

# UNBOUNDED DEPENDENCIES

Robert D. Borsley, University of Essex  
Berthold Crysmann, Université Paris 7

## 1. Introduction

This section will provide a theory-neutral introduction to the properties of unbounded dependencies and explain how the chapter is organized.

## 2. The basic approach

This section will sketch the main features of the HPSG approach to bounded dependencies. It will introduce the SLASH feature, outline the approach to gaps in which they are only represented in ARG-ST lists, sketch the head-driven approach to the distribution of SLASH, and discuss the properties of head-filler-phrases.

## 3. More on gaps

This section will look more closely at the nature of gaps, considering especially whether they are only represented in ARG-ST lists, as is widely assumed, or phonologically empty categories, as assumed in some HPSG work. It will look at complement gaps, subject gaps and adjunct gaps, and consider how far they are similar and how far they are different. It will draw on work such as Bouma, Malouf and Sag (2001), Levine (2002), Levine and Hukari (2006) and Chaves (2009).

## 4. The middle of the dependency

This section will look more closely at the middle of unbounded dependencies. It will spell out the head-driven approach more fully, introducing the SLASH Amalgamation Principle. It will also discuss the Slash Inheritance Principle of Bouma, Malouf and Sag (2001) and the Generalized Head Feature Principle of Ginzburg and Sag (2000), and it will highlight extraction path effects. It will also discuss approaches to SLASH which are not head-driven, e.g. Pollard and Sag (1994: chapter 4) and Chaves (2012). It will note that both approaches to the distribution of SLASH allow structures in which than one daughter of a phrase with a non-empty SLASH value have the same value. This means that structures in which a single filler is associated with more than one gap are expected.

## 5. The top of the dependency: The diversity of unbounded dependency constructions

This section will consider top of an unbounded dependency, which is where diversity of unbounded dependency constructions resides. It will compare and contrast *wh*-interrogatives and *wh*-relatives and highlight a number of other unbounded dependency constructions which contain a filler. It will show how the similarities and differences can be captured with a *head-filler-phrase* type with a number of subtypes. It will also discuss other unbounded dependency constructions with no filler, including the tough construction and non-*wh*-relatives of various kinds.

## 6. Resumptive pronouns

This section will consider unbounded dependencies with a resumptive pronoun. It will present evidence that they involve the SLASH feature and consider exactly what sort of analysis is appropriate, drawing on Borsley (2010, 2013) and Crysmann (2012, 2016).

## 7. *Wh*-in-situ

This section will look at *wh*-in-situ structures both in languages in which they are the normal form for *wh*-interrogatives and in languages like English with have an initial *wh*-phrase in standard *wh*-interrogatives.

## 8. Filler-gap mismatches

This section will consider examples which appear to involve a filler and gap which do not match. It will look in particular at what Arnold and Borsley (2010) call auxiliary-stranding relative clauses (ASRCs), exemplified by (1).

- (1) Kim will sing, which Lee won't \_\_\_\_.

It will also consider examples like (2), discussed in Bouma, Malouf and Sag (2001), and Webelhuth (2012), in which what looks like a clausal filler is associated with a nominal gap.

- (2) That he might be wrong, he didn't think of \_\_\_\_.

## 9. Concluding remarks

Among other things, this section will highlight the main ways in which SBCG is different in this area.

## REFERENCES

- Alqurashi, A. and R. D. Borsley (2012), Arabic relative clauses in HPSG, in S. Müller (ed.), *Proceedings of the HPSG12 Conference*, Stanford: CSLI Publications, 26–44.
- Borsley, R. D. (2010). An HPSG approach to Welsh unbounded dependencies. In S. Müller (ed.), *Proceedings of the HPSG10 Conference*. Stanford, CA: CSLI Publications, 47–67.
- Borsley, R. D. (2013). On the nature of Welsh unbounded dependencies. *Lingua* 133, 1–29.
- Bouma, G., R. Malouf and I. A. Sag (2001), Satisfying constraints on extraction and adjunction. *Natural Language and Linguistic Theory* 19, 1-65.
- Chaves, R. (2009), Construction-based cumulation and adjunct extraction, In *Proceedings of the 16th international conference on head-driven phrase structure grammar*, University of Göttingen, Germany, 47–67. Stanford: CSLI Publications.
- Chaves, R. (2012), On the grammar of extraction and coordination, *Natural Language & Linguistic Theory* 30:465–512.
- Crysmann, B. (2012). Resumption and islandhood in Hausa. In P. de Groote and M-J. Nederhof (eds.), *Formal Grammar. 15th and 16th International Conference on Formal Grammar, FG 2010 Copenhagen, Denmark, August 2010, FG 2011 Lubljana, Slovenia, August 2011*, volume 7395 of Lecture Notes in Computer Science, pages 50–65, Springer.

- Crysmann, B. (2016). An underspecification approach to Hausa resumption, *Proceedings of the Joint 2016 Conference on Head-driven Phrase Structure Grammar and Lexical Functional Grammar*, 194-214.
- Ginzburg, J., and I. A. Sag (2000), *Interrogative Investigations: The Form, Meaning and Use of English Interrogatives*. CSLI Publications, Stanford.
- Levine, R. D. (2002), Adjunct valents: cumulative scoping adverbial constructions and impossible descriptions. In *The proceedings of the 9th international conference on head-driven phrase structure grammar*, eds. Jongbok Kim and Stephen Wechsler, 209–232. Stanford: CSLI Publications.
- Levine, R. D. (2002), Adjunct valents: cumulative scoping adverbial constructions and impossible descriptions. In *The proceedings of the 9th international conference on head-driven phrase structure grammar*, eds. Jongbok Kim and Stephen Wechsler, 209–232. Stanford: CSLI Publications.
- Levine, R. D., and T. E. Hukari (2006), *The Unity of Unbounded Dependency Constructions*. CSLI Publications, Stanford.
- Pollard, C. & I. A. Sag (1994), *Head-driven Phrase Structure Grammar*. Chicago: University of Chicago Press.
- Webelhuth, G. (2012), The distribution of *that*-clauses in English: An SBCG account. In Hans Boas & Ivan A. Sag (eds.), *Sign-based construction grammar*, 203–227. Stanford, CA: CSLI Publications.