

Bridging with Two Types of Definites in German - Relational Anaphora and Situational Uniqueness*

Florian Schwarz (UMass Amherst)

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The Plot

- Background on Definites
- New Perspective: Two Definite Articles in German
- Bridging: Two types of Bridging distinguished by German Articles (supported by experimental evidence): Situational Uniqueness and Relational Anaphora
- Outlook and Broader Implications

1 Introduction

1.1 Theoretical Background

1.1.1 Types of Uses of Definite Descriptions

(1) Classification of Definite Uses (after Hawkins (1978))¹

Type of Definite Use	Example	Context
<i>Immediate situation</i>	<i>the desk</i>	uttered in a room with exactly one desk
<i>Larger situation</i>	<i>the prime minister</i>	uttered anywhere in the UK
<i>Anaphoric</i>	<i>John bought a book and a magazine. The book was expensive.</i>	
<i>Bridging</i>	<i>John bought a book today. The author is French. John drove down the street. The steering wheel was cold.</i>	

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¹Hawkins uses the term *associative anaphora* instead of *bridging*.

1.1.2 A unified meaning for the uses of definite descriptions?

- Theoretical literature generally proposes unified analyses
 - **Dynamic / familiarity theories**
generalize anaphoric case; typically anaphoric to a discourse referent; (Christophersen 1939, Heim 1982, Kamp 1981)
 - **Uniqueness theories**
crucially rely on uniqueness presupposition (Frege 1892, Strawson 1950) (or uniqueness implication (Russell 1905)); has to be restricted to domain or situation. Early work in situation semantics Barwise and Perry (1983), and more recently (Berman 1987, Heim 1990, Recanati 2004, Elbourne 2005, Kratzer 2007)
- **Looking beyond English: Two types of articles in German**
→ **A challenge for unified analyses!**

1.2 A Morphological Contrast Between two Definite Articles in German

Preposition-article contraction (Hartmann 1978, Hartmann 1980, Haberland 1985, Cieschinger 2006):²

- (2) *Hans ging zum / zu dem Haus.*
Hans went to-the_{weak} / to the_{strong} house
'Hans went to the house.'

Subtle contrast in meaning and use!

→ Important theoretical question: What is the contrast between the two? And what does that tell us about possible meanings for definite articles in natural language?

- (3) **Terminology**
Contracted form (*zum*) **weak** article [glossed as *to-the_{weak}*]
non-contracted form (*zu dem*) **strong** article [glossed as *to the_{strong}*]

Same contrast reflected in full article paradigms in many Germanic dialects, e.g. in Fering (Ebert 1971):³

- (4) **The definite article paradigms in Fering**

	m.Sg.	f.Sg	n.Sg.	Pl.
A-forms (weak article)	a	at	at	a
D-forms (strong article)	di	det	det	dön

Similar contrast seems to exist in unrelated languages: e.g. in Lakhota (Buechel 1939) and Hausa (see Lyons (1999) for an overview).

→ This is a **general contrast**, although we only see it in a limited set of environments in standard German.

1.3 What is the Difference Between the Two Articles?

1.3.1 The weak article: situation-unique uses

Both Hawkins' immediate and larger **situation uses** are expressed with the **weak article**. They are available without any previous mention of the relevant individuals and pick out **unique** individuals:

- (5) **Uses of the Weak Article**
- a. *unterm Schreibtisch* ('under the desk') [present in utterance situation]
 - b. *vom Hund* ('of the dog') [situation containing a home or family]
 - c. *vom Bürgermeister* ('of the mayor') [larger situation: town/city]
 - d. *vom Kanzler* ('by the chancellor') [larger situation: country]
 - e. *zum Mond* ('to the moon') [globally unique]

Uniqueness is necessary:

²The availability of contraction is constrained by independent morphological conditions, e.g. on gender and case, which won't concern us here.

³For other dialects that exhibit the same contrast, see (Heinrichs 1954, Hartmann 1967, Hartmann 1982, Haberland 1985, Scheutz 1988, Schwager 2007).

- (6) *In der Kabinettsitzung wurde ein neuer Vorschlag vom **Kanzler** / **#Minister** gemacht.*
 In the cabinet meeting was a new proposal by-the_{weak} chancellor / minister made
 ‘In the cabinet meeting, a new proposal by the chancellor/minister was made.’

As usual, uniqueness has to be relativized to some type of domain restriction. Since my analysis will be couched in a situation semantics, I will make use of the situation argument for that. (Barwise and Perry 1983, Recanati 2004, Wolter 2006b, Kratzer 2007)

1.3.2 The strong article: anaphoric uses

Anaphoric uses are expressed by the **strong article**:

- (7) *Hans hat einen Schriftsteller und **einen Politiker** interviewt. Er hat **#vom** / **von dem** **Politiker** keine interessanten Antworten bekommen.*
 Hans has a writer and a politician interviewt He has from-the_{weak} / from the_{strong} politician
 no interesting answers gotten
 ‘Hans interviewed a writer and a politician. He didn’t get any interesting answers from the politician.’

The description does not have to be the same, and can be much more general (8).

- (8) *Maria hat einen Ornithologen ins Seminar eingeladen. Ich halte **#vom** / **von dem** **Mann** nicht sehr viel.*
 Maria has a ornithologist to-the seminar invited. I hold of-the_{weak} / of the_{strong} man not very
 much
 ‘Maria has invited a ornithologist to the seminar. I don’t think very highly of the man.’

The strong article can also be used deictically, in which case it is typically stressed (Heim 1991).

1.3.3 Covarying Interpretations

Both articles can receive covarying interpretations:

- (9) *Wenn Hans einen Freund besucht, dann übernachtet er **#beim** / **bei dem** **Freund**.*
 When Hans a friend visits then overnight-stays he by the_{strong} / by-the_{weak} friend
 ‘When Hans visits a friend he spends the night at the friend’s house.’
- (10) *Wenn Hans zelten geht, fährt er mit dem Rad **zum** / **#zu dem** **Zeltplatz**.*
 When Hans camping goes rides he with the bike to-the_{weak} / to the_{strong} campground
 ‘When Hans goes camping he rides his bike to the campground.’

Our account will have to cover quantificational cases!

1.3.4 Matching Articles and Analyses?

Hypothesis suggested by data above:

- The weak article picks out the individual that uniquely meets its description (e.g., relative to a situation, following (Barwise and Perry 1983, Heim 1990, Recanati 2004, Elbourne 2005, Kratzer 2007)).
- The strong article picks up an antecedent (discourse referent), as a familiarity account would lead us to expect. (Heim 1982, Kamp 1981)

→ **Two dimensions of context** that meanings can relate to: **linguistic** context vs. **situation** context.⁴

Issues:

- **Theoretical Parsimony?** Do we have to incorporate two theories of definiteness? Is a dynamic / familiarity account **necessary** for the strong article?
 → What does it mean to be anaphoric in formal, theoretical terms?
- **Question of empirical coverage:** Does the characterization of the two articles as involving situational uniqueness vs. being anaphoric account for all uses?
- **How about Bridging?**

⁴See also Krifka (1984), who discusses data on the two articles in Bavarian, proposes the terms W(orld)-definiteness and T(ext)-definiteness, and Roberts (2003), who proposes a similar distinction, namely between weak and strong familiarity (but see Schwager (2007)) for discussion of potential problems for mapping the article contrast onto that distinction).

2 Bridging

2.1 Bridging and its Relation to Other Uses of Definites

Bridging (Clark (1975); Hawkins' *associative anaphora*; see also Prince's *Inferrables* (Prince 1981)):

- (11) John bought a new car. **The steering wheel** was pink.

Is 'bridging' a kind of **anaphoric use** (\rightarrow *associative anaphora*)?

Or is it a case of **situational uniqueness** (considered by Hawkins; see also Wolter (2006b) and Wolter (2006a))

\rightarrow **Two types of bridging, corresponding to two German articles**

2.2 Bridging with the German Articles

Surprisingly, different cases of bridging are expressed by different German articles:

- (12) *Das Theaterstück* missfiel dem Kritiker so sehr, dass er in seiner Besprechung kein gutes Haar **#am** /
The play displeased the critic so much that he in his review no good hair on-the_{weak} /
an dem Autor ließ.
on the_{strong} author left
'The play displeased the critic so much that he tore the author to pieces in his review.'
- (13) *Der Kühlschrank* war so groß, dass der Kürbis problemlos **im** / **#in dem** Gemüsefach
The fridge was so big that the pumpkin without a problem in-the_{weak} / in the_{strong} crisper
untergebracht werden konnte.
stowed be could
'The fridge was so big that the pumpkin could easily be stowed in the crisper.'

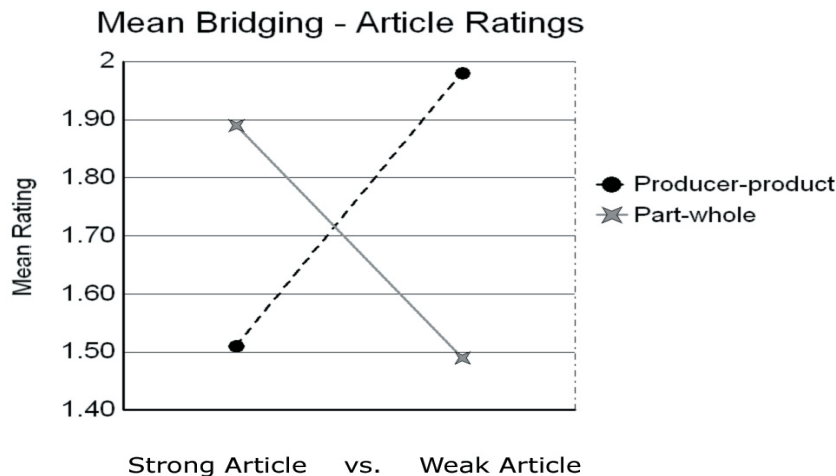
Questions:

- What is the difference between these two cases?
- How solid are the data? (judgments on the articles can be subtle)

2.2.1 A Questionnaire Study on the Bridging Contrast

- Hypothesis: Situational relationship plays a role. Categories used for experiment (to minimize variability):
 - (12): **Producer-Product** relationship (author - play, painter - painting, etc.)
 - (13): **Part-Whole** relationship (fridge - crisper, house - living room, bike-bike handle)
- Situations containing wholes include their parts; Situations containing products don't contain their producers
- 2 sub-experiments:
 - 6 sentences of type (12) ['producer-product' (*play - author*)]
 - 12 sentences of type (13) ['part-whole' (*fridge - crisper*)]
- Independent variable: type of article (weak vs. strong)
- 28 subjects took a questionnaire online
- ca. 70 items from other sub-experiments
- Task: On a scale from 1(best) - 5 (worst), rate whether each sentence sounds like a good sentence of German

Results:⁵



- **producer-product (example (12))**: weak article (1.98) worse than strong article (1.51)
simple effect significant $t_1(27) = 2.85, p < .01, t_2(5) = 3.10, p < .05$
- **part-whole (example (13))**: weak article (1.49) better than strong article (1.84)
simple effect significant: $t_1(27) = 3.42, p < .01, t_2(11) = 3.68, p < .01$
- **Interaction is also significant**; (no main effects)
ANOVA: $F_1(1, 27) = 12.34, p < .01, F_2(1, 16) = 22.89, p < .001$

→ There is a real and general difference between two types of bridging, which are expressed by different articles!

2.2.2 Same Contrast in Fering

- (14) *Wi foon a sark un a maden faan't taarep. A törem stän wat skiaf.*
We found the church in the middle of the village the_{weak} tower stood a little crooked
'We found the church in the middle of the village. The tower was a little crooked.'

Fering (Ebert 1971, 118)

- (15) *Peetji hee un Hamboreg an bilj keeft. DI mooler hee ham an guden pris maaget.*
Peter has in Hamburg a painting bought The_{strong} painter has him a good price made.
'Peter bought a painting in Hamburg. The painter made him a good deal.'

Fering (Karen Ebert, p.c.)

2.2.3 Same Contrast with Covariation

- (16) *Jeder, der einen Roman gekauft hat, hatte schon einmal eine Kurzgeschichte von dem Autor gelesen.*
Everyone that a novel bought has had already once a short story by the_{strong} author read
'Everyone that bought a novel had already once read a short story by the author.'
- (17) *Jeder Student, der ein Auto parkte, brachte einen Parkschein am Rückspiegel an.*
Every student that a car parked attached a parking-pass on-the_{weak} rear view mirror PART
'Every student that parked a car attached a parking pass to the rearview mirror.'

→ What distinguishes these two cases of bridging?

(12) and (16) involve relational anaphora, (13) and (17) involve situational uniqueness!

⁵The fairly small numerical size of the effect is in large part due to the fact that many examples from other studies involved much stronger degrees of badness. An example (from a sub-experiment by Jan Anderssen), for German speakers to see the contrast with the sentences discussed here: *Johannes war nicht so sehr auf den Preis bedacht, weil lauter Ausgaben die Firma übernehmen würde.* Mean rating: 4.8

2.3 Bridging with the Strong Article: Relational Anaphora

2.3.1 A Formal Analysis of Bridging as an Anaphoric Process: Chierchia 1995

One detailed formal proposal implementing the idea that bridging involves anaphora to a ‘bridging antecedent’ is that of Chierchia (1995).

Basic idea: definites have a contextually supplied relation as part of their meaning, whose various arguments are provided as null pronominals (represented by the superscript indices below). (adapted from Chierchia 1995, p. 221-222)

$$(18) \quad \llbracket [_{NP_j} \text{ the } N]^{i_1, \dots, i_n} \rrbracket = \iota x. [\mathbf{R}(\mathbf{y}_1, \dots, \mathbf{y}_n, \mathbf{x}) \ \& \ N(x)]$$

Applying his analysis to the German bridging example in (16), we get an analysis along the lines of (19b):⁶

$$(16) \quad \text{Jeder, der einen Roman gekauft hat, hatte schon einmal eine Kurzgeschichte \#vom / von dem}$$

Everyone that a novel bought has had already once a short story by-the_{weak} / by the_{strong}

Autor gelesen.

author read

‘Everyone that bought a novel had already once read a short story by the author.’

$$(19) \quad \text{a. } \llbracket \text{the author} \rrbracket = \iota u [\mathbf{wrote}(\mathbf{u}, \mathbf{y}) \ \& \ \text{author}(\mathbf{u})]$$

b. ‘Every person x that bought a novel y had read a short story by the author u that wrote y’

2.3.2 The Limits of Relational Bridging

Problem of overgeneration!

If R is supplied by context, the choice of noun should not matter much. But it does matter - it has to be relational!

- A contrast between *Autor* (‘author’) [relational] and *Schriftsteller* (‘writer’/‘novelist’) [NOT relational!]

$$(16) \quad \checkmark \text{ Jeder, der einen Roman gekauft hat, hatte schon einmal eine Kurzgeschichte von dem Autor gelesen.}$$

Everyone that a novel bought has had already once a short story by the_{strong} author read

‘Everyone that bought a novel had already once read a short story by the author.’

$$(20) \quad \# \text{ Jeder, der einen Roman gekauft hat, hatte schon einmal eine Kurzgeschichte von dem Schriftsteller}$$

Everyone that a novel bought has had already once a short story by the_{strong} novelist

gelesen.

read

‘Everyone that bought a novel had already once read a short story by the novelist.’

Unavailability of covarying reading is unexpected on Chierchia’s theory: R could be filled with the same appropriate value as before:

$$(20') \quad \text{‘the novelist that wrote the novel’ (R = wrote)}$$

- An English example:⁷

$$(21) \quad \# \text{ Every waiter that served a married woman also served the man.}$$

$$(22) \quad \checkmark \text{ Every waiter that served a married woman also served the husband.}$$

$$(21') \quad \text{‘the man that the woman was married to’ (R = married-to)}$$

Methodological Point: Quantificational examples yield much clearer intuitions!

Heim (1982, p. 385) discusses a similar, but non-quantificational, case, where the contrast is not as clear:

$$(23) \quad \text{John is married. (\#She/ His wife/ ?The woman) is nice.}$$

- Another example from English: Compounding can reduce arity of relational nouns. The covarying reading becomes unavailable if we make *author* non-relational in this way:

⁶The null pronominal ‘relatum’ argument will have to be dynamically bound (as Chierchia would assume) or function as a null D-Type pronoun.

⁷This is reminiscent of the ‘problem of the formal link’. (usually discussed with pronouns: *Every married woman sat next to him*. (Heim 1982, Kadmon 1987, Heim 1990, Elbourne 2005)). This goes back to Postal’s discussion of ‘anaphoric islands’.

- (24) # The children's book author of the book/article.
('of'-possessives are an independent test for relational nouns, Barker 1995)
- (25) # Everyone that read a book for the class on literature for pre-schoolers wrote a report about the children's book author.
- (25') 'the childrens' book author that wrote the book' (R = wrote)

2.3.3 Introducing the relation lexically

How can we avoid the problem of overgeneration?

- In the examples that work, we are dealing with relational nouns.
- The insight that relations can 'build a bridge' (as implemented by Chierchia) seems right.
- But the relation has to be introduced lexically by the noun!⁸

(26) $[[\text{author}]] = \lambda y. \lambda x. \lambda s. \text{author}(x)(y)(s)$

(16) Everyone that bought a novel had read a short story by the_{strong} author.

- a. 'Every person x that bought a novel y had read a short story by the author u of y'⁹

→ Covariation is implemented by **making the implicit relational argument anaphoric**, like in Chierchia's analysis. But the relation comes directly from the meaning of *author*.

- Where does the implicit argument (i.e., 'y') come into the picture?
- Surprising fact: The contrast between the articles disappears when the relatum argument is made explicit.

(16) *Jeder, der einen Roman gekauft hat, hatte schon mal eine Kurzgeschichte #vom / von dem Autor*
Everyone that a novel bought has had already once a short story by-the_{weak} / by the_{strong} author
gelesen.
read

'Everyone that bought a novel had already once read a short story by the author.'

(27) *Jeder, der ein Roman gekauft hat, hatte schon mal eine Kurzgeschichte ✓vom / von dem Autor*
Everyone that a novel bought has had already once a short story by-the_{weak} / by the_{strong} author
des Buches gelesen.
the_{Gen} novel read

'Everyone that bought a novel had already once read a short story by the author of the book.'

- Assumption: the explicit argument ('the book' in 27) combines with the noun, saturating the relational argument and yielding the whole NP non-relational
- Possible explanation: the articles differ in their possible types.
 - weak article can only combine with properties (e,st)
 - strong article can also combine with relations (e,(e,st))

→ Implicit argument in (16) is in position where we find possessors (Barker 1995):

(28) $[_{DP} \emptyset_{POSS} [_{D'} [_{D} \text{the}_{strong}] [_{NP} \text{author}]]]$ ¹⁰

Relational meaning for the strong article:

(29) $[[\text{the}_{strong}_{(e,(e,st))}]] = \lambda R_{(e,(e,st))}. \lambda y. \lambda s. \iota x. [R(x)(y)(s/w_s)]$

Caveat:

- What nouns are relational? And to what extent is coercion of (e,st)-nouns into relational ones possible?

⁸Löbner (1985) also discusses the importance of relational nouns for definite articles from a different perspective.

⁹I'm ignoring the situation argument for the moment, but see section 2.5.

¹⁰This is similar to, e.g., Barker's null D-head for possessives (Barker 1995). If we consider the possibility of having the null-possessor raise from a lower position, both the structure and the meaning will have to be reconsidered, of course. Thanks to Angelika Kratzer for detailed discussion of these issues.

- There may be gray areas, depending on how easily non-relational nouns can be coerced into relational ones. (This is a common issue in the possessives literature (see, for example, the debate in Jensen and Vikner 1994, Partee and Borschev 2001))
- **Prediction:** availability of relational meaning should correlate with that of covarying interpretations (this might be a good place for experimental work)

2.4 Bridging with the Weak Article: Situational Uniqueness

How can we account for cases of bridging with the weak article? Apparently not in the same way as for the strong article.

2.4.1 Situation Semantics

A situation semantics based on Kratzer (1989):

- Sentences denote sets of situations (propositions)
(*John ate a peanut* denotes the set of situations in which John ate a peanut.)
- Situations are parts of worlds (which are themselves maximal situations) and form a mereological part-structure
(A situation in which John ate a peanut might be part of a situation in which John was watching a movie.)
- Minimal situations (rough working definition): s is a minimal situation in which p is true if there is no proper part of s in which p is true
(A minimal situation in which John ate a peanut is a situation containing John, a peanut, and the eating relationship - and nothing else.)

2.4.2 Part-Whole Bridging

Let's assume the following entry for the situation-unique uses of the weak article (Barwise and Perry 1983, Recanati 2004, Wolter 2006b, Kratzer 2007):

$$(30) \llbracket \text{the}_{\text{weak}} \rrbracket = \lambda P. \lambda s. \iota x [P(x)(s)]$$

$$(31) \text{ a. } \llbracket \text{the}_{\text{weak}} \text{ desk} \rrbracket = \lambda s. \iota x [\text{desk}(x)(s)]$$

b. 'the unique desk in s '

In a situation semantics along the lines of (Kratzer 1989), situations containing individuals / events will also contain their parts.

$$(13) \text{ a. 'refrigerator' } \dots \text{'the}_{\text{weak}} \text{ crisper'}$$

$$\text{ b. } \llbracket \text{the}_{\text{weak}} \text{ crisper} \rrbracket = \lambda s. \iota x [\text{crisper}(x)(s)]$$

c. 'the unique crisper in s '

→ **bridging to parts of a situation expected with the weak article!** (see also Wolter 2006a)

Covariation: introduced by quantifying over situations (Berman 1987, Heim 1990, Elbourne 2005)

$$(17) \text{ Jeder Student, der ein Auto parkte, brachte einen Parkschein } \mathbf{am} \quad \mathbf{Rückspiegel} \mathbf{an.}$$

Every student that a car parked attached a parking-pass on-the_{weak} rear view mirror PART
'Every student that parked a car attached a parking pass to the rearview mirror.'

$$\text{ a. } \lambda s. \forall x. \forall s'. [\text{MIN}(s'): s \leq s' \ \& \ (\text{student}(x)(s') \ \& \ \exists y [\text{car}(y)(s') \ \& \ \text{parked}(x)(y)(s')]) \rightarrow \exists s'']. \text{MIN}(s''): s' \leq s''$$

$$\ \& \ \exists z. [\text{parking-pass}(z)(s'') \ \& \ \text{put-on}(x)(z)(\iota u [\mathbf{rearview-mirror}(u)(s'')])](s'')]$$

b. For every student x and every minimal situation s' in which x parks a car there is a minimal supersituation s'' in which x attaches a parking pass to the unique rearview mirror in s''

(After Elbourne (2005), with simplifications)

→ **Minimal car-parking situations will contain a unique mirror!**

Given that we only care about the situation, there's no need to have a 'bridging antecedent' (for a similar point, see also Wolter 2006a):

$$(32) \text{ Jedes Mal, wenn ein Rennfahrer in eine Kurve fährt, hat er beide Hände fest } \mathbf{am} \quad \mathbf{Lenkrad.}$$

Every time when a race car driver in a curve drives has he both hands tightly on-the_{weak} steering wheel
'Every time a race car driver drives into a curve he has both hands tightly on the steering wheel.'

2.4.3 Larger Situation Uses

Hawkins' larger situation use (e.g., *the mayor*) can also be seen as situational bridging

(33) context: I asked Maria what's new at home.

Hans hat heute einen Brief vom Bürgermeister bekommen.
 Hans have today a letter from-the_{weak} mayor received

'Hans received a letter from the mayor today.'

- There is no mayor in the 'house situation' (the situation that is being talked about)
- But in the default case, we clearly understand which mayor is meant here:
the mayor of the town or city that Hans and Maria live in.
- The phenomena here are quite similar to those we find with with adjectives like *local*, as in: *the local bar, the local mayor*, etc. (Mitchell 1986, Partee 1989)
- Question: How to find the local mayor? (more precisely: a supersituation containing the local mayor)

Starting point: *mayor* is relational - a mayor is a mayor of a town (or city)

(*of*-PP's provide independent test (Barker 1995))

- But to explain the contrast between (16) [*a book ... #the_{weak} author*] and (27) [*a book ... ✓the_{weak} author of the book*], we assumed that *the_{weak}* can only take a property argument.
- → reduce arity by existential closure:

(34) a. $\llbracket \text{mayor}_{(e,(e,st))} \rrbracket = \lambda x. \lambda y. \lambda s. \text{mayor}(x)(y)(s)$
 b. $\llbracket \text{mayor}_{(e,st)} \rrbracket = \lambda x. \lambda s. \exists y. \text{mayor}(x)(y)(s)$
 c. $\llbracket \text{the}_{weak} \text{ mayor} \rrbracket = \lambda s. \iota x. \exists y. [\text{mayor}(x)(y)(s)]$

Now we need a supersituation s' containing an x and a y such that x is the mayor of y in s' !

Can we find a supersituation that contains both an x and a y of the appropriate kind?

$Z_{oom}O_{ut}$: a mechanism that will take you to the unique minimal supersituation of s that contains (in this case) both a mayor and an entity that that mayor is the mayor of.

(35) a. $Z_{oom}O_{ut}(P)(s) = \iota s'. \text{MIN}(s'): s' \geq s \ \& \ \exists x. [P(x)(s')]$
 b. $Z_{oom}O_{ut}(\text{mayor}_{(e,st)})(s) = \iota s'. \text{MIN}(s'): s' \geq s \ \& \ \exists x. [\exists y. \text{mayor}(x)(y)(s')]$

Crucial: relational nature of *mayor* makes it easy to find such a unique supersituation.

→ We know how to get from s to a supersituation that contains a town (or city), and that supersituation will contain the mayor of that town as its part.

The definite is then evaluated with respect to that situation:

(36) $\llbracket \text{the}_{weak} \rrbracket = \lambda P. \lambda s. \iota x. [P(x)(Z_{oom}O_{ut}(P)(s))]$

2.4.4 No Crucial Relations between Individuals

- We have seen that bridging with weak article definites CAN be captured in terms of situations.
- Are there cases that CANNOT be captured in terms of relations between individuals?
- Evidence for situational covariation and against relations holding between individuals:

(37) *Jedes Mal, wenn ein Botschafter in Washington zu Besuch war, bekam er einen Anruf vom*
 each time when an ambassador in-the Washington to visit was got he a call from-the_{weak}
Staatsoberhaupt.
 head of state

'Each time an ambassador visited Washington, he got a call from the head of state.'

the_{weak} head of state \cong *the American president*

→ NO covarying interpretation!

- (38) *Jedes Mal, wenn ein Botschafter seine Eltern zu Hause besuchte, bekam er einen Anruf vom*
 each time when an ambassador his parents at home visited got he a call from-the_{weak}
Staatsoberhaupt.
 head of state
 ‘Each time an ambassador visited his parents at home, he got a call from the head of state.’
the_{weak} head of state \cong *the head of state of the ambassador’s home country*
 → **Covarying Interpretation!**

Relation between ‘head of state’ and ‘ambassador’? → Then both sentences should have covarying interpretations!

- On the situational uniqueness account, the definite is evaluated with respect to the situations quantified over in the ‘when’-clause
- In (37), these are part of the U.S. - $Z_{oom}O_{ut}$ takes us to the unique minimal supersituation containing a y that has a head of state → the U.S. president.
- In (38), these are part of the ambassador’s home country - $Z_{oom}O_{ut}$ results in the definite picking out that country’s head of state for each ambassador.

No contextually supplied relation between the relevant ambassadors and heads of state plays a crucial role in the semantics here!

Upshot: Situational uniqueness account is necessary for these cases of bridging! It should then be taken to be the general case for the weak article!

Some open questions:

- What is the relationship between the two strategies for bridging (situational vs. relational)? For example, is situational uniqueness preferred when both are available? (If so, why?)
 Apparently, at least in some cases: *the mayor* would allow relational anaphora, but weak article is clearly preferred! (but in other cases the articles may overlap)
- What are the limits of situational uniqueness bridging?
 → **Inalienable possession** will have to fit into it, as it quite generally requires the weak article (as was already noted by Ebert’s discussion of Fering)

2.4.5 Situational Uniqueness with *author* - A matter of context

Why is the weak article not felicitous for *author*, when *a book* has been mentioned? (as in (16))

Hawkins (1978, p. 127) [arguing against subsuming bridging under situational uses]: “For example, both *a country* and *a book* trigger a number of associations, but whereas these same associates are triggered within a country, there is no corresponding book-situation which permits a situational use of a first-mention *the* with these associates.”

Basic Idea: There is no (easy) way of using $Z_{oom}O_{ut}$ to get from a situation containing a book to a unique minimal supersituation that includes the author!

Prediction: Contexts where books and their authors are guaranteed to be in ‘naturally chunked’ situations together should allow weak article. This is borne out:¹¹

- (39) a. context: We’re at an ‘author’s book fair’, a special kind of book fair where authors promote their own books. Each author has his own book stand with his latest book on display, and stands behind the book himself.
- b. *Hans war völlig von einem Buch fasziniert und verbrachte lange Zeit an einem der Buchstände. Am*
 Hans was totally by a book fascinated and spent long time at one of the bookstands.
Ende bekam er ✓ vom Autor eine CD geschenkt.
 In-the end got he from-the_{weak} author a CD as a gift
 ‘Hans was totally fascinated by a book and spent a long time at a bookstand. In the end he got a CD from the author as a gift.’

→ **Situation strategy becomes possible, as there is a ‘local’ author in the bookstand situation.**

Building our account on situation structure predicts that these phenomena are highly dependent on the context!

¹¹Thanks to Lyn Frazier for crucial discussions that led to this type of example.

- (40) a. context: Hans is in a library, looking for a new book to read.
 b. *Hans war völlig von einem Buch fasziniert. Er hatte #vom / von dem Autor einmal eine CD geschenkt bekommen.*
 Hans was totally by a book fascinated. He had from-the_{weak} / from the_{strong} author once a CD
 as a gift gotten
 ‘Hans was totally fascinated by a book. He once had gotten a CD from the author as a gift.’

2.4.6 Married women and their missing men

Why does *situational bridging* not work for ‘married woman’ ... ‘the_{weak} man’ (21)?

- Predicate provides clue for $Z_{oom}O_{ut}$ on how to find the relevant unique minimal supersituation.
mayor → town situation, via the existentially closed relational argument
- *Man* is not relational, and there is no general way of finding a unique minimal supersituation containing a man.
- Thus there is no way to get from a ‘married woman’-situation to a unique supersituation containing a man.

2.5 Relational Anaphora in Situation Semantics

Since we need a situation semantics, we have to make sure the strong article meaning works out in that framework:

(41) $[[\text{author}]] = \lambda y. \lambda x. \lambda s. \text{author}(x)(y)(s)$

(42) Everyone that bought a novel had read a short story by the_{strong} author.

(43) a. $\lambda s. \forall s' \forall x [\text{MIN}(s'): s \geq s' \ \& \ \text{person}(x)(s') \ \& \ \exists y [\text{novel}(y)(s') \ \& \ \text{buy}(x)(y)(s')]] \rightarrow$

$\exists s'' [\text{MIN}(s''): s'' \geq s' \ \& \ \text{read-a-short-story-by}(x) (\iota \mathbf{u} \text{ author}(\mathbf{u})(y/\mathbf{THE NOVEL IN } s')(w_s)) (s'')]]$

b. For every person x and every s' such that s' is a minimal situation in which x bought a novel y there is a minimal supersituation s'' in which x read a short story by **the (globally) unique author of y / the unique novel in s'**

- I assume that the definite ‘the author of the book’ can be evaluated with respect to the world that the relevant situation is part of, since I have argued that the author is not part of the situations quantified over.
 (see Wolter (2006b) for a similar assumption)
- $y / \mathbf{THE NOVEL IN } s'$ is a case of donkey anaphora. It could, in principle, either get dynamically bound or be a null D-Type pronoun.

2.6 Summary

(44) Examples		Article	Bridging Type
Everyone that bought a book ...	the author	strong	relational anaphora (lexical)
Every student that parked a car ...	the rearview mirror	weak	situational uniqueness ($Z_{oom}O_{ut}$)
#Every waiter ... a married woman ...	the man	--	--

- **Two types of bridging** are distinguished by the **two German articles**, one working via situations, one involving relational anaphora
 → Bridging supports the proposed analysis of the two articles!
- Simpler picture of definite uses: different cases of bridging subsumed under: **situational uniqueness relational anaphora**

3 Outlook

3.1 How to implement anaphoricity of the strong article?

For relational anaphora, we needed an extra argument that had to be anaphoric in some way or other.

$$(29) \llbracket \text{the}_{strong(e,(e,st))} \rrbracket = \lambda R_{(e,(e,st))}. \lambda y. \lambda s. \iota x. [R(x)(y)(s)]$$

How should we treat the regular anaphoric cases, such as (8) and parallel cases with epithets?

$$(45) \text{Hans hat schon wieder angerufen. Ich will \#vom / von dem Idioten nichts mehr hören.}$$

Hans has already again called. I want #of-the_{weak} / of the_s idiot not more hear.
'Hans has called again. I don't want to hear anything anymore from that idiot.

If we follow Potts (2005), the epithet contributes only conventional implicature content and does not enter the (regular) truth conditions to restrict the definite. → The article has to carry the 'referential load'!

- One option: dynamic system, with an index on the DP that can be dynamically bound.
- Strong article always takes an extra individual argument - supplied by an index. (similar to Elbourne's (2005) 'Add an individual variable to the determiner' strategy!)¹²

$$(46) \llbracket \text{the}_{strong(e,st)} \rrbracket = \lambda P_{(e,st)}. \lambda y. \lambda s. \iota x. [P(x)(s) \ \& \ x = y]$$

It differs minimally from the one for the weak article in having the extra index argument.

$$(47) \llbracket \text{the}_{weak} \rrbracket = \lambda P. \lambda s. \iota x. [P(x)(s)]$$

Extra argument for strong article in Spec DP? → possible explanation for morphological form of the contrast in standard German:

The presence of material between preposition and article could be what prevents contraction!

3.2 The Bigger Picture

Two articles: Two theories?

- (situational) uniqueness 'vs.' anaphoricity? [& corresponding mechanisms of covariation]
- theoretical parsimony may have to yield to empirical diversity
- Bridging: simpler overall picture of uses of definites
- implications for domain restriction

Typological and Processing Issues:

- Do other languages exhibit exactly the same contrast? (e.g., Lakhota and Hausa)
→ What are the basic building blocks for definites?
- What is the typology of definite NP's (including pronouns, demonstratives, etc.) more generally?
- Is the contrast present underlyingly in languages like English? Could this be reflected in processing effects?

¹²Like Elbourne, I have to assume that being an index is something the syntax can see, in order to prevent other expressions of type e from filling the relevant argument slot.

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