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Martin Haspelmath, *Indefinite pronouns* (Oxford Studies in Typology and Linguistic Theory). Oxford: Clarendon Press, 1997. Pp. xvi+364.

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Any book will have some readers, but some books deserve the attention of everyone. Haspelmath's book is one of the second kind. This typological study of indefinite pronouns is wide-ranging, both in the data presented, as well as in the theoretical discussion. Haspelmath shows that the variety of usage of indefinite pronouns in the world's languages is much larger than one might have expected, but he also shows that there are various typological generalisations and restrictions on this variety.

To approach the linguistic diversity, Haspelmath distinguishes nine typologically primitive functions of indefinite pronoun encoding (31–52), as shown here in (1) to (9). An opposition between two of these nine functions is crucial for at least some indefinite pronouns in some languages. There are even more possible functions of indefinite pronouns, but they are left aside for unexplained – yet probably practical – reasons (79–86).

(1) specific, known to the speaker ('**Somebody** called while you were away: guess who!')
(2) specific, unknown to the speaker ('I heard **something**, but I couldn't tell what it was.')
(3) non-specific, irrealis ('Please try **somewhere** else.')
(4) polar question ('Did anybody tell you **anything** about it?')

(5) conditional protasis ('If you see **anything**, tell me immediately.')
(6) indirect negations ('I don't think that **anybody** knows the answer.')
(7) direct negation ('**Nobody** knows the answer.')
(8) standard of comparison ('In Freiburg, the weather is nicer than **anywhere** in Germany.')
(9) free choice ('**Anybody** can solve this simple problem.')

The book consists of nine chapters and two extensive appendices. Chapter 1 is a short survey of the content of the book in five pages. Although the style is rather dry, these pages immediately put one in the midst of the subject. Chapter 2 is the real introduction. Here, the definition of the subject is presented (9–13), earlier work on the subject is discussed (13–15) and some comments on the typological method are made (7–9, 15–20). An important problem which Haspelmath faced is that information on indefinite pronouns is hard to find in reference grammars. Consequently, the main body of Haspelmath's investigation is based on a (still very large) sample of 40 languages on which detailed information was available – in printed format or in the form of linguistically skilled informants. However, the constraint of availability makes the sample Eurocentric. Luckily, the encoding of indefinite pronouns shows high variability. Even close relatives show considerable differences. The 40-language sample is thus sufficiently diverse for a cross-linguistic investigation. Later on (in chapter 9), some hypotheses that arise from the 40-language sample are tested using less complete data from a sample of 100 languages based on reference grammars.

Chapter 3 presents what I would like to call a CROSS-LINGUISTIC INVESTIGATION. In this chapter, the variation of indefinite pronouns is discussed, both in their form and function, using examples from a wide array of languages. The result is an impressive catalogue of phenomena that are traditionally classed under the general heading 'indefinite pronoun'. From now on anybody working in this area will have to take care to take apart the various possible meanings of indefinite pronoun. This cross-linguistic investigation results in a TYPOLOGY of the subject (52), which consists of the nine functions of indefinite pronouns as summarised above. This order of things is exemplary, in my opinion, because a cross-linguistic investigation is a precondition to producing a sensible typology – one that is informed by the possible variation that the typology has to account for. Anybody can make up a set of possible linguistic types, yet not everybody takes the effort to fine-tune the types to the actual variation.

Chapter 4 investigates the interrelation between the types. The nine functions of indefinite pronouns are combined into an implicational map (64), reproduced here as figure 1. Such a map represents the cross-linguistic primitives metaphorically as a semantic space in which closely connected items are placed near each other – in this case enhanced by interconnecting lines.
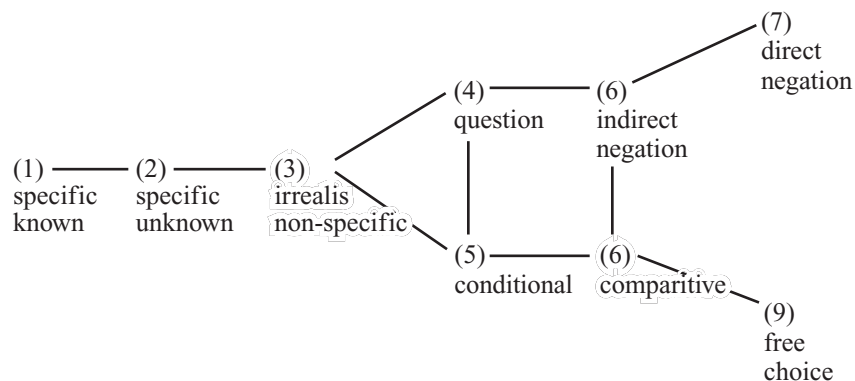
Figure 1
Haspelmath's implicational map for indefinite pronoun functions (63–64)

This map is a strong restriction on possible linguistic structures, as only 10 out of 45 logically possible lines are said to be necessary to account for the linguistic diversity. On the other hand, there are 105 theoretically possible combinations predicted by this model, of which only 39 are actually found by Haspelmath (76).[1] This overgeneralisation is partly countered by introducing two principles (77): 'combinations of fewer than three functions are not possible in the middle of the map' and 'functions 9 and 8 are never combined with function 1'. Even in a loose interpretation of these principles, the 105 possible combinations are only reduced to 82, leaving still a set of 43 unattested possibilities unaccounted for. More problematic, the rationale behind these principles remains quite opaque. Should we expect that the other possibilities will turn up eventually if more languages are investigated? Or are there more principles at work, restricting the possibilities? The precise predictions that can be formulated on the basis of this implicational map are unclear. Haspelmath notes that 'the map was originally established inductively' (122). I will come back to this inductive process at the end of this review.

Chapter 5 deals with possible explanations for this particular form of the implicational map. Haspelmath discusses many different theoretical approaches to indefiniteness, and picks out the parts he finds useful for his own story. This results in five binary oppositions with which he 'explains' the existence of this particular implicational map (119–122). The oppositions take the form of possible semantic characteristics of the various functions of indefinite pronouns: known vs. unknown, specific vs. unspecific, scalar

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[1] In fact, Haspelmath only mentions 37 combinations on page 76, yet in his appendix A there are two more combinations: 456 as instantiated by the Romanian indefinite determiner *vre-un* (264) and 12345678 as instantiated by the Swedish *någon*-series (249), cf. Dahl (1999: 667).

endpoint vs. no scalar endpoint, endpoint on non-reversed scale vs. endpoint on reversed scale, and, finally, within the scope of negation vs. not within the scope of negation. However, these characteristics only partially explain the connections as presented in the map. This explanation is strongly underdetermined – quite in sync with the fact that many connections that are predicted by the semantic map are not attested. The implicational map predicts much more than is actually found, and it can be explained only to a limited extent. This leads to the conclusion that the model as proposed in the form of the implicational map is too strong for the present data.

Chapters 6 and 7 go together. Both discuss diachronic aspects of indefinite pronouns in the context of grammaticalisation. A large catalogue of possible sources of indefinite pronouns is presented. All indefinite pronouns originate from one of the three extremes (1, 7, 9) of the implicational map. Once an indefinite pronoun has been grammaticalised, Haspelmath hypothesises that the changes follow along the lines of his implicational map. Of course, diachronic evidence is sparse, yet the large set of cases that Haspelmath collected seems to corroborate this hypothesis.

Chapter 8 focuses on a restricted part of the indefinite pronoun spectrum: the combination of negation and indefinite marking. Negative indefinite pronouns have attracted some earlier typological attention, so Haspelmath probably felt obliged to add to that discussion. This results in a showcase of Haspelmath's approach. Within his overarching approach to indefinite pronouns, he can give indefinite pronouns their proper place under negation. This chapter shows that linguists could sometimes be a bit less afraid to think big. Of course, approaching a theme as wide-ranging as Haspelmath has done implies a lot of work, but the results can be more than rewarding.

Chapter 9 is called 'Conclusions', but in fact it consists of a strong piece of original research and should surely not be laid aside as mere summary of the foregoing. In this chapter, Haspelmath tries to find correlations between the indefinite pronoun type and other characteristics of a language by investigating a 100-language sample. He does not succeed, exactly as he expected from the fact that even close relatives in the 40-language sample show much variation. However, in this case failure does not imply that no typological correlates exist as Haspelmath does not seem to try very hard to find any. Two appendices follow, of which the first is of great importance. Appendix A consists of 74 pages of detailed discussion of the indefinite pronouns of the 40-language sample. These pages are a goldmine of examples and references to the usage of indefinite pronouns in some well-known, but also many lesser-known languages (244–317). The second appendix is a survey of the 100-language sample.

Finally, I would like to spend a few more words on the inductive process that purportedly led Haspelmath to formulate the implicational map as shown in figure 1. He does not explain how this induction has worked, so I have attempted to repeat the process in a completely automatic way. The

REVIEWS

ideal situation would be if the same model would appear from a purely mathematical analysis of the data. The general idea behind this mathematical analysis is that the distance between two indefinite pronoun functions in a two-dimensional space is iconic to the chance of co-occurrence within one indefinite pronoun expression. The larger the proportion of cases in which the two functions co-occur, the nearer the two points should be in the semantic space. To make this analysis, I have collected all indefinite expressions in Haspelmath's 40-language sample (which total 133). For each combination of functions, I have counted the number of cases where they co-occur. The distance should be inversely proportional to this number (high number of co-occurrences means low distance). I also counted the number of 'breaks', i.e. cases in which one of the two functions occurs, but not the other. The distance should be proportional to this number (high number of breaks means high distance). Then I tried to find the distribution of the nine functions in a two-dimensional space in which the distances approach these conditions as nearly as possible. The result is shown in figure 2.[2]
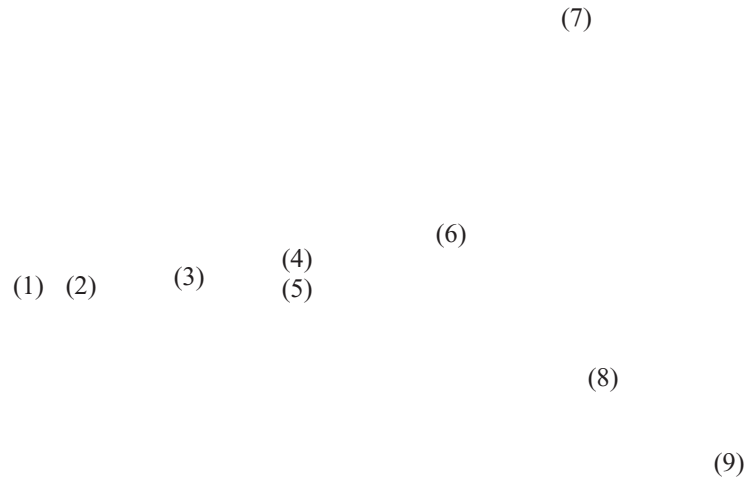
(7)

(6)

(4)
(3)
(1) (2)   (5)

(8)

(9)

Figure 2
Two-dimensional approximation of the distances between the indefinite pronoun functions, based on the 133 indefinite expressions in Haspelmath's 40-language sample
(mean error: 4%)

[2] To be precise, I have used $error_{ij} \times \frac{10 \times (\text{number of breaks})_{ij}}{(\text{number of co-occurance})_{ij} + 10}$ as a measure of the distance between two indefinite pronoun functions i and j. The factors 10 are added for practical reasons only, and do not influence the results in any structural way. The factor $error_{ij}$ in the above measure should be as close to the value 1 as possible for all combinations of i and j. To minimise the errors, I used the algorithm FindMinimum in the software package Mathematica. This algorithm tries to find a local minimum through an iterative process, starting from a specified point. All nine indefinite pronoun functions started from the same point in a two-dimensional space, and the iteration was continued until a minimum of the mean of $(error_{ij} - 1)^2$ was found. Because FindMinimum only returns a local minimum, I

I should stress once again that this distribution was found by a purely mathematical analysis of the data. The similarity between this figure and the model as proposed by Haspelmath (see figure 1 above) is striking. However, the predictions that are made by this figure are slightly different. Circles should be imagined instead of the lines in Haspelmath's model. The argumentation then goes as follows. There is, for instance, much more freedom to draw a circle around the points 456 compared to a circle around the points 346. This predicts that the combination 456 will turn up more frequently than the combination 346 (neither of which is attested in Haspelmath's data). Future research must decide which model makes the better predictions.

However, I should conclude by saying that the discussion of the model accounts only for a small part of the book. Haspelmath presents the model as the major result of his investigation, yet there are very many side issues; topics that do not form part of the model are thoroughly discussed. Also, even if the implicational map turns out to be deficient in the future, the data presented in chapters 3, 6 and 7 and in appendix A are of lasting value. In conclusion, this book is a major addition to our knowledge about the possible variability of human language. The research is exemplary and the results rewarding. It is an important work, not only for those interested in indefinite pronouns, but also for anyone interested in linguistic variation.

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Roland Hausser, *Foundations of computational linguistics: man-machine communication in natural language*. Berlin: Springer, 1999. Pp. xii + 534.

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In this book, Hausser sets out a detailed case for the view that all aspects of language – language-processing, language-production, even the grammar formalism itself – are strictly 'time linear', that is, reflect processing in real

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have tried various starting points for the iteration. All returned roughly the same result, *pace* a rotation of the whole map. This indicates that the minimum as depicted in figure 2 is a real minimum. The mean error is around 4% in all cases.