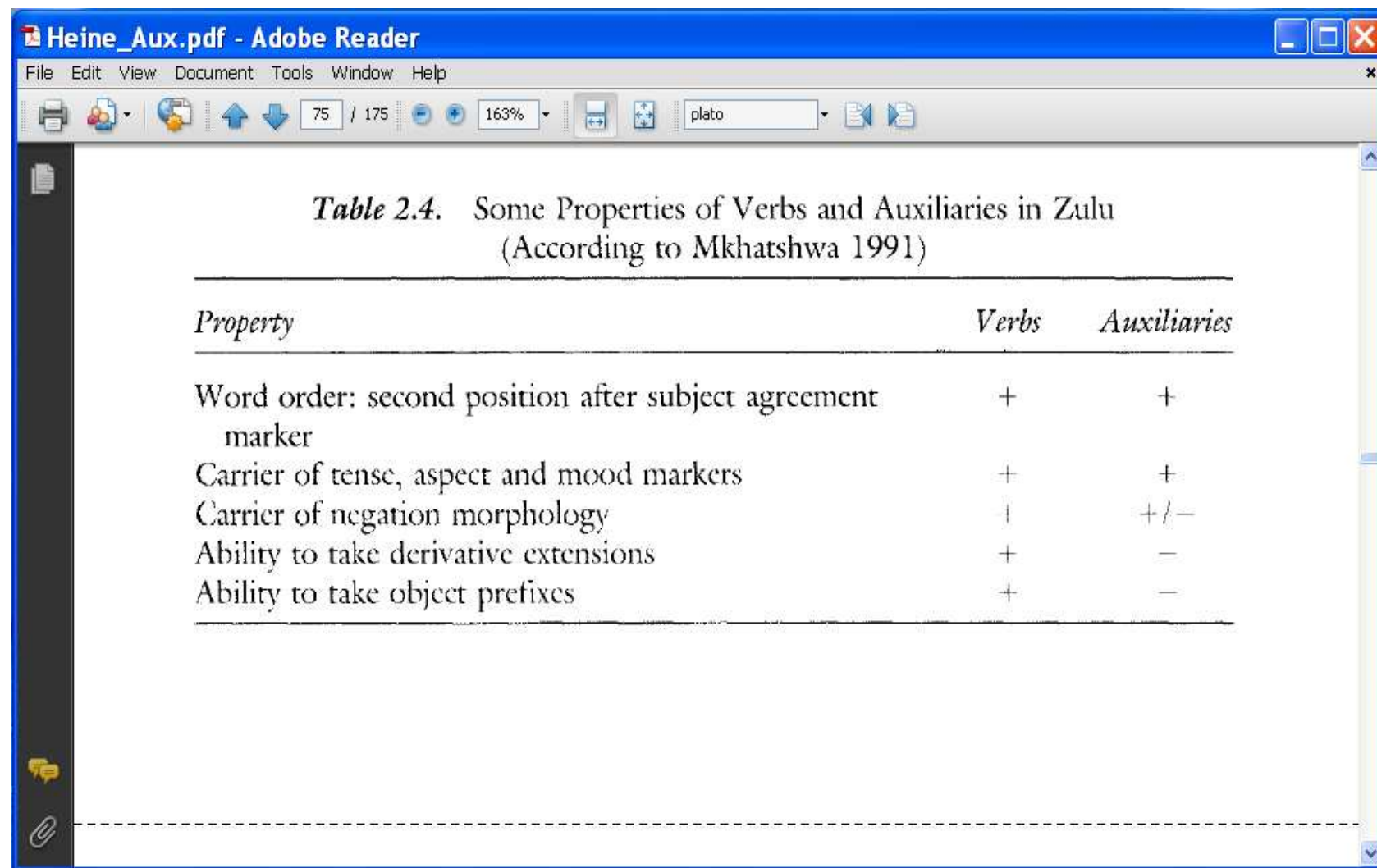


Table 2.4. Some Properties of Verbs and Auxiliaries in Zulu
(According to Mkhathshwa 1991)

<i>Property</i>	<i>Verbs</i>	<i>Auxiliaries</i>
Word order: second position after subject agreement marker	+	+
Carrier of tense, aspect and mood markers	+	+
Carrier of negation morphology	+	+/-
Ability to take derivative extensions	+	-
Ability to take object prefixes	+	-

• “[N]ot much is gained by defining ‘auxiliary’ in terms of necessary and sufficient criteria. Such a definition would have to be either so general as to be largely vacuous or else to be so specific as to exclude many of the properties commonly associated with these items. [...] One alternative would be to **eliminate both the label and the notion ‘auxiliary’ altogether from linguistic terminology.** [...] The term might turn out to be dispensable given a more appropriate theory of language. Since such a theory is not available as yet, both the label and the concept commonly associated with it are retained here.”

• → Definition: „An auxiliary is a linguistic item covering some range of uses along the Verb-to-TAM [*Tense-Aspect-Modality*] chain.” (Heine 1993: 69f)

Realizing Heine's programme: eliminate closed classes (= metalinguistic shorthand)

- a) calling attention to differences in pragmatic (reference, etc.), usage (deference, etc.), or functional aspects (in case of, e.g., 'conjunctions')
- b) simplifying lexicographers' work by grouping queer, anomalous, or out of the ordinary lexical items in the same basket – on grounds of considerations in (a)
- c) letting outsiders think that grammar is 'orderly': it makes statements about classes of words, not just individual items.

Open classes

- new members always possible → some combination of fundamental, central, 'prototypical' properties always available for loanwords, acronyms, regular compounding and derivation
- some features are more general, extend to more items than others, e.g., Crystal's and Gross's feature of 'can function as a subject – with/out an article.'

Affixes

- No need to worry about derivation *versus* inflection:
again determined by (sets of) properties
- Cf. Hungarian ‘syntactic derivation’ – some comparable to English ‘–ed compounds’, e.g., *curly-haired*, *very light skinned*; others to Slavic locative adjectives, cf. →

- Example: Prenominal attributive phrases derived from

- a) NP:

a [[[nagyon hosszú] haj]-ú] diák

the very long hair-**AFX** student

‘the student having very long hair’

- b) PostpositionalP:

a [[Péter felett]-i] diák

the Peter above-**AFX** student

‘the student above Peter’

Feature matrix for affixes: illustration from Mártonfi 2006:

MártonfiA_PhDdissz.pdf - Adobe Reader

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	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
<i>-(V)nként</i>	+	+	-	+	0	-	0	+	-	+	-	+	+	+	+	-	+	+	-	-	-	+
<i>-int</i>	-	0	-	-	-	-	-	-	-	+	-	-	-	+	+	-	-	-	-	-	+	+
<i>-ért</i>	+	+	0	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	-	+	-	+
<i>-Aszt</i>	+	-	0	-	-	-	-	-	-	+	-	-	-	+	+	-	-	-	-	-	-	+
<i>-u</i>	-	+	+	-	-	-	-	0	-	+	-	+	+	+	+	-	+	-	-	-	-	+
<i>-(j)Ú</i>	+	-	+	0	-	-	+	+	-	+	-	-	-	+	+	-	+	+	-	-	-	+
<i>-(An)tyÚ/-AttyÚ</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	+
<i>-(V(d))z[ik]</i>	-	-	-	-	-	-	-	+	-	+	-	-	-	+	-	-	-	-	-	-	-	+
<i>-Ó(d)z[ik]</i>	-	+	-	-	-	-	-	-	-	-	-	-	+	+	+	-	+	-	-	-	-	+
<i>-(A)dOz[ik]</i>	-	+	-	-	-	-	-	-	-	+	-	-	+	+	+	-	+	-	-	-	-	+
<i>-hOz</i>	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	-	+	-	+
<i>-(A)kOz/-kÓz[ik]</i>	+	-	-	-	-	-	-	+	-	+	-	-	-	+	+	-	-	-	-	-	-	+
<i>-íroz</i>	-	-	-	-	-	-	-	-	-	+	-	-	-	0	+	-	0	-	-	-	-	+

Advantages:

no more worries

- about number and composition of classes,
- prototypical *versus* peripheral members,
- clines and fuzzy edges, etc.,
- **and:** no circular definitions

Disadvantages:

- the age-old frame of reference will be seen only as a convenient labeling device for use in language education, lexicography, etc. – but without any theoretical support.

Conclusions 1:

- **There are no word-classes, only (clusters of) features**
- Comparable developments in other fields; complex units → simplex constituents in **physics**; large 'atoms' → smaller and smaller building blocks: proton/neutron/electron → elementary particles (fermions → quarks → hadrons; bosons, etc.)
- **Genetics**: Cells → Chromosomes → DNA → Gene → Nucleotides (Adenines, Thymines, Guanines, Cytosines)
- Also in **linguistics** – phonemes vs. *features*: “In recent years it has become widely accepted that **the basic units of phonological representation are not segments but features**, the members of a small set of elementary categories which combine in various ways to form the speech sounds of human languages.” (Clements and Hume 1995: 245)

Conclusions 2:

- Word-classes are **not** universals (cf. N & V in Chinese, Adj in Korean, cf. Kim 2002), though features (and their combinations) may well be
- Places the issue of word-classes into the proper context, that is:
- syntactic & (productive) morphological processes operate on features (or feature combinations), not words or morphemes;
- Consequently: **word-class is an epiphenomenon**
- And the final conclusion:
- **Dichotomies do live on, but no longer in word-classes, but in features.**

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