Some notes on the scope of *one* indefinites

Tania Ionin – University of Illinois at Urbana-Champaign
tionin@illinois.edu

1 Indefinites and scopal specificity

This paper provides an overview of experimental findings on the interpretation of *one* indefinites and *a* indefinites in scopally ambiguous English sentences. This line of inquiry is related to the work of Klaus von Heusinger in at least two ways. On the one hand, von Heusinger (2002, 2011) discusses several different kinds of specificity, including scopal specificity, our focus here. On the other hand, von Heusinger and colleagues have investigated the behavior of indefinite articles derived from the numeral *one*, including *ein* indefinites (in comparison to *dieser* 'this' indefinites) in German (Deichsel & von Heusinger 2011) and *bir* and *bitta* indefinites in Uzbek (von Heusinger & Klein 2013).

Here, we focus on English *one* indefinites, and how they differ from *a* indefinites with regard to scopal specificity. It is well-known that simple English sentences containing an indefinite quantifier and a universal quantifier in subject vs. object positions, as in (1)–(2), are ambiguous. On the surface-scope reading, the subject takes wide scope over the object, as in (1a) and (2a); on the inverse-scope reading, the subject quantifier takes narrow scope relative to the object quantifier, as in (1b) and (2b). Assuming the classical view that indefinites are quantifiers (Barwise & Cooper 1981), both readings are derived through quantifier raising (QR): on the surface-scope reading, the subject scopes over the object at LF, while the opposite is the case on the inverse-scope reading (May 1985).

(1) Every boy fed a/one bird.
a. *surface-scope (every>a/one)*: Every boy fed at least one bird (the birds are potentially different).
b. *inverse-scope (a/one>every)*: There is one specific bird such that all the boys fed it.

(2) A/one boy fed every bird.
a. *surface-scope (a/one>every)*: There is one specific boy who fed all the birds.
b. *inverse-scope (every>a/one)*: For every bird, there is at least one boy who fed it (the boys are potentially different).

However, the view of indefinites as quantificational has been challenged by the observation that indefinites, unlike quantifiers, are able to escape syntactic islands, such as relative clauses and antecedents of a conditional (Farkas 1981; Fodor & Sag 1982; and much subsequent literature). This is illustrated in (3), where the indefinite *a/one child* is inside a relative clause. If indefinites were restricted to local scope inside a relative clause, we should only obtain the reading in (3a); yet the reading in (3b), on which the indefinite escapes the island and scopes over the universal quantifier, is also possible.

(3) The teacher put away every toy that a/one child played with.
a. *surface-scope (every>a/one) = local scope*: The teacher put away every toy that was played with by at least one child (the children are potentially different).
b. *inverse-scope (a/one>every) = LD scope*: There is one specific child such that the teacher put away all the toys that this child played with.

There have been many different accounts of such long-distance (LD) readings of indefinites, some of which have tied LD scope to some form of specificity or referentiality (see, among others, Fodor & Sag 1982; Reinhart 1997; Winter 1997; Kratzer 1998; Schwarzschild 2002; for overviews, see von Heusinger 2002, 2011).

In English, as in many other languages, the indefinite article is derived from the numeral *one*. As discussed in von Heusinger & Klein (2013), in reference to Uzbek, indefinites go through a series of stages as *one* develops into an article (Heine 1997); during the earlier stages, the *one* indefinite is used to introduce specific referents. Even in languages in which *one* has been fully grammaticalized as an indefinite article, as in the case of *ein* 'a/one' in German, there may still be a distinction between specific and non-specific forms of the article. Endriss (2009) proposed that indefinites with stress on *ein* are topical and scopally specific.

In this paper, we provide an overview of experimental studies from the past decade which examine whether *a* and *one* indefinites differ in their compatibility with scopal (non-) specificity.

2 Experimental findings on *one* vs. *a* indefinites

Two recent experimental studies (Scontras et al. 2014; Ionin & Luchkina 2019) examined native English speakers' judgments of simple double-quantifier sentences such as (1)–(2). Scontras et al. compared the scope possibilities of English to those of Chinese, while Ionin and Luchkina compared English and Russian. Both studies used (modified) truth-value judgment tasks, in which participants listened to a sentence in the context of a picture and had to judge whether the sentence is true/matching or false/non-matching given the picture. Both studies contained (among a variety of other conditions) a distributive condition: for (1)–(2) (sample sentences from Ionin & Luchkina 2019), the target picture showed three different boys each feeding a different bird. Such a picture makes (1) true only on the surface-scope reading, but makes (2) true only on the inverse-scope reading.

Another study (Ionin, Ebert & Stolterfoht 2011) examined the behavior of sentences such as (3), comparing availability of LD indefinite scope in English to German. In this case, the target condition which teased apart the two readings of (3) had two children, a girl and a boy, each playing with some toys; the teacher put away all the toys that the boy played with, but not all the toys that the girl played with, thus making (3) true on the inverse-scope (indefinite-LD/wide) reading, but false on the surface-scope (indefinite-local/narrow) reading.

All three studies compared sentences with *a* indefinites to those with *one* indefinites. The results of the studies are summarized in Table 1.

What do the results show? First, the two studies that tested local configurations obtained similar patterns of results. The rates of true/yes responses were higher for (1), which was true on surface scope, than for (2) which was true only on inverse scope, consistent with a processing preference for surface scope (cf. Kurtzmann & MacDonald 1993; Anderson 2004), but acceptance of inverse-scope readings was much greater with *a* than with *one*, in both studies: *one*-indefinites in subject position in (2) were resistant to taking narrow scope. In the LD configuration in (3), *one* indefinites took LD wide scope more readily than *a* indefinites.

Table 1: Summary of experimental findings

	Scontras, et al. 2014	Ionin & Luchkina 2019	Ionin, et al. 2011
Which reading makes the sentence true?	(1): The surface-scope, *every>a/one* reading (narrow scope of indefinite) (2): The inverse-scope, *every>a/one* reading (narrow scope of indefinite)		(3): The inverse-scope, *a/one>every* reading (LD wide scope of indefinite)
%True/Yes responses with *a*	(1): 93% (2): 56%	(1): 93% (2): 84%	(3): 50%
%True/Yes responses with *one*	(1): 100% (2): 28%	(1): 87% (2): 51%	(3): 75%

3 Conclusion

Thus, while both surface-scope and inverse-scope readings are available to both types of indefinites, *one* indefinites in subject position are more likely to be interpreted as scopally specific (and/or topical, per Endriss 2009) than *a* indefinites.

References

Anderson, Catherine. 2004. *The structure and real-time comprehension of quantifier scope ambiguity*. PhD dissertation, Evanston, IL: Northwestern University.

Barwise, Jon & Robin Cooper. 1981. Generalized quantifiers and natural language. *Linguistics and Philosophy* 4(2). 159–219.

Deichsel, Annika & Klaus von Heusinger. 2011. The cataphoric potential of indefinites in German. In Iris Hendrickx, Sobha Lalitha Devi, António Branco & Ruslan Mitkov (eds.), *DAARC 2011: Anaphora Processing and Applications*, 144–156. Berlin: Springer.

Endriss, Cornelia. 2009. *Quantificational topics: A scopal treatment of exceptional wide scope phenomena*. Dordrecht: Springer.

Farkas, Donka. 1981. Quantifier scope and syntactic islands. *Chicago Linguistics Society* 17, 59–66.

Fodor, Janet Dean & Ivan Sag. 1982. Referential and quantificational indefinites. *Linguistics and Philosophy* 5(3). 355–398.

Heine, Bernd. 1997. *Cognitive foundations of grammar*. Oxford: Oxford University Press.

von Heusinger, Klaus. 2002. Specificity and definiteness in sentence and discourse structure *Journal of Semantics* 19(3). 245–274.

von Heusinger, Klaus. 2011. Specificity. In Klaus von Heusinger, Claudia Maienborn & Paul Portner (eds.), *Semantics: An international handbook of natural language meaning*, vol. 2, 1025–1058. Berlin: De Gruyter.

von Heusinger, Klaus & Udo Klein. 2013. The distribution of two indefinite articles in Uzbek. In Cornelia Ebert & Stefan Hinterwimmer (eds.), *Different kinds of specificity across languages*, 155–176. Dordrecht: Springer.

Ionin, Tania, Cornelia Ebert & Britta Stolterfoht. 2011. One indefinite scopes out of islands: An experimental study of long-distance scope in English and German. Presented at 50 years of Linguistics at MIT: A scientific reunion, December 9–11, 2011.

Ionin, Tania & Tatiana Luchkina. 2019. Scope, syntax and prosody in Russian as a second or heritage language. In J. Camacho and M. Cabrera (eds.), *Exploring interfaces: Lexicon, syntax, semantics and sound*, 141–170. Cambridge: Cambridge University Press.

Kratzer, Angelika. 1998. Scope or pseudoscope? Are there wide scope indefinites? In Susan Rothstein (ed.), *Events and Grammar*, 163–196. Dordrecht: Kluwer.
Kurtzmann, Howard & Maryellen E. MacDonald. 1993. Resolution of quantifier scope ambiguities. *Cognition* 48(3). 243–279.
May, Robert. 1985. *Logical Form: Its structure and derivation*. Cambridge, Massachusetts: MIT Press.
Reinhart, Tanya. 1997. Quantifier scope: How labor is divided between QR and choice functions. *Linguistics and Philosophy* 20(4). 335–397.
Schwarzschild, Roger. 2002. Singleton indefinites. *Journal of Semantics* 19(3). 289–314.
Scontras, Gregory, Cheng-Yu Edwin Tsai, Kenneth Mai & Maria Polinsky. 2014. Chinese scope: An experimental investigation. *Proceedings of Sinn und Bedeutung* 18. 396–414.
Winter, Yoad. 1997. Choice functions and the scopal semantics of indefinites. *Linguistics and Philosophy* 20(4). 399–467.