

# The Typology of TSL Case Assignment

Kenneth Hanson

mail@kennethhanson.net

Stony Brook University & Yale University

MoL 18, August 16-17, 2025

# Subregular complexity

Linguistic patterns are predominantly **tier-based strictly local (TSL)**:

- Local and long-distance **phonotactics** (Heinz 2018)
- Local and long-distance **phonological maps** (Burness et al. 2021)
- Many types of **syntactic dependencies** (Graf 2018, 2022a)

# Long-distance dependencies

Long-distance dependencies appear to be largely in the sub-class **TSL-2**

# Long-distance dependencies

Long-distance dependencies appear to be largely in the sub-class TSL-2

## Past results:

- Long-distance phonotactics (McMullin and Hansson 2016)
- Movement (Graf 2022b)
- Agreement (Hanson 2025)

# Long-distance dependencies

Long-distance dependencies appear to be largely in the sub-class TSL-2

## Past results:

- Long-distance phonotactics (McMullin and Hansson 2016)
- Movement (Graf 2022b)
- Agreement (Hanson 2025)

**This work:** case dependencies in syntax are TSL-2

- Building on Vu et al. (2019) and Hanson (2023)

# Takeaways

- Case dependencies are TSL-2 in both dimensions of the tree
  - Subsumes traditional case theory as well as configurational theories (Yip et al. 1987; Baker 2015)

# Takeaways

- Case dependencies are TSL-2 in both dimensions of the tree
  - Subsumes traditional case theory as well as configurational theories (Yip et al. 1987; Baker 2015)
- Simple manipulations of the TSL-2 tree grammar correspond to well-attested cross-linguistic variation

# Takeaways

- Case dependencies are TSL-2 in both dimensions of the tree
  - Subsumes traditional case theory as well as configurational theories (Yip et al. 1987; Baker 2015)
- Simple manipulations of the TSL-2 tree grammar correspond to well-attested cross-linguistic variation
- Many logically simple yet unnatural patterns are ruled out

# Takeaways

- Case dependencies are TSL-2 in both dimensions of the tree
  - Subsumes traditional case theory as well as configurational theories (Yip et al. 1987; Baker 2015)
- Simple manipulations of the TSL-2 tree grammar correspond to well-attested cross-linguistic variation
- Many logically simple yet unnatural patterns are ruled out
- Case is not so surprising – it carves out a subset of TSL-2 patterns, partly overlapping with other dependencies

# Takeaways

- Case dependencies are TSL-2 in both dimensions of the tree
  - Subsumes traditional case theory as well as configurational theories (Yip et al. 1987; Baker 2015)
- Simple manipulations of the TSL-2 tree grammar correspond to well-attested cross-linguistic variation
- Many logically simple yet unnatural patterns are ruled out
- Case is not so surprising – it carves out a subset of TSL-2 patterns, partly overlapping with other dependencies
- Provides a starting point for additional formal restrictions

# Roadmap

- Background (case, TSL, MG dependency trees)
- TSL case assignment
- Cross-linguistic study
- Impossible case patterns

## Background and model

# Case assignment in syntax

**Problem:** Given a syntactic structure, what must the case of each DP be?

✓ **He** wants **me** to plan **our** trip.

✗ **His** wants **I** to plan **us** trip.

# Case assignment in syntax

**Problem:** Given a syntactic structure, what must the case of each DP be?

✓ **He** wants **me** to plan **our** trip.

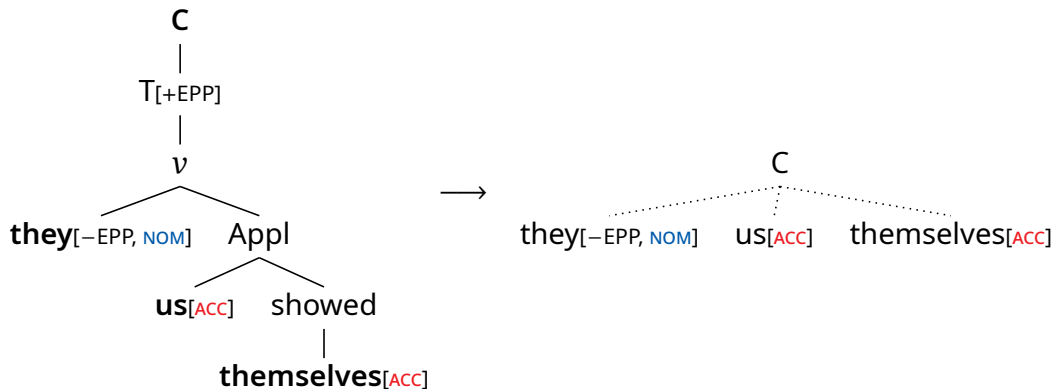
✗ **His** wants **I** to plan **us** trip.

For present purposes, we are not concerned with:

- Distribution of overt/covert nominals (i.e. the Case filter)
- Details of surface realization (e.g. syncretism)
- Details of lexical/semantic factors

# TSL case assignment – preview

- Assuming a framework of Minimalist Grammar (MG) dependency trees
- Project a tier containing all case assigners and DPs
- Tier mother and sisters together constrain the cases of DPs



# TSL string languages

**Tier-based strictly  $k$ -local (TSL):** all constraints are strictly  $k$ -local (SL- $k$ ) when the irrelevant elements are ignored

## Ex. Samala sibilant harmony (Heinz 2018)

✓ p i s o t o n o s i k i w a t

✗ p i s o t o n o ʃ i k i w a t

Window:	2
Visible:	s, ʃ
Constraints:	*sʃ, *ʃs

Also see: Heinz et al. (2011), Lambert and Rogers (2020), and Lambert (2023)

# Minimalist Grammars

Minimalist Grammars (MGs, Stabler 1997, 2011):

- Lexical item is a pair (phonological exponent, string of features/diacritics)
- Features control operations such as selection, movement, etc.

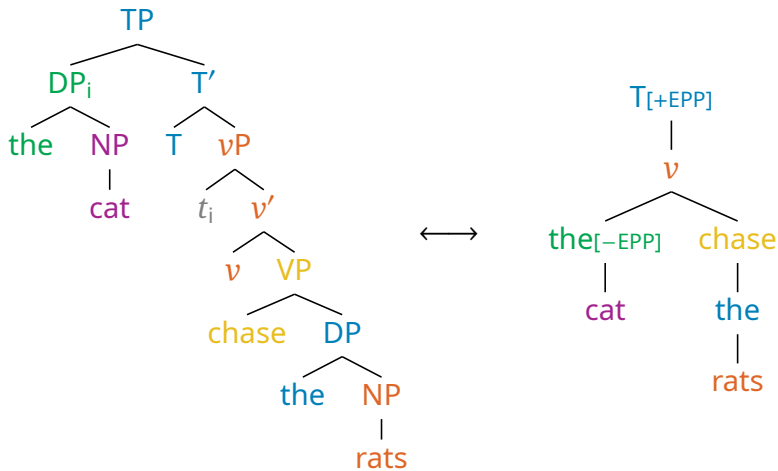
Key points for what follows:

- +F/–F = landing site/mover of movement type F
- **NOM/ACC/GEN**/etc. show which case a DP is assigned (no features for assigners)
- Negative movement features are unordered as in Graf (2022b); so are case features

# MG dependency trees

Every node is a **lexical item**.

The daughters of a node are its **arguments** in reverse order of selection.

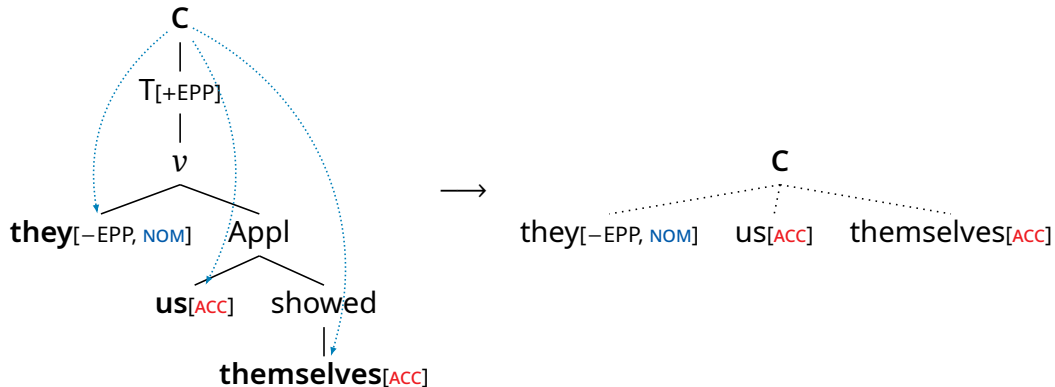


See Graf and Kostyszyn (2021) for details. Related: Kobele (2002, 2012).

# Case with tree tiers

TSL-2 over trees:

- Project a **tree tier** consisting of all salient elements
- Each node constrains its daughters via a TSL-2 **daughter string language**



# The daughter string language

(1) Daughter string grammar for  $T_{\text{FIN}}$  (SL-2)

$$G^+ = \{ \times \cdot D[\text{NOM}], D[\text{NOM}] \cdot D[\text{ACC}], D[\text{ACC}] \cdot D[\text{ACC}], D[\text{NOM}] \cdot \times, D[\text{ACC}] \cdot \times \}$$

Allowed	Disallowed
$D[\text{NOM}]$	$D[\text{ACC}]$
$D[\text{NOM}] \cdot D[\text{ACC}]$	$D[\text{ACC}] \cdot D[\text{NOM}]$
$D[\text{NOM}] \cdot D[\text{ACC}] \cdot D[\text{ACC}]$	$D[\text{NOM}] \cdot D[\text{NOM}] \cdot D[\text{NOM}]$
etc.	etc.

# Configurational case assignment

- Tier mother and tier left-sister relations used to constrain case
- With TSL-2 and very coarse case domains, we can handle many common (and sometimes theoretically problematic) case patterns
- The overall approach is very similar to Case in Tiers (Yip et al. 1987) and especially Dependent Case Theory (Marantz 2000; Baker 2015)

## Before we continue

- Model just presented is identical to Hanson (2023)
- Main innovation compared to Graf (2022b) is direct use of tier sister order, which serves as a proxy for height
- Compared to Vu et al. (2019), no structure-sensitive tier projection

## Cross-linguistic study

# “Parameters” of tree TSL

- Visibility on the tree tier
- Visibility in the daughter string language
- Relation between tier mother and daughters
- **Relation between tier sisters**

# The typology of case assignment

Small differences in a TSL-2 grammar correspond closely to points of linguistic variation (McMullin and Hansson 2016; Graf 2022b; Hanson 2025).

Some case phenomena and their TSL analysis:

Phenomenon	One line summary
Spreading	Allow <b>NOM</b> · <b>NOM</b> , <b>ACC</b> · <b>ACC</b> , etc. in the DSL
Alignment	Change order of marked/unmarked case in DSL
Split alignment	PFV/IPFV, T <sub>FIN</sub> /T <sub>INF</sub> , etc., have different DSLs
Long-distance case	Certain C heads are invisible on the tree tier
Case absorption	P/C/etc. are visible on the tree tier and in the DSL
Case displacement	Lexical case-marked D is invisible in the DSL
Diff. argument marking	DSL can reference non-case features of D

# Case spreading

We saw spreading of accusative in English. But also:

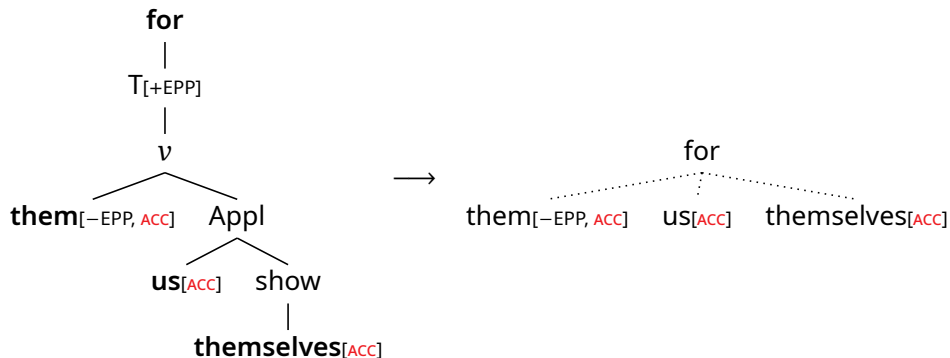
- (2) Multiple accusatives in Swedish (Yip et al. 1987)  
Kungen gav honom henne (till maka).  
the.king gave him.ACC her.ACC (for wife)
- (3) Multiple nominatives in Japanese (Hiraiwa 2001)  
Mary ga eigo ga yoku dekiru.  
Mary NOM English NOM well can.do  
'Mary can speak English well.'
- (4) Multiple genitives in Japanese (Saito et al. 2008)  
yabanzin no Rooma no hakai  
barbarian GEN Rome GEN destruction  
'the barbarians' destruction of Rome'

# Case spreading

If the grammar allows  $ACC \cdot ACC$ , then any number of  $D_{[ACC]}$  is possible.

(5) Grammar for spreading of accusative:

$$G^+ = \{ \times \cdot ACC, ACC \cdot ACC, ACC \cdot \times, \times \cdot \times \}$$



# Alignment

Call the case of the intransitive subject (S) nominative.

What happens when there are two arguments (A/O)?

Either A or O can get a special case, or both, or neither.

Alignment	Case of		
	S	A	O
Accusative	NOM	NOM	ACC
Ergative	NOM	ERG	NOM
Tripartite	NOM	ERG	ACC
Neutral	NOM	NOM	NOM

Table 1: Common case alignments

## Alignment (2)

Assume that default linear order reflects base structural order (cf. Baker 2015; Bárány 2024).

Accusative	$\begin{array}{c} T \\ \vdots \\ D_{[NOM]} \end{array}$	$\begin{array}{c} T \\ \swarrow \quad \searrow \\ D_{[NOM]} \quad D_{[ACC]} \end{array}$
Ergative	$\begin{array}{c} T \\ \vdots \\ D_{[NOM]} \end{array}$	$\begin{array}{c} T \\ \swarrow \quad \searrow \\ D_{[ERG]} \quad D_{[NOM]} \end{array}$
Tripartite	$\begin{array}{c} T \\ \vdots \\ D_{[NOM]} \end{array}$	$\begin{array}{c} T \\ \swarrow \quad \searrow \\ D_{[ERG]} \quad D_{[ACC]} \end{array}$
Neutral	$\begin{array}{c} T \\ \vdots \\ D_{[NOM]} \end{array}$	$\begin{array}{c} T \\ \swarrow \quad \searrow \\ D_{[NOM]} \quad D_{[NOM]} \end{array}$

## Alignment (3)

The most common alignments are all simple SL-2 patterns.

(6) Grammar for accusative alignment

$$G^+ = \{ \times \cdot \text{NOM}, \text{NOM} \cdot \text{ACC}, \text{NOM} \cdot \times, \text{ACC} \cdot \times \}$$

(7) Grammar for ergative alignment

$$G^+ = \{ \times \cdot \text{NOM}, \times \cdot \text{ERG}, \text{ERG} \cdot \text{NOM}, \text{NOM} \cdot \times \}$$

(8) Grammar for tripartite alignment

$$G^+ = \{ \times \cdot \text{NOM}, \times \cdot \text{ERG}, \text{ERG} \cdot \text{ACC}, \text{NOM} \cdot \times, \text{ACC} \cdot \times \}$$

Spreading is intentionally omitted from these grammars, but could be added.

# Ditransitives

What about ditransitive structures, with two objects?

Similarly, either might get a new case, separate from NOM/ACC/ERG.

Examples where the goal gets the new case (**dative**):

(9) Japanese ditransitive verb

Jin ga Yumi ni hon o ageta.

Jin **NOM** Yumi **DAT** book **ACC** gave

'Jin give Yumi a book.'

(10) Ingush ditransitive verb

Aaz cynna mashen jelar

1SG.**ERG** 3SG.**DAT** car.**NOM** gave

'I gave him/her a car' (Bickel and Nichols 2008)

## Ditransitives (2)

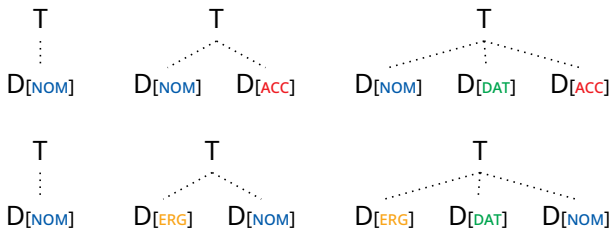
Ditransitive structures can be handled without increasing the window.

(11) Accusative alignment with dative goal

$$G^+ = \{ \times \cdot \text{NOM}, \text{NOM} \cdot \text{ACC}, \text{NOM} \cdot \text{DAT}, \text{DAT} \cdot \text{ACC}, \text{NOM} \cdot \times, \text{ACC} \cdot \times \}$$

(12) Ergative alignment with dative goal

$$G^+ = \{ \times \cdot \text{NOM}, \times \cdot \text{ERG}, \text{ERG} \cdot \text{NOM}, \text{ERG} \cdot \text{DAT}, \text{DAT} \cdot \text{NOM}, \text{NOM} \cdot \times \}$$



# Adding in spreading

What if there are more than three arguments?

In Japanese, all middle arguments are dative (Kuno 1973).

(13) Causative of ditransitive

Ken ga Jin ni Yumi ni hon o agesaseta.

Ken **NOM** Jin **DAT** Yumi **DAT** book **ACC** gave.CAUS

'Ken made/let Jin give Yumi a book.'

(14) Grammar for verbal domain (Hanson 2023)

$G^+ = \{ \times \cdot \text{NOM}, \text{NOM} \cdot \text{ACC}, \text{NOM} \cdot \text{DAT}, \text{DAT} \cdot \text{DAT}, \text{DAT} \cdot \text{ACC}, \text{NOM} \cdot \times, \text{ACC} \cdot \times \}$

# Invisibility

In Icelandic, nominative/accusative flow around lexical dative as if it is invisible.

(15) Case displacement in Icelandic (Yip et al. 1987)

a. Siggí leyndi konuna sannleikanum.  
S.NOM concealed the.woman.ACC the.truth.LDAT

'Siggí concealed the truth from the woman.'

b. Siggí sagði barninu söguna.  
S.NOM told the.child.LDAT the.story.ACC

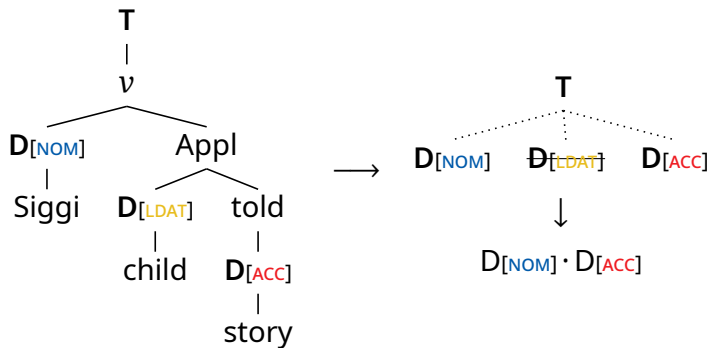
'Siggí told the child the story.'

c. Barninu batnaði veikin.  
the.child.LDAT recovered.from the.disease.NOM

'The child recovered from the disease.'

## Invisibility (2)

Analysis: lexical dative DPs are invisible *in the daughter string language* for structural case assignment.



## Invisibility (3)

Why not make lexical dative invisible in the tree tier?

## Invisibility (3)

Why not make lexical dative invisible in the tree tier?

Then any D heads inside them would become part of the upper clause.

## Invisibility (3)

Why not make lexical dative invisible in the tree tier?

Then any D heads inside them would become part of the upper clause.

This is not right for Icelandic, but sometimes this is what exactly what we want...

## Invisibility (4)

(16) Finite ECM (Kishimoto 2018)

Ken ga [Eri {ga/o} kawaii to] omotteiru.

Ken **NOM** Eri {**NOM/ACC**} be.cute C think

'Ken thinks that Eri is cute.'

Analysis (Hanson 2023):

ECM verbs optionally select a C head which is invisible on the case tier

# Differential argument marking

Case on the object may be conditioned by other syntactic/semantic properties

(17) Sakha accusative correlates with object movement  
(Baker and Vinokurova 2010)

a. Masha salamaat-\*(y) türgennik sie-te.  
Masha porridge-ACC quickly eat-PST.3SG

'Masha ate the porridge quickly.'

b. Masha türgennik salamaat-(#y) sie-te.  
Masha quickly porridge-ACC eat-PST.3SG

'Masha ate porridge quickly.' (ACC on 'porridge' only with contrastive focus)

## Differential argument marking (2)

Analysis: D is ACC iff it bears –oshift (and preceded by another D)

(18) Accusative DOM triggered by object movement

- Project:  $T_{FIN}$ , all D
- DSG of  $T_{FIN}$ :  $\{ \times \cdot D[NOM], D[NOM] \cdot D[-oshift, ACC], D[NOM] \cdot D[NOM], D[NOM] \cdot \times, D[-oshift, ACC] \cdot \times \}$

## Differential argument marking (3)

The case of the subject/object may be conditioned by properties of either.

We predict four possibilities, as both appear in the same tier bigram.

All are attested.

(19) Typology of self/externally-driven DAM (Daniel 2024)

Subtype	Locus of Controlling Property	
	Self	External
DSM	Kham, Folopa, Umpithamu	Eastern Ostyak, Ika, Kanuri
DOM	Hindi, Spanish, Turkish, Sakha	Ik

## Impossible case patterns

## Non-TSL-2 and impossible case patterns

Consider the following unrealistic case systems:

- (20) **2x2 alignment:** the first two DPs are nominative; the next two DPs are accusative; repeat
- (21) **Coordinated alignment:** when two clauses are coordinated, one must have accusative alignment and the other ergative, in either order
- (22) **Rationed dative case:** up to two clauses may contain dative DPs; the rest use genitive instead
- (23) **Rotating alignment:** the main clause is accusative; a singly embedded clause is ergative; a doubly embedded clause is accusative; etc.

All of these can be ruled out as they are not TSL-2.

## Other factors

Not every unattested pattern can be ruled out in this way – there are always other factors at work, and also accidental gaps.

# Other factors

Not every unattested pattern can be ruled out in this way – there are always other factors at work, and also accidental gaps.

Some other possible formal factors:

- The mapping from position to case must be **monotonic**
  - ▶ Rules out (NOM · ACC)\*
- The mapping from position to case must be **deterministic**
  - ▶ Rules out NOM<sup>+</sup> · ACC\*

## Other questions/puzzles

- To what extent do the patterns of movement/agreement/case overlap?
- What is the typology of multi-tier (multi-domain) case patterns?
- What if we put case in the **mapping** (transduction) from dependency tree to phrase structure tree? (cf. Graf 2023)
- Tier sister order doesn't exactly correspond to c-command. Can we fix this? Should we?

# Conclusion

# Conclusion

- Case dependencies are TSL-2, along with movement, agreement, and long-distance phonotactics

# Conclusion

- Case dependencies are TSL-2, along with movement, agreement, and long-distance phonotactics
- Predictions of the tree tier model correspond well with real case phenomena, subsuming traditional and configurational theories

# Conclusion

- Case dependencies are TSL-2, along with movement, agreement, and long-distance phonotactics
- Predictions of the tree tier model correspond well with real case phenomena, subsuming traditional and configurational theories
- Case is not quite as strange as is sometimes thought, but there is still plenty to learn!

Thank you!

Introduction

Background and model

Cross-linguistic study

Impossible case patterns

Conclusion

# References

- Baker, Mark C. (2015). *Case*. Cambridge Studies in Linguistics 146. Cambridge University Press. DOI: 10.1145/1463891.1464000.
- Baker, Mark C. and Nadya Vinokurova (2010). Two modalities of case assignment: Case in Sakha. *Natural Language & Linguistic Theory* 28.3, pp. 593–642. DOI: 10.1007/s11049-010-9105-1.
- Bárány, András (2024). Case and agreement alignment in ditransitive constructions: A typological gap and its explanation. *Language* 100.3, pp. 385–432. DOI: 10.1353/lan.2024.a937184.
- Bickel, Balthasar and Johanna Nichols (2008). Case Marking and Alignment. *The Oxford Handbook of Case*. Ed. by Andrej L. Malchukov and Andrew Spencer. Oxford University Press, pp. 304–321. DOI: 10.1093/oxfordhb/9780199206476.013.0021.
- Burness, Phillip Alexander et al. (2021). Long-distance phonological processes as tier-based strictly local functions. *Glossa: a journal of general linguistics* 6.1. DOI: 10.16995/glossa.5780.
- Chomsky, Noam (1981). *Lectures on government and binding: The Pisa lectures*. Berlin, New York: Walter de Gruyter.
- Daniel, Penelope (2024). Unifying Differential Argument Marking through Interpretable Features. *Proceedings of the 41st West Coast Conference on Formal Linguistics*. Somerville, MA: Cascadilla Press, pp. 105–112.
- Graf, Thomas (2018). Why movement comes for free once you have adjunction. *Proceedings of CLS* 53. Chicago, IL: The Chicago Linguistic Society, pp. 117–136. URL: <https://thomasgraf.net/output/graf18cls.html>.

## References (2)

- Graf, Thomas (2022a). Subregular linguistics: bridging theoretical linguistics and formal grammar. *Theoretical Linguistics* 48.3–4, pp. 145–184. DOI: 10.1515/tl-2022-2037.
- Graf, Thomas (2022b). Typological implications of tier-based strictly local movement. *Proceedings of the Society for Computation in Linguistics (SCiL) 2022*. Amherst, MA: University of Massachusetts Amherst, pp. 184–193. DOI: 10.7275/gb65-ht31.
- Graf, Thomas (2023). Subregular Tree Transductions, Movement, Copies, Traces, and the Ban on Improper Movement. *Proceedings of the Society for Computation in Linguistics (SCiL) 2023*. Ed. by Tim Hunter and Brandon Prickett. Amherst, MA: University of Massachusetts Amherst, pp. 289–299. DOI: 10.7275/TK1N-Q855.
- Graf, Thomas and Kalina Kostyszyn (2021). Multiple Wh-Movement is not Special: The Subregular Complexity of Persistent Features in Minimalist Grammars. *Proceedings of the Society for Computation in Linguistics (SCiL) 2021*. Ed. by Allyson Ettinger, Ellie Pavlick, and Brandon Prickett. Amherst, MA: University of Massachusetts Amherst, pp. 275–285. DOI: 10.7275/2dfv-v219.
- Hanson, Kenneth (2023). A TSL Analysis of Japanese Case. *Proceedings of the Society for Computation in Linguistics (SCiL) 2023*. Ed. by Tim Hunter and Brandon Prickett. Amherst, MA: University of Massachusetts Amherst Libraries, pp. 15–24. DOI: 10.7275/xqhr-r404.
- Hanson, Kenneth (2025). Tier-based strict locality and the typology of agreement. *Journal of Language Modelling* 13.1, pp. 43–97. DOI: 10.15398/jlm.v13i1.411.

## References (3)

- Heinz, Jeffrey (2018). The computational nature of phonological generalizations. *Phonological Typology*. Ed. by Larry M. Hyman and Frans Plank. Phonetics and Phonology 23. De Gruyter Mouton, pp. 126–195. doi: 10.1515/9783110451931-005.
- Heinz, Jeffrey, Chetan Rawal, and Herbert G. Tanner (2011). Tier-based strictly local constraints for phonology. *Proceedings of the 49th Annual Meeting of the Association for Computational Linguistics: Human Language Technologies*. Ed. by Dekang Lin, Yuji Matsumoto, and Rada Mihalcea, pp. 58–64. URL: <https://aclanthology.org/P11-2011/>.
- Hiraiwa, Ken (2001). Multiple Agree and the Defective Intervention Constraint in Japanese. *Proceedings of the MIT-Harvard Joint Conference (HUMIT 2000)*. Cambridge, MA: MITWPL, pp. 67–80.
- Kishimoto, Hideki (2018). On exceptional case marking phenomena in Japanese. *Kobe Papers in Linguistics* 11, pp. 31–49.
- Kobele, Gregory M. (2002). Formalizing mirror theory. *Grammars* 5.3, pp. 177–221. doi: 10.1023/A:1022104104992.
- Kobele, Gregory M. (2012). Eliding the derivation: A minimalist formalization of ellipsis. *Proceedings of the International Conference on Head-Driven Phrase Structure Grammar*. CSLI Publications, Oct. doi: 10.21248/hpsg.2012.23.
- Kuno, Susumu (1973). *The Structure of the Japanese Language*. Cambridge, MA: MIT Press.
- Lambert, Dakotah (2023). Relativized Adjacency. *Journal of Logic, Language and Information* 32.4, pp. 707–731. doi: 10.1007/s10849-023-09398-x.

## References (4)

- Lambert, Dakotah and James Rogers (2020). Tier-Based Strictly Local Stringsets: Perspectives from Model and Automata Theory. *Proceedings of the Society for Computation in Linguistics (SCiL) 2020*. Ed. by Allyson Ettinger, Gaja Jarosz, and Joe Pater. Amherst, MA: University of Massachusetts Amherst, pp. 159–166. DOI: 10.7275/2n1j-pj39.
- Marantz, Alec (2000). Case and licensing. *Arguments and Case: Explaining Burzio's generalization*, pp. 11–30.
- McMullin, Kevin (2016). "Tier-based locality in long-distance phonotactics: learnability and typology". PhD thesis. Vancouver, B.C.: University of British Columbia.
- McMullin, Kevin and Gunnar Ólafur Hansson (2016). Long-Distance Phonotactics as Tier-Based Strictly 2-Local Languages. *Proceedings of the Annual Meetings on Phonology*. Ed. by Adam Albright and Michelle A. Fullwood. Vol. 2. Washington, DC: Linguistic Society of America. DOI: 10.3765/amp.v2i0.3750.
- Saito, Mamoru, T.-H. Jonah Lin, and Keiko Murasugi (2008). N'-Ellipsis and the Structure of Noun Phrases in Chinese and Japanese. *Journal of East Asian Linguistics* 17.3, pp. 247–271. DOI: 10.1007/s10831-008-9026-8.
- Stabler, Edward P. (1997). Derivational minimalism. *Logical Aspects of Computational Linguistics. First International Conference, LACL '96, Nancy, France, September 23-25, 1996. Selected Papers*. Ed. by Christian Retoré. Lecture Notes in Computer Science 1328. Berlin, Heidelberg: Springer. DOI: 10.1007/BFb0052152.

## References (5)

- Stabler, Edward P. (2011). Computational perspectives on Minimalism. *Oxford handbook of linguistic Minimalism*. Ed. by Cedric Boeckx. Oxford: Oxford University Press, pp. 617–643. DOI: 10.1093/oxfordhb/9780199549368.013.0027.
- Vu, Mai Ha, Nazila Shafiei, and Thomas Graf (2019). Case assignment in TSL syntax: A case study. *Proceedings of the Society for Computation in Linguistics (SCiL) 2019*. Ed. by Gaja Jarosz et al. Amherst, MA: University of Massachusetts Amherst, pp. 267–276. DOI: 10.7275/sywz-xw23.
- Yip, Moira, Joan Maling, and Ray Jackendoff (1987). Case in Tiers. *Language* 63.2, pp. 217–250. URL: <http://www.jstor.org/stable/415655>.