

Markedness and Optimality Theory

A Case Study of Pronominal Inventories

JOAN BRESNAN

Stanford University

[Optimality Theory and Typology, Summer School 2002]

1

A parable from phonology:^a

Once upon a time there were phonological rules: e.g.

coda devoicing: [-son] → [-voice] / ___]_σ

vowel nasalization: V → [+nasal] / N_σ

Grammars consisted of rules. e.g. Dutch had the rule of coda devoicing; English did not. In Dutch:

/bed/ → [bet]
/bed.ən/ → [be.dən]

^a—freely adapted from Kager (1999: ch. 1)

2

OT replaced such rules by universal constraints:

- a. *VOICED-CODA: obstruents must not be voiced in syllable coda position
- b. IDENT-IO(VOICE): the specification of the feature [voice] of an input segment must be preserved in its output correspondent

Constraints conflict. (b) is a *Faithfulness* constraint; these preserve contrasts. (a) is a *Markedness* constraint; these penalize complex or ‘difficult’ structures, and so tend to erode contrasts. A particular language harmonizes the conflicting constraints by prioritizing (ranking) them.

Given a language-particular constraint ranking, *the optimization function* ‘minimizes the maximum problem’ (Boersma 1998) by picking the candidate that best satisfies the top ranked constraint on which it differs from its competitors (Prince and Smolensky 1993).

3

Dutch: *VOICED-CODA ≫ IDENT-IO(VOICE)

For input /bed/, Dutch has:

Candidates:	*VOICED-CODA	IDENT-IO(VOICE)
bet		*
bed	*!	

English: IDENT-IO(VOICE) ≫ *VOICED-CODA

For input /bed/, English has:

Candidates:	IDENT-IO(VOICE)	*VOICED-CODA
bet	*!	
bed		*

4

Where do constraints come from? “What are the constraints on the constraints?” “What prevents you from having a constraint *T0ASTEROVEN?”^a

... what is ‘marked’ and ‘unmarked’ for some structural distinction is not an arbitrary formal choice, but rooted in the articulatory and perceptual systems.
—René Kager
(*Optimality Theory: Cambridge Textbooks in Linguistics*, 1999: 3)

e.g. Voicing is unmarked in vowels, marked in obstruents (Ito and Mester 1998: VOP—Voiced Obstruent Prohibition). Across languages syllable onsets have more voicing contrasts than codas, and this can be explained by the greater salience of onsets, which enhances perception of voicing contrasts.

The fact that voicing is unmarked in vowels and marked in obstruents is assumed, not explained by OT (indeed, the constraints could be formally reversed). What OT provides is *explicit mechanisms (a formal model) for deriving complex outputs of rule systems from substantive functional theories*.

^aJane Grimshaw, p. c.

5

6

What is gained by all this?

Factorial typology:

- I IDENT-IO(VOICE) \gg *VOICED-CODA, VOP
- II *VOICED-CODA \gg IDENT-IO(VOICE) \gg VOP
- III VOP, *VOICED-CODA \gg IDENT-IO(VOICE)

- I = Full contrast (e.g. English)
- II = Positional neutralization (e.g. Dutch)
- III = No contrast (e.g. Polynesian)

OT: a unified formal theory of language-internal patterns and crosslinguistic asymmetries. ‘Distributional markedness’ and ‘typological markedness’^a are logically derived from the same theory.

^a(Gundel, Houlahan, and Sanders 1986).

7

8

In a nutshell:

- constraints, not rules
- grounded constraints
- factorial typology
- language-internal distributional patterns ~ crosslinguistic typological asymmetries

A markedness approach to syntax?

Variation within languages approaches variation across languages.^a
We may call this result the “congruence of intra- and interlinguistic diversity.”

—Emmon Bach
(*Syntactic Theory*, 1974: 255)

Markedness Distribution Principle: Typological markedness and difference of distribution are correlated such that, in a given language with two alternating forms A and B, if A has a wider distribution than B, then A is not typologically marked relative to B, and if A is typologically unmarked relative to B, then A has a wider distribution than B.

—Gundel, Houlihan, and Sanders
(*Markedness*, Eckman, Moravcsik and Wirth, eds., 1986: 107–38)

^aFormulation suggested by Emmon Bach, p.c., April 2002

9

An OT approach to markedness in syntax

- **constraints, not rules**
- *grounded* constraints
- factorial typology
- language-internal distributional patterns ~ crosslinguistic typological asymmetries

10

11

To formulate constraints we need explicit representations of morphosyntactic input and output.

The nature of input and output representations in morphosyntax is largely determined by two general conditions on the OT model:

- ‘Richness of the base’
- Recoverability of the input from the output.

I. ‘Richness of the base’: Languages differ systematically *only* in their rankings of universal constraints (Prince and Smolensky 1993, Smolensky 1996a). Systematic variation is derived by the rerankings of universal constraints rather than by language-particular specifications of differences in input or lexical inventory. *The universality of the morphosyntactic input can be expressed by an abstract multidimensional space of dimensions of contrast as formally modelled by complex feature structures.*^a

II. Recoverability of input from output: For learnability, the input must be recoverable from the output (containing the overt perceptible data) either by containment or correspondence (Tesar and Smolensky 1996). The recoverability of the abstract feature structure from the overt perceptible forms of expression can be ensured by taking GEN to be one of the mathematically well understood feature-structure based models of syntax, such as OT-LFG (Kuhn 2001).^b

^aSome universal constraint families are indexed to language-particular word classes or morphemes, such as the family of morphological alignment constraints (McCarthy and Prince 1993) and morphologically indexed faithfulness constraints (Urbanczyk 1995, 1996; Benua 1995, 1996; Fukazawa 1997).

^b—also the family of related models (HPSG, construction grammar, categorial grammar variants, ...).

12

The Input for personal pronouns.

By 'richness of the base' the input must be universal across all particular languages.

Assumption: What universally characterizes a pronoun are its referential role and functions, not its syntactic category.

Assumed in functional syntax (e.g. Givón 1976, 1983, 1984, 1990, 1995, Nichols 1986, Van Valin 1996), lexical functional grammar (e.g. Mohanan 1982, Simpson 1983, 1991, Kanneyama 1985, Bresnan and Mchombo 1986, 1987, Andrews 1990, Austin and Bresnan 1996, Bresnan 1995, 2001a), some Optimality Theoretic syntax (Grimshaw and Samek-Lodovici 1995, Samek-Lodovici 1996, Bresnan 2001b,c, 1998b, 2000b), and some work in the Minimalist Program (Everett 1996).

13

Examples:

- Indirect object clitic copies in Spanish: not pronominal in content, but markers of grammatical agreement (Suñer 1988, Andrews 1990) occurring with every kind of indirect object, including negative indefinites and interrogatives
- An obligatory subject agreement prefix in Setawana having pronominal content (Denuh and Johnson 1989)
- Deictics recruited as anaphoric pronouns in many languages (Greenberg 1986: xix)
- Pronouns derived from nominals, as in Spanish *Vuestra Merced* and Portuguese *Vossa Merce* ('Your honour'), which became *Usted* and *Você(s)* respectively (Mühlhäusler and Harré 1990: 136–7); similarly in Japanese (Sugamoto 1989), where *watashi* [1pers] comes from *watakushi* 'privacy'.
- "a generic pronominal root (usually invariant across all person-number categories, and often etymologically a form of the verb 'be' or a noun such as 'body' or 'self') with nominal or verbal affixes distinguishing the different number categories" (Nichols and Peterson 1996: 345–6; Lipkind 1945; Jelinek and Demers 1983, 1994)

14

An English example:

Trudgill and Chambers (1991: 8) report that in East Anglian dialects of English *it* occurs only as an object pronoun, with third person neuter singular subjects being indicated by *that*:

*That's raining.
I don't like it—that's no good.*

A local woman who helps us clean the house here said to me the other day after a long search for the broom, which, like many other things is always being moved around the house by the kids, and had gone missing to be finally located down the side of the fridge

"That's a good place for it. But as soon as you start saying something, that disappears."

(Louisa Sadler, p.c., May 6, 1997)

In East Anglian, *that* has the morphological form of a demonstrative, but is functioning as a third singular neuter personal pronoun. Thus it is incorrect to *define* pronouns as having distinct pronominal stem forms. It is the functions of the element that determine its pronominality, not its etymology or its form.

15

Features of the input for personal pronouns:^a

- PRO — shifters used for reference to speech-act participants (Jespersen 1922: 123; Cysouw 2001: 5)
- TOP — topic-anaphoricity (Givón 1976, 1983, 1984, 1990: 91ff)
- P/N — classification by person, number, ... (Givón 1984: 354–5)

Language-independent representation of pronominal content by feature-structures:



^aNote. Social level or distance is also important: Javanese (Geertz 1960: 248ff), Balinese (Arka 1998), Thai, Burmese, and Vietnamese (Cooke 1968), Mühlhäusler and Harré (1990: 64) take the major pronominal contrasts to be (i) "'person' and the features of participant roles" and (ii) "'distance and proximity (obviative and proximative) both spatial and social'".

16

The Output: Typological variation in pronominal forms

Range of personal pronominal forms:

Zero Bound Clitic Weak Free

Zero: pronominals having no expression in morphology or syntax

Bound: morphologically bound pronominals, also called pronominal inflections, which are expressed by affixal structure on a head

Clitic: pronominals that have a specialized syntactic position and are phonologically bound to a host; 'special clitics' in Zwicky's (1977, 1985) sense

Weak: freestanding pronominal forms, neither phonologically nor morphologically bound to another constituent, but atonic and differing in syntactic distribution from nominal phrases.

Free: freestanding pronominal forms which may receive primary sentence accents

17

Representation of pronominals as form/content pairings:

Zero: $\langle \emptyset, \left[\begin{array}{c} \text{PRO} \\ \text{TOP} \end{array} \right] \rangle$

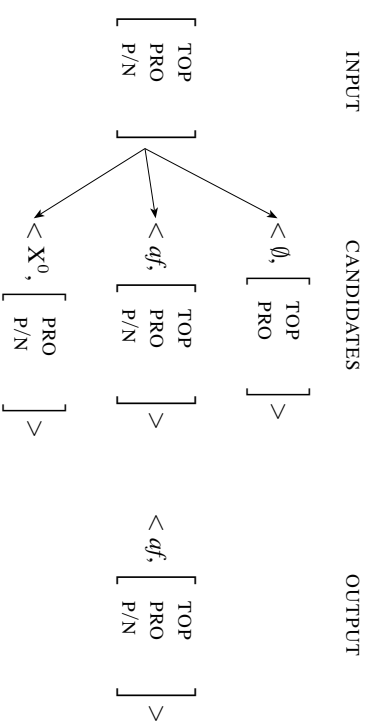
Bound: $\langle af, \left[\begin{array}{c} \text{TOP} \\ \text{PRO} \\ \text{P/N} \end{array} \right] \rangle$

Free: $\langle X^0, \left[\begin{array}{c} \text{PRO} \\ \text{P/N} \end{array} \right] \rangle$

etc.

18

OT: pronominal markedness theory:



GEN: INPUT → CANDIDATES

EVAL: CANDIDATES → OUTPUT

19

An OT approach to markedness in syntax

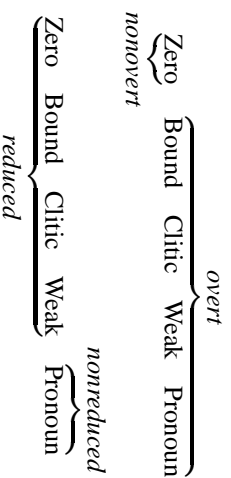
- constraints, not rules
- **grounded constraints**
- factorial typology
- language-internal distributional patterns ~ crosslinguistic typological asymmetries

20

Markedness constraints

“The relation between pronominal form and pronominal content is not arbitrary, like the Saussurean sign: no language has Free pronouns devoid of any person/number/gender distinctions, while many languages have Zero pronouns with just this property. No language has Zero, Bound, or Clitic pronouns used only for emphasis or focus, while many languages have Free pronouns with just these functions.” (Bresnan 2001b)

Classification of pronominal forms:



21

Functions of pronominal forms:

- (a) Overt \Leftrightarrow P/N: Pronominals are inherently specified for person/number/gender contrasts if and only if they are overt.^a
- (b) Reduced \Leftrightarrow TOP: Pronominals are reduced if and only if they are specialized for topic anaphoricity.^b

^aBresnan 2001b; Austin and Bresnan 1996. Distinguish zero pronouns from pronominal inflections (Givón 1976; Simpson 1983, 1991; Jehneek 1984, 1988, 1990, 1995; Bresnan and Mchombo 1986, 1987; Sandoval and Jehneek 1989; Demuth and Johnson 1989; Andrews 1990; Speas 1990; Willie (1990); Sadock 1991; Uyechi 1991; Nordlinger 1997; Jehneek and Demers 1994; Bresnan 1996, 2001a; Böjars, Chapman, and Vincent 1997; Torwonen 1996, 1997; Everett 1996; Speas 1997; inter alia)

^bGivón 1976, 1984, 1990: 917; Haiman 1985: 150, 167, 194, 232–2; Schwartz 1986 (on focus functions of independent pronouns); Van Valin 1996; Kameyama 1985; Grimshaw and Samet-Lodovici 1995; Samet-Lodovici 1996; Lambrecht and Lemoine 1996; Bresnan and Mchombo 1986, 1987; Lambrecht 1981; Cardinaletti 1999; Cardinaletti and Starke 1996; inter alia.)

22

23

One example: discourse topics in Chicheŵa (Bresnan and Mchombo 1987: 768):

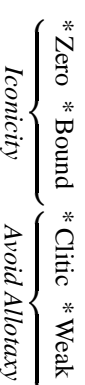
- (a) *Fisi anadyá nkāngo. Á-tá (ú) dyá. anapítá ku San Francisco.*
 hyena ate lion(3) he-serial-iti(3)-eat he-went to S.F.
 ‘The hyena ate the lion. Having eaten it, he went to S.F.’
- (b) *Fisi anadyá nkāngo. Á-tá-dyá (two) anapítá ku San Francisco.*
 hyena ate lion(3) he-serial-eat it(3) he-went to S.F.
 ‘The hyena ate the lion. Having eaten it (something other than the lion), he went to S.F.’

Reduced pronominals are syntactically marked

Motivation: In syntax, reduced pronouns are structurally marked, in that they impose difficulties for semantic recoverability (iconicity), and involve more complexity in the form-function mapping (avoid allomorphy) (Haiman 1985).

Free pronouns preserve iconicity and avoid allomorphy (perceptual advantages), while reduced pronouns minimize expression of the familiar (production advantages). (Haiman 1985: 150, 167, 194, 232–2; Houghan and Iverson 1979: 141); Gundel, Houghan, and Sanders 1986: 136–7)

A family of **markedness constraints** (= MARK): (Haiman 1985, Bresnan 2001b, 1998b, 2000b, Vincent 1999)



24

Faithfulness constraints: (= FAITH)

FAITH(TOP), FAITH(PRO), FAITH(P/N)

Faithfulness constraints require that features of the input content be preserved in the output expression. They thus serve the communicative function of expressing contrasts in content, protecting content against the eroding effects of markedness constraints on forms.

25

26

Input [PRO, P/N, TOP]	*WEAK	*CLITIC	*BOUND	*ZERO	FAITH(TOP)	FAITH(P/N)	FAITH(PRO)
Zero: [PRO, TOP]			*	*		*	
Bound: [PRO, TOP, P/N]							
Clitic: [PRO, TOP, P/N]	*						
Weak: [PRO, TOP, P/N]	*				*		
Free: [PRO, P/N]					*		
Input [PRO, P/N]	*WEAK	*CLITIC	*BOUND	*ZERO	FAITH(TOP)	FAITH(P/N)	FAITH(PRO)
Zero: [PRO, TOP]			*	*	*	*	
Bound: [PRO, TOP, P/N]					*	*	
Clitic: [PRO, TOP, P/N]	*				*		
Weak: [PRO, TOP, P/N]	*				*		
Free: [PRO, P/N]							

27

An OT approach to markedness in syntax

- constraints, not rules
- *grounded* constraints
- **factorial typology**
- language-internal distributional patterns ~ crosslinguistic typological asymmetries

28

If MARK \gg FAITH, violations of structural markedness constraints are worse than violations of faithfulness constraints. Hence, being a structurally marked form will be worse than failing to preserve contrasts. In order to minimize violations, the marked forms will be avoided in favor of unmarked forms, regardless of the input (content).

Ranking yielding only the free pronoun:

Input [PRO, TOP, P/N]	MARK	FAITH
Zero: [PRO, TOP]	*1	*
Bound: [PRO, TOP, P/N]	*1	
Free: [PRO, P/N]		*

If FAITH \gg some member \mathcal{M} of MARK, then failing to preserve contrast is worse than violating \mathcal{M} . Hence, the marked form will be utilized to express contrast, and unmarked forms will be used elsewhere.

Ranking yielding a bound pronominal:

Input [PRO, TOP, P/N]	...	*ZERO	FAITH	*BOUND
Zero: [PRO, TOP]		*!	*	
Bound: [PRO, TOP, P/N]				*
Free: [PRO, P/N]			*!	

The free pronoun under the same ranking:

Input [PRO, P/N]	...	*ZERO	FAITH	*BOUND
Zero: [PRO, TOP]		*!	**	
Bound: [PRO, TOP, P/N]			*!	*
Free: [PRO, P/N]				

29

Because languages differ systematically only in their constraint rankings, by “Richness of the Base” (Prince and Smolensky 1993, Smolensky 1996a), this (partial) markedness theory predicts the asymmetrical distribution of reduced pronominals.

Asymmetric crosslinguistic distribution of reduced pronominals:

“... no language lacks free forms while some languages may lack bound forms...” (Carstairs-McCarthy 1992: 165–6)

Languages	Free	Reduced
Navajo, Macushi, ...:	X	X
English, Lezgian, ...:	X	–
?	–	X

30

An OT approach to markedness in syntax

- constraints, not rules
- *grounded* constraints
- factorial typology
- language-internal distributional patterns ~ crosslinguistic typological asymmetries

31

Variation within languages (distributional markedness)

Relational hierarchy of nominal dependents of verbs:



The positional markedness of reduced pronominals in non-Core relations:

*REDUCED/OBL

Motivation: Information structure is not randomly mapped onto syntactic structure: topical arguments are preferred in core over noncore syntactic positions (Aissen 1999, Haspelmath 2001). Reduced pronominals are specialized for topicality, and so are attracted to core syntactic positions.

32

A constraint family:

*ZERO/OBL: Japanese, Malayalam (Mohanan 1983)

*CLITIC/OBL: Olang Tirolese (Cardinaletti and Starke 1996), Czech

*BOUND/OBL: Chicheŵa (Bresnan and Mchombo 1987), Warlpiri (Simpson 1991)

Prediction: When positional markedness constraints (here *RE-DUCED/OBL) dominate faithfulness constraints, contrasts (even if otherwise preferred in the language) are avoided in the marked positions. This overriding of faithfulness constraints creates an “emergence of the unmarked effect” (Bresnan 2000a,b, 2001b, 1998b)

33

35

Emergence of the unmarked pronoun in Japanese:

Input [ABOUT < x >, [PRO, TOP] _x]			
Zero <i>tuite</i> :	[... [PRO, TOP]]	*1	* ZERO/OBL
Bound+ <i>tuite</i> :	[... [PRO, TOP, P/N]]	*1	∴ BOUND
Free <i>tuite</i> :	[... [PRO, P/N]]	*	FAITH
		**	* ZERO

Free replacing Zero: Japanese^a

sono hon-o yonda kedo watashi-wa ??sore-o-0 susume-nai
 that book-ACC read:PAST but I-TOP (it) recommend-NEG
 ‘I read that book but I wouldn’t recommend it.’

sono hon-o yonda kedo sore-ni-0 tuite-wa hanasitaku nai
 that book-ACC read:PAST but (that-dat) about-TOP talk:want NEG
 ‘I read that book but I don’t want to talk about it.’

^aNote: Japanese attaches constraints of social level to its pronominal system: use of an overt pronoun to designate a person implies social familiarity and is therefore avoided in many situations (Peter Sells and Yukiko Morimoto, p.c. March 1997). For this reason, an inanimate overt pronoun is used in these examples.

34

36

Free replacing Bound: Chicheŵa

(Bresnan and Mchombo 1987: 769; Bresnan 2000a, 2001b)

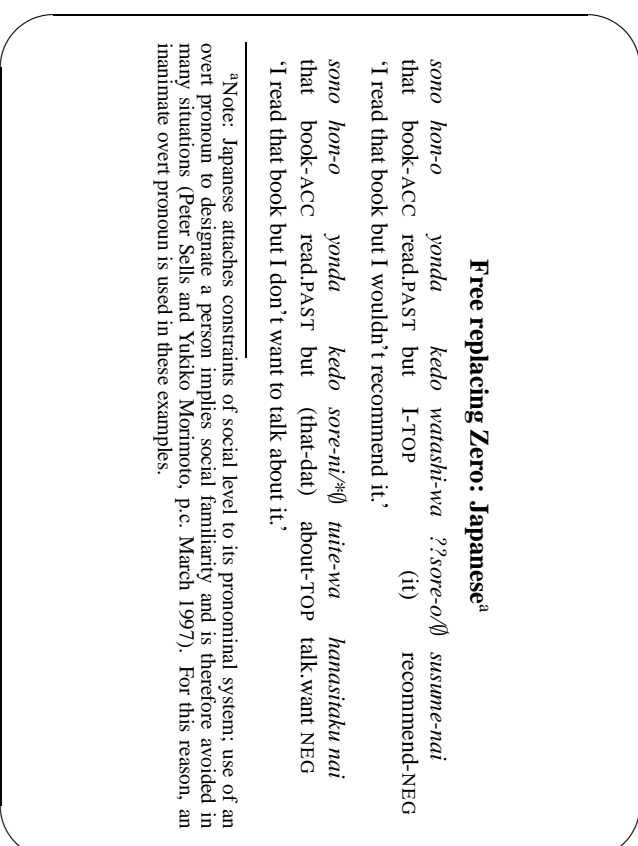
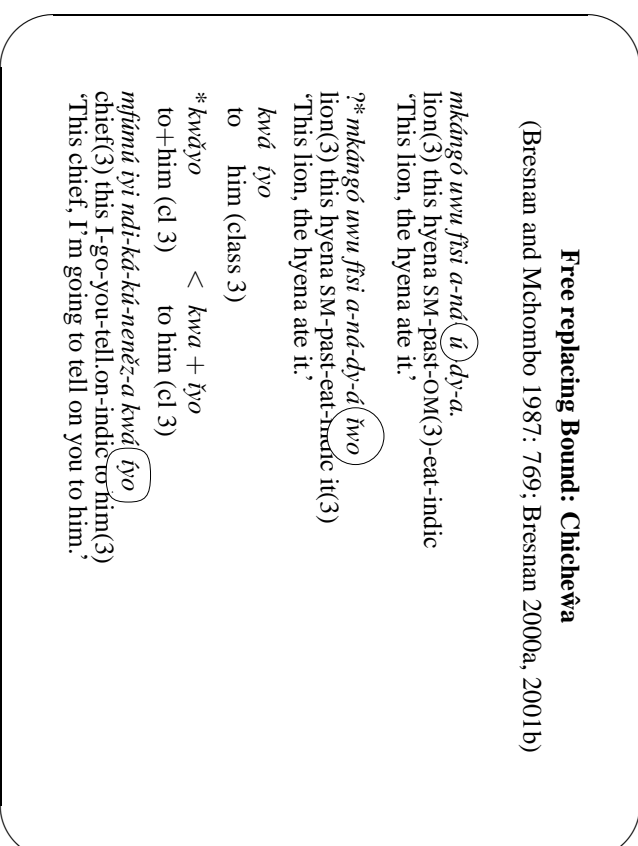
mkángó uwu físi a-ná-ú-dy-a.
 lion(3) this hyena SM-past-OM(3)-eat-indic
 ‘This lion, the hyena ate it.’

∴ *mkángó uwu físi a-ná-dy-á-wo*
 lion(3) this hyena SM-past-eat-indic it(3)
 ‘This lion, the hyena ate it.’

kawá ŷyo
 to him (class 3)

* *kwaŷyo* < *kwa* + *ŷyo*
 to+him (cl 3) to him (cl 3)

nyámú ŷyi ndi-ká-kú-neně-z-a kwá-ŷyo
 chief(3) this I-go-you-tell.on-indic to him(3)
 ‘This chief, I’m going to tell on you to him.’



Emergence of the unmarked pronoun in Chicheŵa:

Input [TO < x >, [PRO, TOP] _x]				
kwá Zero	[... [PRO, TOP]]	* BOUND/OBL	∴ ZERO	*!
kwá+Bound [... [PRO, TOP, P/N]]		*!		
kwá Free	[... [PRO, P/N]]		FAITH	* **

Emergence of the unmarked pronoun in Czech:

Input [AT < x >, [PRO, TOP] _x]				
na Zero:	[... [PRO, TOP]]	*!	* BOUND	FAITH
na+Bound: [... [PRO, TOP, P/N]]			*!	* **
na Free:	[... [PRO, P/N]]			* **

Free replacing Clitic: Czech

(Petr Sgall, p.c., November 10, 1998)

<i>Vidm tě.</i> see-I CL:you 'I see you.'		<i>Tebe vidm.</i> you see-I 'I see YOU (contrastive).'
* <i>Dvám se na tě.</i> look-I REFL at CL:you 'I look at you.'		* <i>Na tě se vidm.</i> at CL:you REFL look-I 'I look at you.'
<i>Dvám se na tebe.</i> look-I REFL at you 'I look at you.' (not contrastive)		<i>Na tebe se dvám.</i> at CL:you look-I 'I look at YOU.' (contrastive)

Variation across languages (typological markedness)

*REDUCED/OBL \gg FAITH \gg *REDUCED
positional neutralization

Occurs in: Japanese [Zero], Chicheŵa [Bound], Czech [Clitic]

FAITH \gg *REDUCED/OBL, *REDUCED
full contrast

Occurs in: Macushi (Carib) [Bound], Godié (Kru) [Clitic and Weak], Sanuma (Yanomani) [Weak]

*REDUCED/OBL, *REDUCED \gg FAITH
no contrast

Occurs in: English, Lezgian, ...

This derives the asymmetry:

Positional neutralization of the reduced/nonreduced contrast:

Reduced pronominals occur most frequently with subjects or subjects and objects ('core relations') and less frequently with oblique ('non-Core') argument types (Moravcsik 1974, Givón 1976, Foley 1998, Siewierska 1999).

	Free	Reduced
Core relations:	x	x
Non-Core relations:	x	–

41

Summary of some concepts

OT constraints are motivated by functional considerations including general properties of the human perceptual, motor, and cognitive systems and the pragmatic context of language use. [grounded constraints]

The same general constraints are hypothesized to be present in every grammar but are more or less active depending on their relative strength (ranking) among conflicting constraints. [universality]

Systematic aspects of language-particular inventories are derived by constraint ranking, not from alterations in the assumed inputs. [richness of the base]

Unmarked structures become optimal when faithfulness constraints (which maintain marked structures to express contrasts) are overridden. [the emergence of the unmarked]

The possible rerankings of the general constraints in any grammar give a set of alternative grammars. [factorial typology]

“Variation within languages approaches variation across languages.” [Distributional markedness and typological markedness are logically derived from the same theory.]

42

For further reference . . .

Bresnan, Joan. 2001b. The emergence of the unmarked pronoun. In *Optimality-Theoretic Syntax*, ed by Géraldine Legendre, Jane Grimshaw, and Sten Vikner, 113–142. Cambridge: The MIT Press.

On the typology of pronominal expression:

Cysouw, Michael. 2001. *The Paradigmatic Structure of Person Marking*. Nijmegen: Katholieke Universiteit Nijmegen Ph.D. dissertation.

Forchheimer, Paul. 1953. *The Category of Person in Language*. Berlin: Walter de Gruyter.

Mithlhäusler, Peter and Ron Harré. 1990. *Pronouns and People: The Linguistic Construction of Social and Personal Identity*. Oxford: Basil Blackwell.

Siewierska, Anna. 1999. Reduced Pronominals and Argument Prominence. In *Proceedings of the LFG99 Conference*, University of Manchester, ed. by Miriam Butt and Tracy Holloway King. On-line, CSLI Publications: <http://csli-publications.stanford.edu/LFG/4/lfg99.html>.

Wiesemann, Ursula (ed.). 1986. *Pronominal Systems*. Tübingen: Gunter Narr Verlag.

43

On pronominal functions:

Arka, I Wayan. 1998. *From Morphosyntax to Pragmatics in Balinese. A Lexical-Functional Approach*. Sydney: University of Sydney Department of Linguistics Ph.D. dissertation.

Austin, Peter and Joan Bresnan. 1996. Nonconfigurationality in Australian aboriginal languages. *Natural Language & Linguistic Theory* 14, 215–68.

Cardinaletti, Anna. 1999. Pronouns in Germanic and Romance languages: an overview. In *Clinics in the Languages of Europe*, ed. by Henk van Riemsdijk, 33–82. Berlin: Mouton de Gruyter.

Cardinaletti, Anna and Michal Starke. 1996. Deficient pronouns: a view from Germanic. A study in the unified description of Germanic and Romance. In *Studies in Comparative Germanic Syntax*, vol. II, ed. by Höskuldur Thráinsson, Samuel David Epstein, and Steve Peter, 21–65. Dordrecht: Kluwer.

Demuth, Katherine and Mark Johnson. 1989. Interaction between discourse functions and agreement in Setawana. *Journal of African Languages and Linguistics* 11, 21–35.

44

- Givón, Talmy. 1976. Topic, pronoun and agreement. In *Subject and Topic*, ed. by Charles N. Li, 149–88. New York: Academic Press.
- Givón, Talmy. 1983. Topic Continuity in Discourse: An Introduction. *Topic Continuity in Discourse: A Quantitative Cross-Language Study*, ed. by T. Givón, 5–41. Amsterdam: John Benjamins Publishing Company.
- Noguchi, John. 1997. Two types of pronouns and variable binding. *Language* 73: 770–797.
- Sugamoto, Nobuko. 1989. Pronominality: a noun-pronoun continuum. *Linguistic Categorization*, ed. by In Corrigan Corrigan, Roberta, Fred Eckman, and Michael Noonan, 267–291. Amsterdam: John Benjamins.
- Suñer, Margarita. 1988. The role of agreement in clitic-doubled constructions. *Natural Language & Linguistic Theory* 6: 391–434.
- Trudgill, Peter and J. K. Chambers (eds). 1991. *Dialects of English. Studies in Grammatical Variation*. London: Longman.
- Whitischko, Martina. 2002. The syntax of pronouns: Evidence from Halkomelem Salish. *Natural Language & Linguistic Theory* 20: 157–195.

- On markedness and functionally motivated grammar:**
- Corrigan, Roberta, Fred Eckman, and Michael Noonan. 1989. *Linguistic Categorization*. Amsterdam: John Benjamins.
- Croft, William. 1990. *Typology and universals*. Cambridge: Cambridge University Press.
- Eckman, Fred R., Edith A. Moravcsik, and Jessica R. Wirth (eds). 1986. *Markedness*. New York: Plenum Press.
- Gundel, Jeanette, Kathleen Houlihan, and Gerald Sanders. 1989. Category restrictions in markedness relations. In Corrigan et al. (eds), 131–147.
- Haiman, John. 1985. *Natural Syntax: Iconicity and Erosion*. Cambridge: Cambridge University Press.
- Kager, René. 1999. *Optimality Theory: A Textbook*. Cambridge: Cambridge University Press.

email: bresnan@stanford.edu
 WWW: <http://www-ol.stanford.edu/bresnan/>

On the representational basis:

- Andrews, Avery D. 1990. Unification and morphological blocking. *Natural Language & Linguistic Theory* 8: 507–557.
- Bresnan, Joan. 2000a. Optimal syntax. In *Optimality Theory: Phonology, Syntax, and Acquisition*, ed. by Joost Dekkers, Frank van der Leeuw, and Jeroen van de Weijer, 334–395. Oxford University Press, Oxford.
- Bresnan, Joan. 2001a. *Lexical-Functional Syntax*. Oxford: Blackwell.
- Kuhn, Jonas. 2001. *Formal and Computational Aspects of Optimality-theoretic Syntax*. Stuttgart: IMS, Universitit Stuttgart Ph.D. dissertation.
- Sells, Peter, ed. 2001. *Formal and Empirical Issues in Optimality Theoretic Syntax*. Stanford: CSLI Publications.
- Sells, Peter. 2001. *Structure, Alignment and Optimality in Swedish*. Stanford: CSLI Publications.