Syntactic Universals and Usage Frequency
(MARTIN HASPELMATH, Leipzig Spring School on Linguistic Diversity, March 2008)

Introduction:
Syntactic universals and usage frequency

1. This course

1	*Introduction*	We
2	*Object marking, definiteness and animacy*	We
3	*Alienable vs. inalienable possessive constructions*	Th
4	*Causatives and anticausatives*	Fr

2. Syntactic theory = understanding syntactic phenomena

an example:

(1) a. *The dog   chased   the cat   in the garden.*
    b. **The dog   chased   at the cat   the garden.*

Question: Why does the locative phrase have a preposition, while the patient phrase does not? (Further question: Why is there no **other** language in which this is the case?)

Answer: Because patients are more frequent than locatives, and **more frequent expressions tend to be shorter**.

		(per mi. words)
Cf. the most common 1-syllable word in English:	*the*	61,847
2-syllable	*into*	1,634
3-syllable	*government*	622
4-syllable	*information*	386
5-syllable	*international*	221
6-syllable	*responsibility*	93

Methodology: Look at *(morpho-)syntactic asymmetries*, and see whether they correspond to frequency asymmetries.

3. A widespread alternative:
Syntactic theory = a restrictive descriptive framework

generative linguistics, and "formal linguistics" more generally:

• Theoretical syntactic work consists in (i) proposing "syntactic theories" (= restrictive syntactic frameworks that are applicable to all languages), and (ii) providing "analyses" (= descriptions framed within the restrictive framework)
• It is assumed that there is only one correct "analysis".
• It is assumed that the restrictive framework is *innate* (Universal Grammar)

I make **none of these assumptions** (see Haspelmath 2004a). I only assume
• that syntactic phenomena can be described in *some* way
("phenomenological description")
•and that they can be compared across languages (using "comparative concepts", Haspelmath 2008d)

Example: **X-bar theory**

Observation: Gaps in attested patterns -- some describable structures don't exist.

(2)	NP --> D [$_{N'}$ N PP]	*the [horse on the meadow]*
	VP --> Adv [$_{V'}$ V NP]	*often [eats a flower]*
	PP --> Adv [$_{P'}$ P NP]	*right [under the tree]*
	(but not e.g. *NP --> VP P)	

Redundancy needs to be "expressed" in the descriptive framework:
only phrase structures of the following type are allowed:

(3)   **XP --> Y [$_{X'}$ X ZP]**   (**X-bar schema**, Jackendoff 1977 etc.)

Claim: The non-existence of the unattested structures has been "explained" by the new, "more restrictive" framework.

(4) "**Why** don't some languages have rules like "NP --> VP P"?"
     *Answer: Because such structures are not describable by the framework.
      Answer: Because the X-bar schema is part of Universal Grammar, i.e. such rules would not be acquirable.

•Without the innateness claim, there is no explanation here!

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4. Universalist explanations

Both in the generative approach and in my functionalist approach, explanations are *explanations of language universals*. Language-particular facts cannot be explained (in the strong sense of "explanation") -- they are historical accidents.

(Of course, language-particular facts can often be subsumed under more general rules; but these rules are always accidental to some extent.)

e.g. *The dog chased the cat*   *vs.*   **The dog the cat chased.*

(And language-particular facts are explained in a weak sense by showing that they instantiate more general universal facts.)

5. Diachronic functional explanations

Frequency-based explanations are not **purely synchronic explanations**. The tendency for frequent expressions to be short is not synchronically necessary -- a hypothetical language violating it could function as a language, be acquired by children, etc.

But there is a strong tendency for frequent forms to be **reduced diachronically** (cf. Haspelmath 1999b for diachronic functional explanations).

This means that present structural asymmetries are really due to past frequency asymmetries! But since our explanations are universalist anyway, this is not a problem -- we look at universal frequency asymmetries.

E.g. singular-plural contrast: singulars are universally more frequent than plurals (Greenberg 1966: 32)

(5)	Singular	Plural	Dual	number of nouns
Sanskrit	70.3%	25.1%	4.6%	93,277
Latin	85.2%	14.8%		8,342
Russian	77.7%	22.3%		8,194
French	74.3%	25.7%		1,000

(6) From Latin to Spanish:

SINGULAR	Spanish *lobo*	Latin	NOM	*lupus*	'wolf'	*(*lobos)*
			ACC	*lupum*		*(lobo)*
PLURAL	*lobo-s*		NOM	*lupi*		*(*lobe)*
			ACC	*lupos*		*(lobos)*

6. Three frequency effects

6.1. Relative frequency of paradigmatic alternatives

—> *differential predictability*   —> *shortness (of more frequent form)*

This relationship between shortness of coding and frequency of occurrence is found **in any efficient sign system** (e.g. phone numbers).

More frequent forms are shorter; when the two forms are related, the more frequent forms tend to be zero-coded:

Table 1. Frequent and rare categories	
dimension:	**categories, ordered by frequency:**
number	singular > plural > dual
case	nominative > accusative > dative
person	3rd > non-3rd (1st/2nd)
degree	positive > comparative > superlative
voice	active > passive
mood	indicative > subjunctive
polarity	affirmative > negative
tense	present > future

(7) Udmurt

	SINGULAR	PLURAL	
NOMINATIVE	*val*	*valjos*	'horse(s)'
ACCUSATIVE	*valez*	*valjosty*	'horse(s) (dir. obj.)'
ABLATIVE	*valleś*	*valjosleś*	'from the horse(s)'
ABESSIVE	*valtek*	*valjostek*	'without the horse(s)'

(8) Tzutujil

	COMPLETIVE	INCOMPLETIVE	POTENTIAL
1SG	*x-in-wari*	*n-in-wari*	*xk-in-wari*
2SG	*x-at-wari*	*n-at-wari*	*xk-at-wari*
3SG	*x-wari*	*n-wari*	*xti-wari*
1PL	*x-oq-wari*	*n-oq-wari*	*xq-oo-wari*
2PL	*x-ix-wari*	*n-ix-wari*	*xk-ix-wari*
3PL	*x-ee-wari*	*n-ee-wari*	*xk-ee-wari*

(Dayley 1985:87-8)

6.2. Absolute frequency of word forms

—> *differential memorizability*   —> *irregularity (of highly frequent forms)*

Suppletion and other forms of irregularity are found in high-frequency forms, e.g. Welsh:

(9)		a.	*gwel-d* 'see'	b.	*myn-d* 'go'	*gwneu-d* 'do'	*do-d* 'come'
	1SG		*gwel-es i*		*es i*	*nes i*	*des i*
	2SG		*gwel-est ti*		*est ti*	*nest ti*	*dest ti*
	3SG		*gwel-odd e*		*aeth e*	*naeth e*	*daeth e*

(King 1993:183)

6.3. Type frequency

—> *lexical strength in memory*   —> *productivity (of type-frequent patterns)*

The German plural in *-e* has a high type frequency (hundreds of nouns take this suffix), so it is productive, i.e. extended to new nouns (e.g. *Fax/Faxe*);
the German plural in *-er* (*Buch/Bücher*) has a low type frequency (only a few dozen nouns take this suffix), so it is unproductive.

7. Against markedness and iconicity   (cf. Haspelmath 2006, 2008b)

7.1. Against iconicity of complexity ("markedness matching")

(10) "More complex meanings are expressed by more complex forms."

some quotations from the literature that describe this principle and refer to it as "isomorphic" or "iconic":

• Lehmann (1974:111): "The more complex the semantic representation of a sign is, the more complex is its phonological representation."
• Mayerthaler (1981:25): "What is more "semantically" should also be "more" constructionally."

- Givón (1991:§2.2): "A larger chunk of information will be given a larger chunk of code."
- Haiman (2000:283): "The more abstract the concept, the more reduced its morphological expression will tend to be. Morphological bulk corresponds directly and iconically to conceptual intension."
- Langacker (2000:77): "[I]t is worth noting an iconicity between *of*'s phonological value and the meaning ascribed to it (cf. Haiman 1983). Of all the English prepositions, *of* is phonologically the weakest by any reasonable criterion.... Now as one facet of its iconicity, *of* is arguably the most tenuous of the English prepositions from the semantic standpoint as well..."

often iconicity of complexity is described as a kind of "iconicity of markedness matching":

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(11) "Marked meanings are expressed by marked forms."

- Jakobson (1963[1966:270]): "language tends to avoid any chiasmus between pairs of unmarked/marked categories, on the one hand, and pairs of zero/nonzero affixes...on the other hand"
- Plank (1979:139): "The formal markedness opposition iconically mirrors the conceptual-semantic markedness opposition."
- Haiman (1980:528): "Categories that are marked morphologically and syntactically are also marked semantically."
- Givón 1991: "(The meta-iconic markedness principle:) Categories that are *cognitively* marked—i.e. complex—tend to also to *structurally* marked."
- Aissen 2003:§3: "Iconicity favors the morphological marking of syntactically marked configurations."
see also Matthews (1991:236), Newmeyer (1992:763), Helmbrecht (2004:226)

"formally marked" = "expressed overtly"; typical examples of such markedness matching:

(12)	less marked/unmarked	(more) marked
number	SINGULAR (*tree-Ø*)	PLURAL (*tree-s*)
case	SUBJECT (Latin *homo-Ø*)	OBJECT (*homin-em*)
tense	PRESENT (*play-Ø*)	PAST (*play-ed*)
person	THIRD (Spanish *canta-Ø*)	SECOND (*canta-s*)
gender	MASCULINE (*petit-Ø*)	FEMININE (*petit-e*)
causation	NON-CAUSATIVE (Japanese *ik-u* 'go')	CAUSATIVE (*ik-ase-ru* 'make go')
object	INANIMATE (Spanish *Veo la casa* 'I see the house'	ANIMATE *Veo a la niña.* 'I see the girl.')

These universal formal asymmetries have been known since Greenberg (1966) (who did not invoke iconicity to explain them!)

7.2. Iconicity of complexity: frequency-based explanation

Greenberg (1966): frequency asymmetries explain formal asymmetries:
– "less marked" forms are more frequent, and "more marked" forms are less frequent across languages

• the English preposition *of* is not only the most "semantically tenuous", but also the most frequent of all the English prepositions.
• not only sufficient to account for the relevant phenomena, but also necessary, because iconicity of complexity makes wrong predictions:

(13)	**less marked/unmarked**	**(more) marked**
number	PLURAL	SINGULAR
	Welsh *plu* 'feathers'	*plu-en* 'feather'
case	OBJECT CASE	SUBJECT CASE
	Godoberi *mak'i* 'child'	*mak'i-di* (ergative)
person	SECOND P. IMPERATIVE	THIRD P. IMPERATIVE
	Latin *canta-Ø* 'sing!'	*canta-to* 'let her sing'
gender	FEMALE	MALE
	English *widow-Ø*	*widow-er*
causation	CAUSATIVE	NONCAUSATIVE
	German *öffnen*	*sich öffnen*

• in all these cases, <u>frequency makes the right predictions!</u>

• often called "markedness reversal"

• "unmarkedness" = 'frequency': "Marked" means "rare", and "unmarked" means "frequent". Cf. Haiman (2000:287):
> "...what is fundamentally at issue is markedness. Where plurality is the norm, it is the plural which is unmarked, and a derived marked singulative is employed to signal oneness: thus, essentially, *wheat* vs. *grain of wheat*.

• what is fundamentally at issue is frequency, not markedness!
(see Haspelmath 2006 for further arguments that a notion of markedness is superfluous)

• Lehmann (1974) and Haiman (2000): grammatical morphemes are universally shorter than lexical morphemes, and this iconically mirrors their more abstract or less complex meaning.
• But again frequency and economy account for the same facts!
• Iconicity makes the wrong prediction that lexical items with highly abstract or simple meanings should be consistently shorter than items with more concrete or complex meanings (as noted by Ronneberger-Sibold 1980:239).
• It predicts, e.g., that *entity* should be shorter than *thing* or *action*, that *animal* should be shorter than *cat*, that *perceive* should be shorter than *see*, etc.

7.3. Against iconicity of cohesion

> "Meanings that belong together more closely are expressed by more cohesive forms."

Haiman (1983:782-3): "The linguistic distance between expressions corresponds to the conceptual distance between them."

(14) Haiman's (1983:782) cohesion scale
    a. X *word* Y   (function-word expression)
    b. X Y   (juxtaposition)
    c. X-Y   (bound expression)
    d. Z   (portmanteau expression)

• "cohesion" preferable to "distance" (cohesion ≠ contiguity!); Newmeyer (1992:761-2) and Givón (1985:202, 1991:89) conflate cohesion and contiguity. Examples:

(i) **Possessive constructions:**
Inalienable possession shows at least the same degree of cohesion as alienable possession, because in inalienable possession (i.e. possession of kinship and body part terms) the possessor and the possessum belong together more closely semantically (Haiman 1983:793-5), e.g.

(15) Abun (West Papuan; Berry & Berry 1999:77-82)
    a. *ji bi nggwe*   'my garden'
       I of garden
    b. *ji syim*   'my arm'
       I arm

(ii) **Causative constructions:**
Causative constructions showing a greater degree of cohesion tend to express direct causation (where cause and result belong together more closely), whereas causative constructions showing less cohesion tend to express indirect causation (Haiman 1983:783-7; cf. also Comrie 1981:164-7, Dixon 2000:74-8).

(16) Buru (Austronesian; Indonesia; Grimes 1991:211, cit. after Dixon 2000:69)
    a. *Da   puna ringe gosa.*
       3SG.A cause 3SG.O be.good
      'He (did something which, indirectly,) made her well.'
    b. *Da   pe-gosa   ringe.*
       3SG.A CAUS-be.good 3SG.O
      'He healed her (directly, with spiritual power

cf. also English *cause to die* vs. *kill*

7.4. Iconicity of cohesion: frequency-based explanation

Absolute frequency explains the contrast between portmanteau expression and separate expression (cf. §6.2):

(17)	X-Y	Z
comparatives	*dri-er*	*worse*
past tense	*play-ed*	*went*
negation	*has-n't*	*won't*
gender	*actr-ess*	*nun*
diminutive	*pig-let*	*puppy*

• The items that show greater formal cohesion are more frequent in an absolute sense.

• Relative frequency and predictability explains the contrast between function-word expression (or affixal expression) and zero expression (14a vs. 14b), as well as the contrast between 14b and 14c (short items tend to be affixed because they are short[1]). Cf. subsequent sessions.

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[1] This issue deserves separate discussion but is probably beyond the scope of this course.

7.5. Is frequency-based shortness due to entrenchment?

> The theoretical explanation for economy (e.g. Bybee 1985) requires absolute frequency. Economy effects are due to degree of entrenchment of linguistic forms (morphological forms or constructions such as the possessive) in the mental representation of linguistic knowledge. Entrenchment leads to routinization of the production of the form by a speaker, which in turn brings about reduction of that form. But entrenchment is a result of exposure to the number of tokens of the linguistic form; that is, entrenchment is a function of the absolute frequencies of forms, not relative frequencies. (Croft 2008)

My reply (Haspelmath 2008c):

This echoes similar remarks in Joan Bybee's work (e.g. Bybee 2001, Bybee 2003), but I do not see how such a view can be reconciled with some basic facts. To be sure, routinization often cooccurs with reduction of form, because forms that are routinized for the speaker are often also predictable for the hearer. But in such cases the cause of the reduction is not the routinization, but the speaker's tendency to save energy when part of the message is predictable. When a routinized form is not predictable (e.g. when I dictate my phone number to someone), no reduction occurs. George Kingsley Zipf saw this correctly from the beginning of his writings:

> "In listening to spoken language, we notice that, among other things, the speaker invariably emphasizes these two: first, what is new or unexpected to the hearer; second, what the hearer desires [for the speaker] to make especially clear... But that which is unexpected, unusual, or unfamiliar to the hearer is, by definition, the seldom." (Zipf 1929:5)

Thus, frequency-induced reduction is to a large extent a hearer-based phenomenon and is not due to routinization, but to predictability. It should also be noted that predictability need not be due to linguistic frequency. Stereotypical situations allow massive reduction, simply because the context makes the utterance content easy to predict.

8. Manifestations of frequency-induced shortness (cf. Haspelmath 2008a)

8.1. Frequent: zero/Rare: overt

(18)		**frequent expression**		**rare expression**
(i)	a.	singular: *book-Ø*	b.	plural: *book-s*
(ii)	a.	3rd person: Spanish *canta-Ø* 'sings'	b.	2nd person: *canta-s* 'you sing'
(iii)	a.	present: *I Ø sing*	b.	future: *I will sing*

The overt element may be an affix (as in (18i-ii)) or a free word (as in (18iii)).

8.2. Frequent: shorter/Rare: longer.

(19)		**frequent expression**		**rare expression**
(i)	a.	Tamil inanimate locative *-il*	b.	animate locative *-iṭam*
(ii)	a.	Latin dative sg. *-ō/-ae/-ī*	b.	dative plural *-īs/-īs/-ibus*
(iii)	a.	Russian "middle" refl. *-sja*	b.	ordinary reflexive *sebja*

8.3. Frequent: straightforward/Rare: roundabout construction

(20)   **(a) frequent expression**   **(b) rare expression**

  (i) *Gabriel's friend*   *a friend **of** Gabriel's*
                                        (cf. Haspelmath 1999a)

  (ii) *I gave her it.*   *I gave it **to** Aisha.*
                                         (cf. Haspelmath 2004b, 2007)

  (iii) German
    Ich will spielen.   *Ich will, **dass** du spielst.*
    'I want to play.'   'I want you to play.'

  (iv) Modern Greek
    Ton=íða.   *Íða **ton** eaftó=mu.*
    'I saw him.'   'I saw myself.'

(21)   **frequent expression**   **rare expression**
  a. *sing!* (imperative 2nd person)   b. *let her sing!* (imperative 3rd pers.)

8.4. Frequent: existent/Rare: nonexistent

(22)   **frequent expression**   **rare expression**

    Tzutujil (Dayley 1985:145)
  (i) a. *w-ati7t* 'my grandmother'   b. **ati7t* 'grandmother'
  (ii) a. *juyu7* 'mountain'   b. **w-juyu7* 'my mountain'

    Acehnese (Durie et al. 1994:177-8)
  (iii) a. *Lôn-tém woe.*   b. **Lôn-tém droeneuh woe.*
      I-want   return   I-want   you   return
      'I want to return.'   'I want you to return.'

  (iv) a. *Who do you think that I met?*   b. **Who do you wonder why I met?*

9. Three ways of achieving well-coded patterns   (cf. Haspelmath 2008a)

9.1. Differential phonological reduction: the more frequent pattern gets reduced

(23) Person: From Proto-Slavic to Polish

	gloss	Proto-Slavic	Russian	Polish
1SG	'I write'	*pišǫ	pišu	piszę
2SG	'you write'	*pišešǐ	pišeš'	piszesz
3SG	's/he writes'	*pišetǔ	pišet	pisze-Ø

(24) Number: From OE to ModE
    English singular of nouns became zero by special phonological reduction:
    Old English *dæg/dagas (>* Modern English *day/days)*
    < Proto-Germanic **dag-z/*dag-ōs* (cf. Gothic *dags* 'day', *dagos* 'days')

(25) Reflexives:
    Russian reduced reflexive pronoun: *-sja*, apparently derived by special
    phonological reduction from full reflexive pronoun *sebja*
    (at the Proto-Slavic stage or even earlier)

(26) Alienability:
  a. Old Italian   Latin
     moglia-ma   <   *mulier mea*   'my wife'
     fratel-to   <   *fratellus tuus*   'your brother'
     *terra-ma   (*cf. terra mea*)   'my land' (alienable noun)

  b. Nyulnyul (Nyulnyulan; northern Australia; McGregor 1996):
     jan   yil   vs.   *nga-lirr*   (< *ngay lirr*)
     I.OBL dog   1SG-mouth   I   mouth
     'my dog' (alienable)   'my mouth' (inalienable)

(27) Complement clauses of 'want':
  English same-subject *wanna*, contrasting with different-subject *want to*
  (*The reason I wanna come is Anna* vs. *The guest I want to come is Anna.*)

9.2. Differential expansion/inhibition of a new construction

• conserving effect of usage frequency (more frequent constructions are preserved)
• predictability implies less need of overt coding

e.g. Alienability splits

In Classical Arabic, all nouns can take possessive affixes:

(28) *yad*   'hand'   *kitaab*   'book'
     yad-ii 'my hand'   *kitaab-ii* 'my book', etc.

In Maltese, only inalienable nouns (body part terms/kinship terms) take possessive affixes; others occur in a periphrastic construction with *tiegħ-* 'of':

(29) *id*   'hand'   *ktieb*   'book'
     id-i   'my hand'   **ktieb-i* 'my book'
                               il-ktieb tiegħ-i (originally: 'the book my-possession')

9.3. Analogical change can create economical patterns

Selective preservation of older markers, e.g.:

(30)   Old High German   Modern German
     NOM.SG *affo*   *knoto*   *Affe*   *Knoten*
     ACC.SG *affon*   *knoton*   *Affen*   *Knoten*
            'ape'   'knot'   'ape'   'knot'
 (cf. Haspelmath 2002:245).

(31)   Old French   >   Modern French

	SG	PL	SG	PL
NOM	*murs*	*mur*		
ACC	*mur*	*murs*	*mur*	*murs*

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