なぜOV言語はCVか：語順と音韻の相関性

Why do OV languages have CV syllable structure?

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Goals

- To show that OV languages have simple syllable structure by analyzing data in *The World Atlas of Language Structures* (*WALS*).
- To explain why OV languages have simple syllable structure by phonological constraints and syntactic movement.

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OV => agglutinative
VO => inflectional

- Consistent OV languages tend to be agglutinative in their morphology. [Universals Archives #11]
  (Lehmann 1973: 47)

(1) Japanese
  a. *yomaseta* 'He caused to read.'
  b. *yomasenai* 'He does not cause to read.'
  c. *yomarenai* 'It is not being read.'

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OV => agglutinative
VO => inflectional

- Consistent VO languages tend to be inflectional in their morphology.
  (Lehmann 1973: 47)

(2) Hebrew
  a. *ka:tab* 'He wrote.'
  b. *hikti:b* 'He caused to write/be written.'
  c. *hitkatte:b* 'He corresponded (wrote reciprocally).'

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OV => moraic-counting
VO => syllable-counting

- OV languages are often mora-counting, and VO languages are syllable-counting.
  [UA#891] (Lehmann 1973)

(3) Japanese
  /su-ro-o-mo-o-sho-n/

(4) English
  /slow-mo-tion/

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OV => phrase-initial stress
VO => phrase-final stress

- In a Verb Phrase, main stress should be to the right of Verb in VO languages and to its left in OV languages [because a phrase's main stress is located on its most deeply embedded constituent, which is ordinarily the innermost complement of the phrase head]. [UA#372, cf. #893]
  (Cinque 1993, cf. Donegan and Stampe 1983)

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#893 RHYTHMIC HOLISM: Donegan & Stampe (1983) and Stampe (1985)		
phrase accent ('X):	rising (final)	falling (initial)
word canon:	iambic (last syllable accented) or monosyllabic	trochaic or dactylic (first syllable accented)
timing:	isoaccentual (stress timed)	isosyllabic or isomorphic (syllable-or mora-timed)
syllable canon:	(C)V or (C)(C)V(Glide)(C)	(C)V(C)
consonantism:	diachronically shifting tonogenetic consonantism non-geminate clusters	stable geminate clusters
vocalism:	diachronically shifting diphtongal reductive	stable monophtongal harmonic
tone/register:	contour tones/register	level tone
verse:	rhyme (identities final)	alliteration (identities initial)
music:	polyphony tempered scales multiplicative rhythms	monophony modal scales additive rhythms
word order:	rigid operator last: VO, VAdv, AuxV, NAdj, AAdv, NGen, Adp NP (i.e. prepositions)	variable operator first: OV, AdvV, VAux, AdjN, AdvA, GenN, NP Adp (i.e. postpositions)
clitic order:	proclitic	enclitic
affix order:	prefixing	suffixing
morphosyntax:	more analytic	more synthetic , especially case, verb agreement
morphology:	flective or isolating	agglutinative or polysynthetic

#894 RHYTHMIC HOLISM: Gil (1986)	
IAMBIC RHYTHM (WEAKER-STRONGER)	TROCHAIC RHYTHM (STRONGER-WEAKER)
unstressed before stressed	stressed before unstressed
less- before more-syllable units	more- before less-syllable units
less- before more-sonorous units	more- before less-sonorous units
less- before more complex syntactically	more- before less complex syntactically
less- before more important syntactically	more- before less important syntactically
(S)OV etc. (i.e. modifier-head order throughout)	(S)VO etc. (i.e. head-modifier order throughout)
agglutinative morphology	flective morphology
stressed-timed	syllable-timed
faster tempo (measured in syllables per unit time or per unit content	slower tempo
simple syllable structure	complex syllable structure
high consonant-vowel ratio	low consonant-vowel ratio
more obstruent segments (textually and in phonemic inventory)	more sonorant segments
more level intonation contours (less pitch variation)	more variable intonation contours (more melodic)
non-tonal	tonal

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OV => simple syllable structure
VO => complex syllable structure

- OV languages tend to have simple syllable structure. [UA#196]

(Lehmann 1973:61, cf. Plank 1998)

(5) Japanese: CV or CV*n* /se/ or /sen/

(6) English: CCCVCCCC /streŋkθs/ *strengths*

Cf. *COMPLEX: No more than one C or V may associate to any syllable position node.

NO-CODA: A syllable must *not* have a coda.

(Prince and Smolensky 1993)

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Do OV languages have simple syllable structure?

- Haspelmath, Martin, Matthew S. Dryer, David Gil, and Bernard Comrie (eds.) 2005. *The World Atlas of Language Structures (WALS)* [with The Interactive Reference Tool].
- Combined features:

  Word order: OV, VO or No dominant order

  Syllable: Simple, Moderately complex or Complex

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Syllable structure

- Simple: CV (Hawaiian, Mba)
  (C)V (Fijian, Igbo, Yareba)
- Moderately complex: Moderately simple
  CVC_C [C_C: limited? (HT)]
  CC_2V [C_2: liquids or glides]
  CC_2VC (Darai /bwak/ 'father')
- Complex: (C)(C)(C) V (C)(C)(C)(C)
  (Maddieson 2005 in *WALS*)

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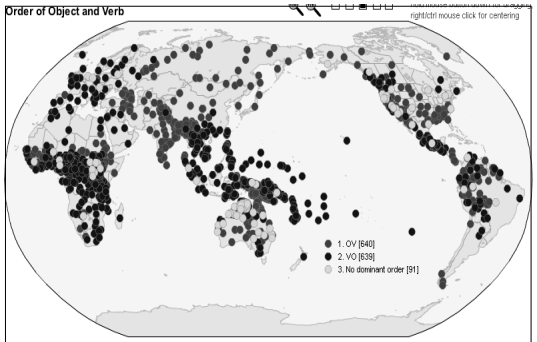

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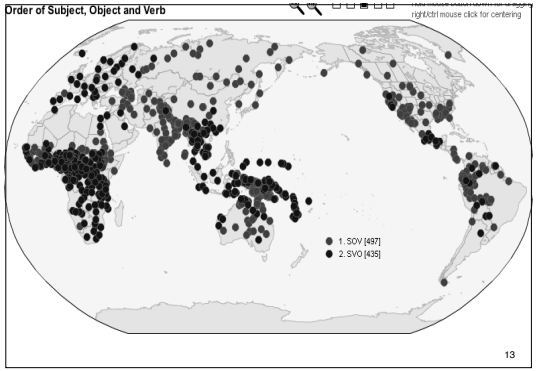

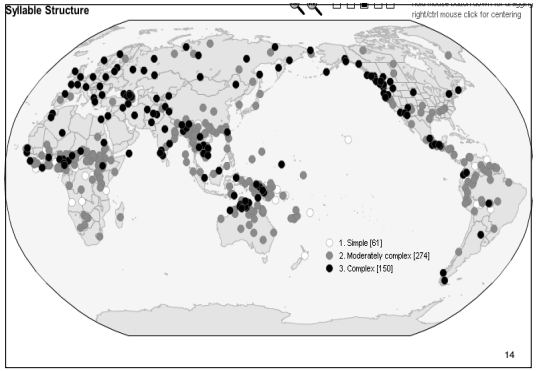

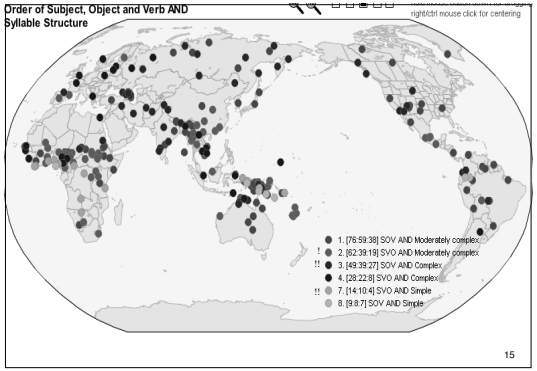

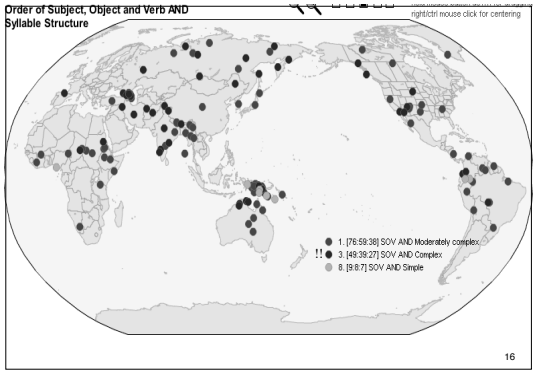

Epenthesis/Deletion

- Hindi

(7) a. pre:m -> pəre:m (CCVC -> CVCVC)
b. krisn -> krisən (CCVCC -> CCVCVC)

- Basque <- Latin

(8) a. liburu <- libru(m) (CVCVCV <- CVCCV)
b. luma <- pluma(m) (CVCV <- CCVCV)

- Georgian (SOV/SVO?)

(9) gvprtskvni ‘you peel us’; ts’k -> tsik (?)

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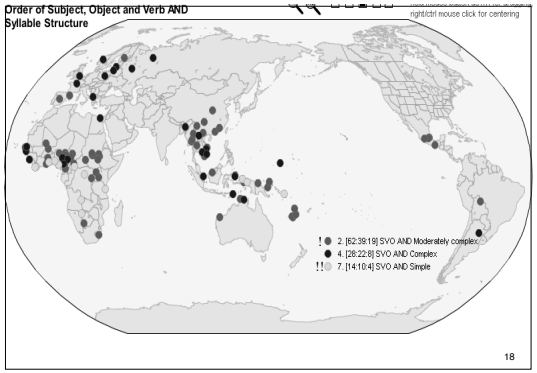

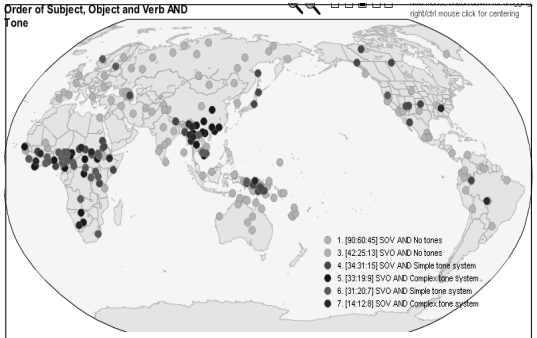

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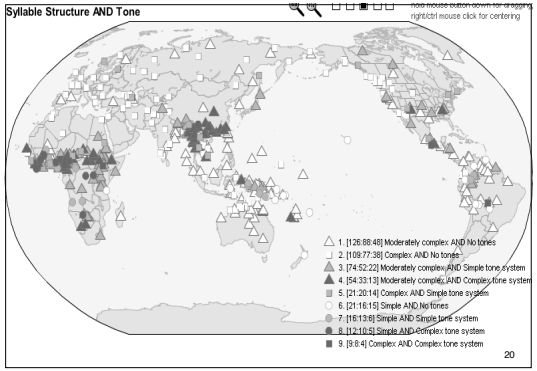

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Correlating phonological complexity

- syllable complexity and mean # of consonants: positive correlation
- syllable complexity and tone complexity: negative correlation

(Maddieson 2006)

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Coda consonants in VO languages

- South east Asia (Thai, Vietnamese)
- Thai: VO, Moderately complex syllable

  Coda: /p, t, k, ʔ, m, n, ŋ, w, y/
- Vietnamese: VO, Moderately complex syllable $(C_1)(w)V(G)(C_2)+T$

  C_2: labial, coronal, & velar stops /p, t, k/ and nasals /m, n, ŋ/

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Summing up

- OV languages tend to have simple (or moderately complex) syllable structure.
- Exceptions can be attributed to the neglect of phonological simplification.
- VO languages tend to have complex syllable structure with consonant cluster and various coda consonants or (moderately) complex tone.

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Why do OV languages have simple syllable structure?

- Head parameter: head-final [O<u>V</u>]
  head-initial [<u>V</u>O] (Chomsky 1981)
- Movement: SV<u>O</u> -> S<u>O</u>V (Kayne 1994)
  SO<u>V</u> -> S<u>V</u>O (Fukui and Takano 1998)
- Incorporation, polysynthesis (Baker 1988, 2001)
- Branching and stress in compounds and phrases (Cinque 1993)

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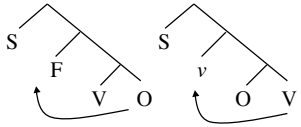
Syntax of OV and VO

- Movement: S V O -> S O V (Kayne 1994)
  S O V -> S V O (Fukui and Takano 1998)



Kayne 1994 Fukui and Takano 1998

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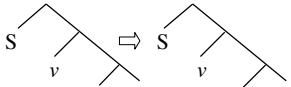
Proposal: O-to-V movement

- Movement: S V O -> S O V (Kayne 1994)
  S V O -> S O-V (Proposal)



Movement driven by an interface condition at PF (NO-PAUSE)

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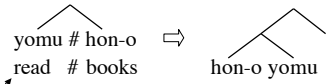
Movement driven or canceled by phonological constraints

(10) NO-PAUSE
A sentence must *not* have pause.



(NO-PAUSE: *) CVCV CVCV (*COMPLEX: √)
* books read
CVCC CVC (*COMPLEX: **)

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	*COMPLEX	NO-PAUSE
a. yomu # hon-o CVCV # CVCV		*!
b. ☞ hon-o yomu CVCV CVCV		
a. ☞ read # books CVC # CVCC		*
b. books read CVCC CVC	*!	

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Consequences

- Agglutinative
  yom-ase-ta made them read
  oyog-eru can swim
- PP: P N (V O) -> N-P (O-V)
  ni # Komaba -> Komaba-ni
  to # Boston -> *Bost*o*n-to

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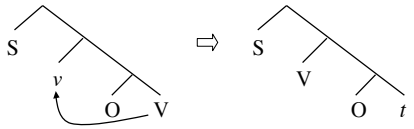
An alternative analysis: SOV -> SVO



[S [*v* [O V]]] [S [V [O *t*]]]
...CVCV…
...VCCCCV… ⇨ ...VCC [CCV...

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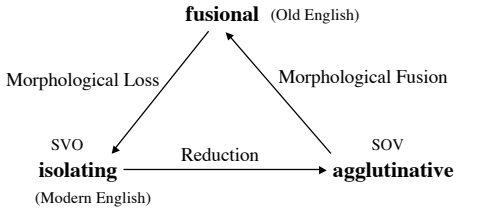
Historical change in morphological type



(Whaley 1997; Sapir 1921)

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Left-branching structure as compound

- Head parameter: head-final vs. head-initial
- OV <-> N Postp:

  [[[Kita-no] kuni-no] kurashi]
  north-P country-P life
  'life in countries in the north'
- VO <-> Prep N

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Left-right asymmetry
Voicing in Japanese: *rendaku*

(11) a. [nise [tanuki shiru]] -> [nise [tanuki jiru]]

b. [[nise tanuki] shiru] -> [[nise danuki] jiru]

(12) Right Branch Condition

Rendaku applies only when a potential *rendaku* segment is in a right branch constituent.

(Otsu 1980, cf. LBC by Haraguchi 2001)

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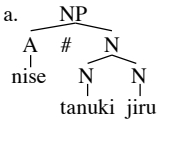
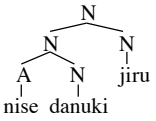
Right-branching as phrase
Left-branching as compound

(13) a.



b.



nise # tanuki + jiru — [nise [tanuki jiru]]

nise + danuki + jiru — [[nise danuki] jiru]

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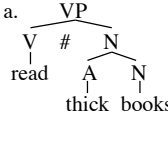
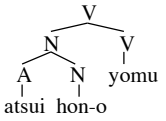
Right-branching as phrase
Left-branching as compound

(14) a.



b.



read # thick + books — read [thick books]] — CVC # CV(C) + CVCC

atsui + hon-o + yomu — [[atsui hon-o] yomu] — VCV + CVCV + CVCV

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*COMPLEX-ONSET in Complement and NO-CODA in Head

- *COMPLEX-ONSET in Complement

(15) them -> 'em beat'em VO HC

- NO-CODA in Head

(16) of -> o' a cup [o' tea] PN HC

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Branching and phrase/compound

(17) In a configuration $[_C$ A B $_C]$:

a. NSR: If C is a phrasal category, B is strong.

b. CSR: if C is a lexical category, B is strong iff it branches.

(Liberman and Prince 1977, cf. Cinque 1993:273)

(18) Right-branching structure is a phrase with a strong boundary.

Left-branching node is a compound with a weak boundary.

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Complement-to-Head movement in VO languages

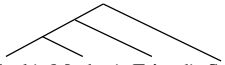
(19) a. therein <- in there (in that place)

N - P P N

b. proof-reading <- read proof

N - V V N

c.



Wadeck's Mother's Friend's Son (movie title)

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Conclusion

- OV languages tend to have simple syllable structure.
- OV languages allow Complement-to-Head movement to derive pause-less structure without consonant cluster.

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Yasutomo KUWANA for collecting and analyzing data

Toshiro TSUMAGARI for reminding me of *WALS*.

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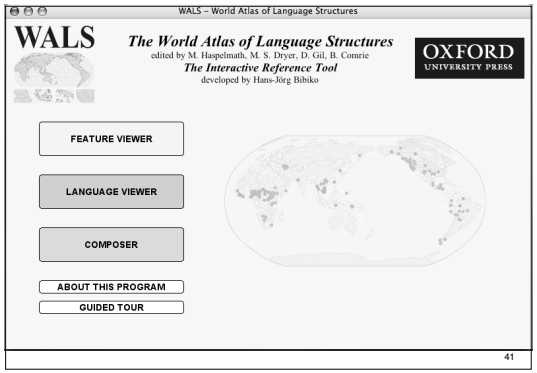

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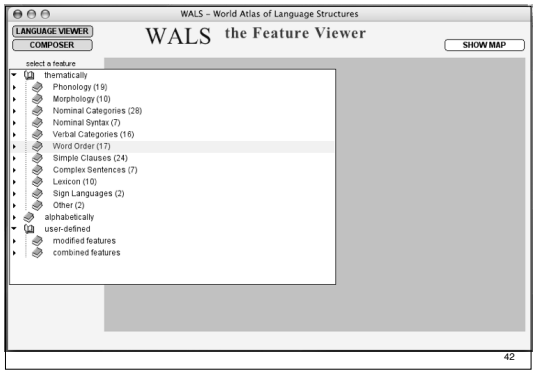

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References

Allen, George D. 1975. Speech rhythm: Its relation to performance universals and articulatory timing. *Journal of Phonology* 3: 75-86. ???

Baker, Mark C. 1988. *Incorporation: A theory of grammatical function changing*. Chicago: University of Chicago Press.

Baker, Mark C. 2001. *The atoms of language: The mind's hidden rules grammar*. New York: Basic Books.

Chomsky, Noam. 1995. *The minimalist program*. Cambridge, Mass.: MIT Press.

Chomsky, Noam, and Morris Halle. 1968. *The sound pattern of English*. New York: Harper and Row.

Cinque, Guglielmo. 1993. A null theory of phrase and compound Stress. *Linguistic Inquiry* 24, 239-298.

Collins, Chris. 2001. Eliminating labels. In *MIT Occasional Papers in Linguistics* 20. MIT Working Papers in Linguistics. Also in *Derivation and explanation in the minimalist program*, ed. Samuel David Epstein and T. Daniel Seely, 42-64. Malden, MA: Blackwell, 2002.

Donegan, Patricia Jane and David Stampe. 1983. Rhythm and the holistic organization of language structure. *Papers from the parasession on the interplay of phonology, morphology and syntax*. ed. J. F. Richardson, 337-353, Chicago Linguistic Society.

Dryer, Matthew S. 1992. The Greenbergian word order correlations. *Language* 68, 81-138.

Fukui, Naoki and Yuji Takano. 1998. Symmetry in syntax: Merge and Demerge. *Journal of East Asian Linguistics* 7, 27-86.

Gil, David. 1986. A prosodic typology of language. *Folia Linguistica* 20, 165-231.

Haraguchi, Shosuke. 2001. On rendaku. *Phonological Studies (On-in Kenkyu)* 4, 9-32.

Haspelmath, Martin, Matthew S. Dryer, David Gil, and Bernard Comrie (eds.) 2005. *The world atlas of language structures*. Oxford: Oxford University Press.

服部範子. 2003. 「英語の強勢変異形と枝分かれ制約」『音韻研究』6, 1-10.

Hawkins, John A. 1994. *A performance theory of order and constituency*. Cambridge: Cambridge University Press.

Hualde, José Ignacio and Jon Ortiz de Urbina. 2003. *A grammar of Basque*. Berlin: Mouton de Gruyter.

Kayne, Richard S. 1994. *The antisymmetry of syntax*. Cambridge, MA: MIT Press.

古賀勝郎. 1986.『基礎ヒンディー語』大学書林.

Lehmann, W. P. 1973. A structural principle of language and its implications. Language 49, 47-66.

Maddieson, Ian. 2005. Syllable structure. In Hapelmath, et al. 2005.

Maddieson, Ian. 2006. Correlating phonological complexity: Data and validation. *Linguistic Typology* 10, 106-123.

Mazuka, Reiko. 1996. Can a grammatical parameter be set before the first word? Prosodic contribution to early setting of a grammatical parameter. *Signal to syntax: Bootstrapping from speech to grammar in early aquisition*, eds. James L. Morgan and Katherine Demuth, 313-330. Mahwah, NJ.: Lawrence Erlbaum Associates.

Nespor, Marina, Maria Teresa Guasti, and Anne Christophe. 1996. Selecting word order: The rhythmic activation principle. *Interfaces in phonology*, ed. Ursula Kleinhenz, 1-26. Berlin: Akademie Verlag.

Newmeyer, Frederick J. 2005. *Possible and probable languages: A generative perspective on linguistic typology*. Oxford: Oxford University Press.

Otsu, Yukio. 1980. Some aspects of *rendaku* in Japanese and related problems. *Theoretical issues in Japanese linguistics (MIT Working Papers in Linguistics 2)*, ed. Yukio Otsu and Ann Farmer, 207-236.

Plank, Frans. 1998. The co-variation of phonology with morphology and syntax: A hopeful history. *Linguistic Typology* 2, 195-230.

Prince, Alan and Paul Smolensky. 1993. *Optimality theory: Constraint interaction in generative grammar*. Rutgers University Center for Cognitive Science. Technical report RuCCS-TR-2. New Brunswick, NJ.

Sapir, Edward. 1921. *Language*. New York: Harcourt, Brace and World.

佐藤信夫・飯島紀. 1994.『グルジア語文法』泰流社.

下宮忠雄. 1979.『バスク語入門–言語・民族・文化–』大学書林.

Tokizaki, Hisao. 1999. Prosodic phrasing and bare phrase structure. In *Proceedings of the North East Linguistic Society 29*, *Volume one*, 381-395. GLSA, University of Massachusetts, Amherst.

Tokizaki, Hisao. 2000. Prominence, phrasing, and movement, *English Linguistics* 17, 459-487.

Tokizaki, Hisao. 2005b. Prosody and phrase structure without labels, *English Linguistics* 22:2, 380-405.

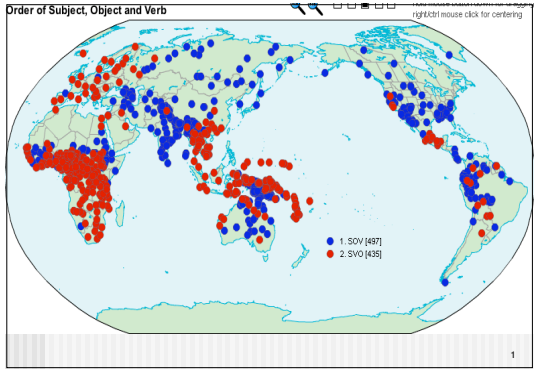
Tokizaki, Hisao. 2006a. Spell Out before you Merge: Parse Right and Merge Left is no paradox, paper presented at InterPhases, Nicosia, Cyprus on May 18-20, 2006.

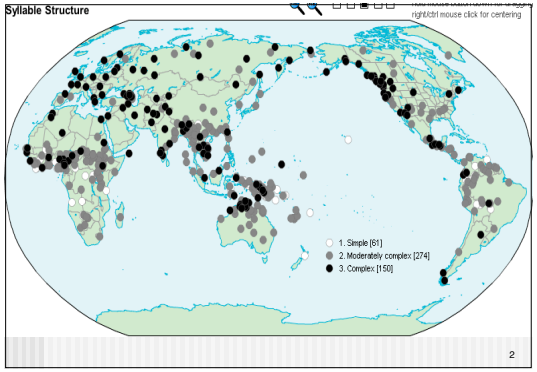
Tokizaki, Hisao. 2006b. Linearizing structure with silence: A minimalist theory of syntax-phonology interface. Doctoral dissertation to be submitted to the University of Tsukuba.

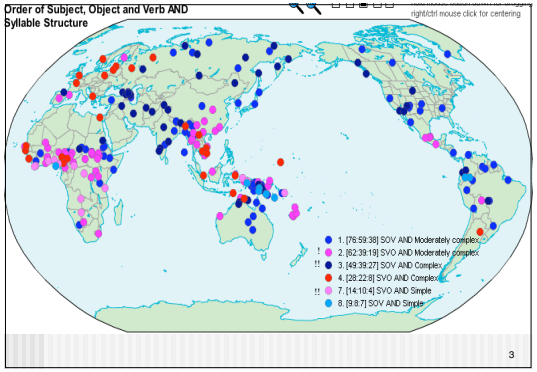
Whaley, Lindsay J. 1997. *Introduction to typology: The unity and diversity of language*. Thousand Oaks, California: SAGE Publications.

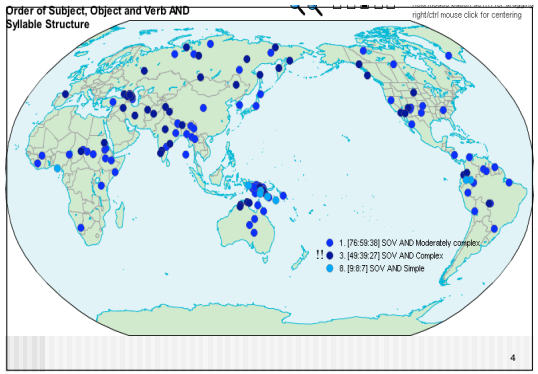
Zubizarreta, María Luisa and Jean-Roger Vergnaud. 2006. Phrasal stress and syntax. In *The Blackwell companion to syntax, vol. III,* ed. Martin Everaert and Henk van Riemsdijk, 522-568. Malden, MA: Blackwell Publishing.

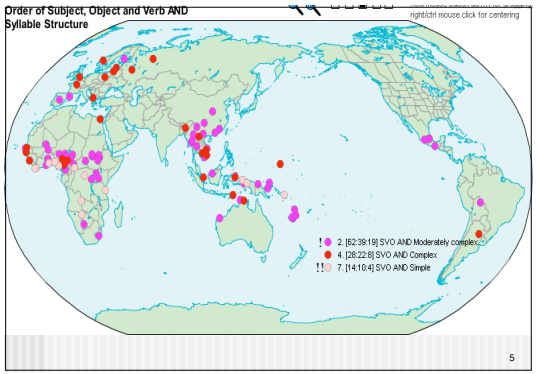
*The Universals Archive (by Frans Plank and Elena Filimonova) http://ling.uni-konstanz.de:591/Universals/introduction.html

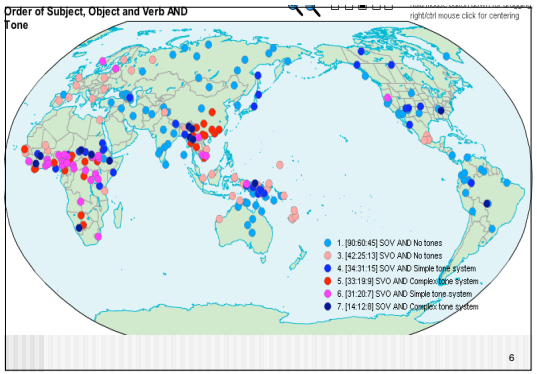

Order of Subject, Object and Verb
right/ctrl mouse click for centering
1. SOV [497]
2. SVO [435]
1


Syllable Structure
right/ctrl mouse click for centering
1. Simple [61]
2. Moderately complex [274]
3. Complex [150]
2


Order of Subject, Object and Verb AND
Syllable Structure
right/ctrl mouse click for centering
1. [76:59:38] SOV AND Moderately complex
2. [62:39:19] SVO AND Moderately complex
3. [49:39:27] SOV AND Complex
4. [28:22:8] SVO AND Complex
7. [14:10:4] SVO AND Simple
8. [9:8:7] SOV AND Simple
3


Order of Subject, Object and Verb AND
Syllable Structure
right/ctrl mouse click for centering
1. [76:59:38] SOV AND Moderately complex
3. [49:39:27] SOV AND Complex
8. [9:8:7] SOV AND Simple
4


Order of Subject, Object and Verb AND
Syllable Structure
right/ctrl mouse click for centering
2. [62:39:19] SVO AND Moderately complex
4. [28:22:8] SVO AND Complex
7. [14:10:4] SVO AND Simple
5


Order of Subject, Object and Verb AND
Tone
right/ctrl mouse click for centering
1. [90:60:45] SOV AND No tones
3. [42:25:13] SVO AND No tones
4. [34:31:15] SOV AND Simple tone system
5. [33:19:8] SVO AND Complex tone system
6. [31:20:7] SVO AND Simple tone system
7. [14:12:8] SOV AND Complex tone system
6