SEMANTICS

CRITICAL CONCEPTS IN LINGUISTICS

Edited by
JAVIER GUTIÉRREZ-REXACH

SEMANTICS

Critical concepts in linguistics

Edited by Javier Gutiérrez-Rexach

Volume V

Operators and sentence types

Routledge
Taylor & Francis Group
LONDON AND NEW YORK

First published 2003
by Routledge
11 New Fetter Lane, London EC4P 4EE

Simultaneously published in the USA and Canada
by Routledge
29 West 35th Street, New York, NY 10001

Routledge is an imprint of the Taylor & Francis Group

Typeset in Times by
RefineCatch Limited, Bungay, Suffolk
Printed and bound in Great Britain by
MPG Books, Bodmin

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

Library of Congress Cataloging in Publication Data
A catalog record for this book has been requested

ISBN 0-415-26632-7 (Set)
ISBN 0-415-26637-8 (Volume V)

Publisher's note
References within each chapter are as they appear in the original complete work

ACKNOWLEDGMENTS

The publishers would like to thank the following for permission to reprint their material:

Hans Kamp, 'Two theories about adjectives', in Edward Keenan (ed.), *Formal Semantics of Natural Language*, Cambridge: Cambridge University Press, 1975, pp. 123–155. Reprinted with the permission of Cambridge University Press and the author. © Cambridge University Press 1975.

Academic Press and the author for permission to reprint Max J. Cresswell, 'The semantics of degree', in Barbara Partee (ed.), *Montague Grammar*, New York: Academic Press, 1976, pp. 261–292.

Jean-Yves Lerner and Manfred Pinkal for permission to reprint Jean-Yves Lerner and Manfred Pinkal, 'Comparatives and nested quantification', in Paul Dekker and Martin Stokhof (eds), *Proceedings of the Eighth Amsterdam Colloquium*, Amsterdam: ILLC, University of Amsterdam, 1991, pp. 329–345.

Christopher Kennedy for permission to reprint Christopher Kennedy, 'Comparison and polar opposition', in *Proceedings of Semantics and Linguistic Theory (SALT)*, 5, Ithaca, NY: CLC Publications, Cornell University, 1997, pp. 240–257.

Gilles Fauconnier for permission to reprint Gilles Fauconnier, 'Polarity and the scale principle', in *Proceedings of the Chicago Linguistics Society (CLS)*, 11, 1975, pp. 188–199.

Linguistic Analysis and the author for permission to reprint Jack Hoeksema, 'Monotonicity phenomena in natural language', *Linguistic Analysis*, 16, 1986, pp. 25–40.

Nirit Kadmon and Fred Landman for permission to reprint Nirit Kadmon and Fred Landman, 'Polarity sensitive *any* and free choice *any*', in Martin Stokhof and Leen Torenvliet (eds), *Proceedings of the Seventh Amsterdam Colloquium*, Amsterdam: ILLC, University of Amsterdam, 1989, pp. 227–251.

Linguistic Analysis and the author for permission to reprint Frans Zwarts, 'Nonveridical contexts', *Linguistic Analysis*, 25, 1995, pp. 286–312.

William Ladusaw, 'Configurational expression of negation', in Jaap van der Does and Jan van Eijck (eds), *Quantifiers, Logic, and Language*, Stanford, CA: CSLI Publications, 1996, pp. 203–223. Reprinted, with permission, from CSLI Publications and the author. Copyright © 1996 Center for the Study of Language and Information, Leland Stanford Junior University.

Lauri Karttunen, 'Syntax and semantics of questions', *Linguistics and Philosophy*, 1, 1977, pp. 3–44. Reprinted with kind permission from Kluwer Academic Publishers and the author.

Walter de Gruyter GmbH & Co. and the authors for permission to reprint James Higginbotham and Robert May, 'Questions, quantifiers and crossing', *The Linguistic Review*, 1, 1981, pp. 41–79.

Walter de Gruyter GmbH & Co. and the authors for permission to reprint Jeroen Groenendijk and Martin Stokhof, 'On the semantics of questions and the pragmatics of answers', in Fred Landman and Frank Veltman (eds.), *Varieties of Formal Semantics*, Dordrecht: Foris Publications, 1984, pp. 143–170.

Stephen Berman for permission to reprint Stephen Berman, 'Towards the semantics of open sentences: *wh*-phrases and indefinites', in Martin Stokhof and Leen Torenvliet (eds), *Proceedings of the Seventh Amsterdam Colloquium*, Amsterdam: ILLC, University of Amsterdam, 1989, pp. 53–77.

Utpal Lahiri for permission to reprint Utpal Lahiri, 'Questions, answers and selection', in *Proceedings of the North East Linguistic Society (NELS)*, 21, Amherst MA: Graduate Linguistic Students' Association, 1991, pp. 233–246.

Jonathan Ginzburg for permission to reprint Jonathan Ginzburg, 'A quasi-naive semantics for interrogatives and its implications', in Paul Dekker and Martin Stokhof (eds), *Proceedings of the Eighth Amsterdam Colloquium*, Amsterdam: ILLC, University of Amsterdam, 1991, pp. 197–212.

Veneeta Dayal for permission to reprint Veneeta Dayal, 'Two types of universal terms in questions', in *Proceedings of the North East Linguistic Society (NELS)*, 22, 1992, pp. 443–457.

MIT Press and the author for permission to reprint James Higginbotham, 'Interrogatives', in Ken Hale and Samuel J. Keyser (eds), *The View from Building 20*, Cambridge, MA: MIT Press, 1993, pp. 195–227. Copyright © 1993 by The Massachusetts Institute of Technology.

Javier Gutiérrez-Rexach for permission to reprint Javier Gutiérrez-Rexach, 'Interrogatives and polyadic quantification', in Nelia Scott (ed.), *Proceedings*

of the International Conference on Questions, Liverpool: University of Liverpool, 1999, pp. 1–14.

Disclaimer

The publishers and the editor have made every effort to contact authors/copyright holders of works reprinted in *Semantics: Critical Concepts in Linguistics*. This has not been possible in every case, however, and we would welcome correspondence from the individuals/companies we have been unable to trace.

VOLUME V OPERATORS AND SENTENCE TYPES

INTRODUCTION

This part of the anthology contains papers on the semantics of three constructions of diverse complexity: adjectival modification, negation, and interrogatives. The exploration of the semantics of these expressions leads to important theoretical insights on the nature of modification, operators, and sentence types in natural language.

Hans Kamp (**66**) provides a semantics for several types of adjectives (extensional, non-extensional, etc.), comparatives, and superlatives. Viewing adjectives as functions from properties to properties works for the first type of adjectives but not for the second class of constructions, which require a more sophisticated theory based on supervaluations and graded context-dependent models with probability functions.

Max Cresswell (**67**) presents a possible-worlds semantics for comparative constructions. He introduces the notion of a degree of comparison and provides a syntax and semantics for positive adjectives and comparatives based on his lambda-categorial languages.

Jean-Yves Lerner and Manfred Pinkal (**68**) study the relation between comparatives and quantifier terms. They explore the status of the comparative as a degree quantifier, predicative and attributive comparatives, and the behavior of quantifier terms occurring in comparative constructions.

Christopher Kennedy (**69**) analyzes "cross-polar" anomaly in comparatives, illustrated by sentences such as the anomalous *#Mike is shorter than Carmen is tall.* Based on this phenomenon he argues that gradable adjectives denote relations between individuals and extents or intervals in a scale rather than relations between individuals and degrees or points in a scale, as proposed by Cresswell and others. He also claims that there is a sortal distinction between positive and negative adjectives.

The work of Gilles Fauconnier and William Ladusaw at the end of the 1970s launched a whole new direction of research on the semantics of negative terms, based on what has finally being termed the Ladusaw–Fauconnier generalization. Their basic insight was that the occurrence of so-called negative polarity items (NPIs) is restricted to environments of a downward monotonic (set to subset) inferential nature. Gilles Fauconnier (**70**) proposes

that the distribution of polarized elements follows from the "scale principle", which he views as a semantic/pragmatic inferential restriction.

Jack Hoeksema (**71**) presents a general overview of monotonicity phenomena in natural language. He defines and illustrates the notions of direct and inverse monotonicity and he explains how the latter predicts the distribution of NPIs.

Nirit Kadmon and Fred Landman (**72**) propose a unified analysis of the semantics and pragmatics of *any*, a term that can have either a polarity-sensitive use or a free-choice use. They propose that free-choice *any* is a generic indefinite with the properties of widening and strengthening. These two properties explain a host of distributional characteristics of this term.

Frans Zwarts (**73**) explores what Montague called "nonveridical contexts." The occurrence of *any* is restricted to nonveridical contexts. Similarly restricted is the distribution of NPIs in Modern Greek and Romanian, and certain Dutch adverbials.

William Ladusaw (**74**) studies the interpretation of negative concord, a morphological property of some languages in which negation is instantiated on several positions in a clause. Drawing on recent work on the syntax of negation, he proposes that the elements of a negative chain should be considered indefinites.

The last nine papers of this volume deal with several problems and issues in the semantics of interrogatives. Lauri Karttunen (**75**) presents a systematic account of the semantics of interrogatives. He revises previous proposals by Belnap, Hamblin, and Hintikka, among others. Hamblin proposed that a direct or matrix question denotes a set of propositions, namely the set of propositions expressed by the possible answers to it. For Karttunen, a question denotes the set of propositions expressed by their true answers. He proposes an extension of Montague's PTQ framework to include questions.

James Higginbotham and Robert May (**76**) study the interaction of *wh*-expressions and quantifiers, and the relevance of crossing coreference constructions at Logical Form. They claim that some of the problems associated with these structures can be explained by positing binary operators (binary quantifiers, or binary *wh*-operators), and they propose an operation of absorption that derives n-ary quantifiers from unary ones.

Jeroen Groenendijk and Martin Stokhof (**77**) explore a possible-worlds account of the question–answer relation in which questions are treated as partitions of the set of indices. Each element of that partition represents a proposition, a possible semantic answer to the question. Total and partial answers, and direct and indirect questions are treated in this model.

Stephen Berman (**78**) extends the Lewis–Kamp–Heim analysis of indefinites as restricted free variables to the analysis of *wh*-phrases (interrogatives). He demonstrates the existence of several parallelisms between *wh*-terms and indefinites (quantificational variability, dependence on presupposition accommodation), as well as some asymmetries. He concludes that *wh*-phrases should also be treated as restricted free variables.

Utpal Lahiri (**79**) studies embedded questions of two types – the *wonder*-type and the *know*-type – and concludes that the question/answer distinction in the interpretation of embedded interrogatives is not marked in the syntax, nor can it be properly characterized as based on the selection of different semantic objects. Rather, it is a matter of the lexical semantics of the predicate in question. To support his view, he discusses further evidence from Spanish.

Jonathan Ginzburg (**80**) presents an account of interrogatives in situation semantics where questions are treated as unresolved states-of-affairs. He also argues for a non-quantificational approach to interrogative meaning.

Veneeta Dayal (**81**) considers the interaction of *wh*-expressions and universal quantifiers, which gives rise to so-called individual answers, pair-list answers, and functional answers. She distinguishes between the effects associated with universal determiners such as *each, every*, and *both*, and those associated with plural definites. The latter should be analyzed in terms of their individual answers. List answers to questions with plural definites represent one of two readings of an individual answer.

James Higginbotham (**82**) associates interrogative sentences with a semantic object that he calls an "abstract question," viewed as a partition of states, in a way similar to Groenendijk and Stokhof (**77**). He explores several empirical and theoretical issues related to direct and indirect questions, scopal interaction with quantifiers, and the licensing of NPIs in interrogatives.

Javier Gutiérrez-Rexach (**83**) develops a treatment of *wh*-phrases and quantification into questions within the generalized quantifier framework. *Wh*-phrases are uniformly treated as denoting interrogative generalized quantifiers. Quantification into questions is viewed as the interaction between a declarative and an interrogative quantifier, giving rise to a variety of polyadic quantifiers. Reducibility issues are also studied.

Part A

ADJECTIVES, DEGREES, AND COMPARATIVES

66

TWO THEORIES ABOUT ADJECTIVES[1]

Hans Kamp

Source Edward Keenan (ed), *Formal Semantics of Natural Language* Cambridge Cambridge University Press, 1975, pp 123–155

1

I will discuss two theories about adjectives The first theory dates from the late 1960s It is stated in Montague (1970) and Parsons (1968) According to this theory the meaning of an adjective is a function which maps the meanings of noun phrases onto other such meanings, e g the meaning of *clever* is a function which maps the meaning of *man* into that of *clever man*, that of *poodle* onto that of *clever poodle*, etc Predicative uses of adjectives are explained as elliptic attributive uses Thus *This dog is clever* is analysed as *This dog is a clever dog* – or as *This dog is a clever animal*, or perhaps as *This dog is a clever being* Which noun phrase ought to be supplied in this reduction of predicative to attributive use is in general not completely determined by the sentence itself, and to the extent that it is not, the sentence must be regarded as ambiguous

The main virtue of this doctrine is that it enables us to treat, within a precise semantical theory for a natural language – as e g that of Montague – adjectives in such a way that certain sentences which are, or might well be, false are not branded by the semantics as logically true Examples of such sentences are

(1) Every alleged thief is a thief
(2) Every small elephant is small
(3) If every flea is an animal, then every big flea is a big animal

Each of these sentences would come out logically true in Montague's model theory if it were to treat adjectives as ordinary predicates, so that the logical form of (1), for example, would be $(\forall x)(A(x) \wedge T(x) \rightarrow T(x))$

Moreover, the theory allows us to express in very simple mathematical terms some important semantical features which some, though not all, adjectives possess In order to give precise formulations of such features, it is necessary to make some assumptions about the comprehensive semantical theory in which this particular doctrine about adjectives is to be embedded These assumptions can all be found in Montague (1970) I regard them as basically sound, but would like to point out to those who have strong qualms about possible world semantics that the distinctions drawn by the definitions below do not depend on these assumptions as such

The assumptions are the following

(a) Each possible interpretation (for the language in question) is based upon (i) a certain non-empty set W of possible worlds (or possible situations, or possible contexts) and (ii) a set U of individuals
(b) A property relative to such an interpretation is a function which assigns to each $w \in W$ a subset of U (intuitively the collection of those individuals which satisfy the property in that particular world (or context) w)
(c) The meaning of a noun phrase in such an interpretation is always a property

Thus the meanings of adjectives in an interpretation of this kind will be functions from properties to properties

We may call an adjective *predicative in* a given interpretation if its meaning F in that interpretation satisfies the following condition

(4) there is a property Q such that for each property P and each $w \in W$, $F(P)(w) = P(w) \cap Q(w)$

Once we have singled out a given class $\mathcal{K}$ of admissible interpretations, we can also introduce the notion of being *predicative* simpliciter an adjective is *predicative* (with respect to the given class $\mathcal{K}$) if and only if it is predicative in each interpretation (belonging to $\mathcal{K}$)

Predicative adjectives behave essentially as if they were independent predicates If for example *four-legged* is treated as predicative then any sentence *If every N_1 is an N_2 then every four-legged N_1 is a four-legged N_2*, where N_1 and N_2 are arbitrary noun phrases, will be true in each admissible interpretation in all the worlds of that interpretation

Predicative adjectives are, roughly speaking, those whose extensions are not affected by the nouns with which they are combined Typical examples are technical and scientific adjectives, such as *endocrine, differentiable, superconductive*, etc

We may call an adjective *privative in* a given interpretation if its meaning F in that interpretation satisfies the condition

(5) for each property P and each $w \in W$ $F(P)(w) \cap P(w) = \phi$

Again, an adjective will be called *privative* if (5) holds on all admissible interpretations

A privative adjective A is one which, when combined with a noun phrase N produces a complex noun phrase AN that is satisfied only by things which do not satisfy N If A is a privative adjective then each sentence *No AN is an N* will be a logical truth Adjectives that behave in this way in most contexts are e g *false* and *fake* I doubt that there is any English adjective which is privative (in the precise sense here defined) in all of its possible uses

An adjective is *affirmative in* a given interpretation if its meaning satisfies

(6) for each P and w,
$F(P)(w) \subseteq P(w)$

It is *affirmative* if (6) holds in all admissible interpretations

Clearly all predicative adjectives are affirmative But there are many more In fact the vast majority of adjectives are affirmative Typical examples of affirmative adjectives which are not predicative are *big*, *round*, *pink*, *bright*, *sharp*, *sweet*, *heavy*, *clever*

Finally, an adjective is *extensional in* a given interpretation if

(7) there is a function F' from sets of individuals to sets of individuals such that for every P and w $(F(P))(w) = F'(P(w))$

and *extensional* if (7) holds in all admissible interpretations

Thus a predicative adjective is in essence an operation on extensions of properties if two properties have the same extension in w then the properties obtained by applying the adjective to them also have the same extension in w

Clearly all predicative adjectives are extensional Non-extensional adjectives are for example *affectionate* and *skilful* Even if (in a given world) all and only cobblers are darts players, it may well be that not all and only the skilful cobblers are skilful darts players,[2] and even if all men were fathers the set of affectionate fathers would not necessarily coincide with the set of affectionate men [3]

It is an interesting question whether there are any adjectives which are extensional but not predicative It has been suggested[4] that in particular such adjectives as *small*, *tall*, *heavy*, and *hot* belong to this category Indeed these adjectives are evidently not predicative, whereas their extensionality follows from a certain proposal according to which they derive from their comparatives in the following way Let A be an adjective of this kind, and let $\mathcal{R}$ be the binary relation represented by the phrase *is more A than* The function $\mathcal{A}$ from properties to properties which is associated with A is then characterized by

(8) for any property P and world w $\mathcal{A}(P)(w) = \{u \in P(w)$ for most $u' \in P(w)$ $\langle u,u' \rangle \in \mathcal{R}(w)\}$