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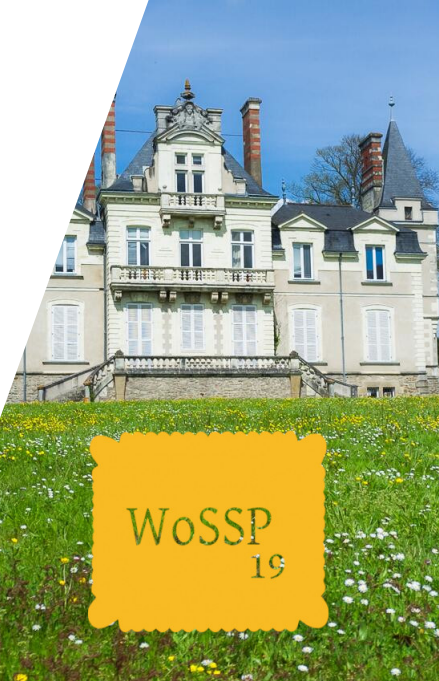
Adnominal Purpose Clauses in German

WoSSP 19 – Université Nantes

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28. September 2023



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The German complementizer *um*

1 Introduction

- *um* introduces infinitival clauses.
 - They are typically used to express the **purpose** or **rationale** behind some action.
- (1) a. Er hat Blumen gekauft, um seine Freundin zu überraschen.
'He bought flowers (in order) to surprise his girlfriend.'
- b. Er hat sie rausgeschickt, um den Müll wegzubringen.
'He sent her out to take out the trash.'
- This use requires intentionality on the part of some party.
- (2) John ist die Treppe runtergefallen, um sich das Bein zu brechen.
'John fell down the stairs (in order) to break his leg.'
⇒ It was no accident!



Different types of constructions

1 Introduction

- But there are more uses of *um*.
- (3) **Telic Clause** (Whelpton 2001)
Er hat sein Leben lang gearbeitet, (nur) um dann alles an einem Tag zu verlieren.
'He has worked all his life, (only) to lose everything in one day.'
- (4) **Modal *um*-construction**
Um das Spiel zu verlieren, müssen sie 3 Tore kassieren.
'To lose the game, they have to concede 3 goals.'
- Neither (3) nor (4) require intentionality on anyone's part.
 - (3) expresses an unintended consequence.
 - (4) expresses necessity in light of a potential outcome.



The goal of my dissertation

1 Introduction

- I am trying to describe and explain the meaning and distribution of *um*-clauses (and their finite cousins, *damit*-clauses).
- I argue that *um* is involved in different constructions, which share a common semantics involving an enabling relation.



Adnominal constructions

1 Introduction

- *um*-clauses also appear as **adnominal adjuncts**.
- (5) a. Ein Eingreifen Gottes, um Leid zu verhindern [wäre schlecht]
'An intervention by God to prevent suffering would be bad.'
- b. Was sind die Voraussetzungen, um als Trainer erfolgreich zu sein?
'What are the requirements to be successful as a coach?'
- c. **Ein Fahrzeug, um Patienten zu transportieren**, wäre schön.
'A car to transport patients (with) would be nice.'
- (5a) can be linked to the rationale-clause use of *um*: an action with the intention to...
- (5b) can be linked to the modal construction. Whatever licenses *um*-clauses with *must*, licenses them with *requirement*, *necessity*...
- But (5c) does neither involve a modal noun nor an intentional event → topic of this talk.



Claim

1 Introduction

- Cases of adnominal *um*-clauses allow adding the **modal *geeignet*** ('suited/suitable') or *benötigt* ('needed') without change of meaning.
- In absence of an overt modal, we have a **covert** one (compare adnominal *if*-clauses (Frana 2017; Blümel 2019)).
- The covert modal is existential, receiving a universal(-like) interpretation in certain circumstances.
- The adnominal *um*-clause is thus a special case of the modal *um*-construction.



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A semantics for modals

2 The modal construction

- I assume a standard **Kratzerian modal semantics**, i.e.:
 - Modal words like *must/may* are universal/existential quantifiers over worlds.
 - The exact set of worlds is determined contextually (involving a modal base and an ordering source).
- (6) a. $\llbracket \text{you must take the A-train} \rrbracket = \lambda w \forall w' [w' \in \text{BEST}(w) \rightarrow \text{take-the-A-train}(w')]$
 - b. $\llbracket \text{you may take the A-train} \rrbracket = \lambda w \exists w' [w' \in \text{BEST}(w) \wedge \text{take-the-A-train}(w')]$
- (6a) = in all worlds (e.g. worlds that comply with all the rules in the context), you take the A-train.
- (6b) = there is at least one world in the contextually given set of worlds in which you take the A-train.



A semantics for the modal *um*-construction

2 The modal construction

(7) Um nach Harlem zu gelangen, musst du den A-Zug nehmen.
'To go to Harlem, you have to take the A-train.'

- The *um*-clause in (7) has been analyzed as
 - being a complement of the modal itself
 - restricting the worlds over which the modal quantifies.
(von Fintel and Iatridou 2005; von Stechow, Krasikova, and Penka 2006)

(8) $\llbracket \text{To go to Harlem you have to take the A-train} \rrbracket =$
 $\lambda w \forall w' [w' \in \text{BEST}(w) \cap \text{go-to-Harlem} \rightarrow \text{take-the-A-train}(w')]$

- According to this approach, **go-to-Harlem** worlds are **take-the-A-train** worlds.
- Similar to a conditional under the classic Kratzerian analysis.



A semantics for the modal construction

2 The modal construction

- But the semantics is too weak.
- (9) **The problem of conceptual order** (von Stechow, Krasikova, and Penka 2006)
 - a. Wenn Kängurus keine Schwänze hätten, würden sie hintenüberfallen.
'If kangaroos had no tails, they would topple over.'
= All **no-tail**-worlds are **topple-over**-worlds.
 - b. #Um keine Schwänze zu haben, müssen Kängurus hintenüberfallen.
'To have no tails, kangaroos would have to topple over.'
= All **no-tail**-worlds are **topple-over**-worlds.
- Having no tail would lead to toppling over, not the other way around.
- But this conceptual order is not encoded in the semantics.



A semantics for the modal construction

2 The modal construction

- (10) **The problem of compatibility** (Nissenbaum 2005)
- a. Wenn du nach Harlem fährst, kannst du auch Pedro Martinez küssen.
'If you go to Harlem, you can kiss Pedro Martinez, too.'
= There is a **go-to-H-and-kiss-PM** world.
 - b. #Um nach Harlem zu fahren, kannst du auch Pedro Martinez küssen.
'To go to Harlem, you can kiss Pedro Martinez.'
= There is a **go-to-H-and-kiss-PM** world.
- Kissing Pedro Martinez just doesn't seem relevant for going to Harlem, but it might be compatible with it.
 - (10b) seems to assert more than just compatibility.
 - Kissing PM is asserted to lead to going to Harlem.



Enabling semantics

2 The modal construction

- I propose that the *um*-clause is a modifier of modals.
- It contributes an enabling semantics that is present in the other *um*-constructions as well.

(11) a. $\llbracket \text{um}_{\text{modal}} q \rrbracket = \lambda M \lambda R \lambda p \lambda w [M(\bigcap R \cap q)(p)(w) \wedge \text{ENABLE}(p, q, w)]$
[with M the type of modals and R a modal base]

b. $\llbracket \text{To get to Harlem, you can kiss Pedro Martinez} \rrbracket =$
 $\lambda w [\exists w' [w' \in (\bigcap R \cap \text{get-to-h}) \wedge \text{kiss-pm}(w')] \wedge \text{ENABLE}(\text{kiss-pm}, \text{get-to-h}, w)]$

- The enabling semantics ensures the right order of events and rules out irrelevant co-occurring events.



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Ingredient 1: building propositions

3 Adnominal modal construction

- Some intensional verbs like *want* and modals like *need* have a nominal complement.

(12) I want/need an icecream.

- We still need propositions for interpretation, recruited via a contextually supplied silent predicate like HAVE (Schwarz 2006).

(13) a. (12) = I want/need to have/eat...icecream.

b. $\llbracket 13a \rrbracket = \lambda w \forall w'. [w' \in BEST(w) \rightarrow HAVE(sp, icecream)]$

Ingredient 2: the modal *um*-construction semantics

3 Adnominal modal construction

- The *um*-clause combines with a covert adjectival modal, which combines with *car* via Predicate Modification.

(14) a. $\llbracket \text{car} \rrbracket = \lambda x \lambda w. \text{CAR}(x, w)$

b. $\llbracket \text{SUITABLE } um \text{ Patienten zu transportieren} \rrbracket =$
 $\lambda x \lambda w. \exists w' \in (\bigcap R(w) \cap \text{transport-patients}) [\text{HAVE}(PRO, x, w')] \wedge$
 $\text{ENABLE}(\text{HAVE}(PRO, x), \text{transport-patients}, w)$

c. $\llbracket \text{ein SUITABLE Auto, } um \text{ Patienten zu transportieren} \rrbracket =$
 $\lambda x \lambda w. \text{CAR}(x, w)$
 $\wedge \exists w' \in (\bigcap R(w) \cap \text{transport-patients}) [\text{HAVE}(PRO, x, w')]$
 $\wedge \text{ENABLE}(\text{HAVE}(PRO, x), \text{transport-patients}, w)$

- In prose: *x* is a car and there is a world in which one has *x* and transports patients and having *x* enables transporting patients.
 \approx a car with which you can transport patients



Universal interpretation

3 Adnominal modal construction

- Sometimes the force of the hidden modal appears to be universal rather than existential.
- (15) a. Die Kosten, um einen Pizzakarton zu bedrucken, werden von der Druckplatte bestimmt.
'The cost (needed) to print a pizza box are determined by the printing plate.'
- b. Der Schnitt, um die Liga zu halten, liegt [...] bei 45 Zählern pro Begegnung .
'The average (needed) to stay in the league is 45 points per match'
- Due to pragmatic reasons: uniqueness presupposition of the definite article (Bhatt 2006).
 - If there is only one thing that you **can** use for a certain task, you **need** to use it for a certain task. There is no other thing you can use.
 - No need for two covert modals.



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Translation as IRC

4 A Comparison With English Infinitival Relative Clauses

- The adnominal *um*-clause is translated to English as an Infinitival Relative Clause.
- But not all IRCs can be translated to German as *um*-clauses.

- (16) a. The deceased has many **heirs for us to console**.
≠ ‘*Erben, um (sie) zu trösten’
- b. Mrs Schaden found many **things for us to do**.
≠ ‘*Dinge, um (sie) zu tun’
- c. **The book to read for tomorrow** is on the table.
≠ ‘*Das Buch, um (es) für morgen zu lesen’



Existential and universal force

4 A Comparison With English Infinitival Relative Clauses

- IRCs exhibit existential and universal force, depending on the determiner.
- Strong determiners require a universal interpretation (Hackl and Nissenbaum 2012).

- (17) a. A book to read over the holidays.
⇒ you **can/have to** read the book over the holidays
- b. The book to read over the holidays.
⇒ you **have to** read the book over the holidays



'Instrumental' IRCs

4 A Comparison With English Infinitival Relative Clauses

- So called 'instrumental' IRCs defy the universal interpretation with definite determiners.
- Currently no explanation in the literature.

(18) The guns to shoot quail with (have wooden handles).

⇒ you have to shoot quail (with the guns)

⇒ you can/have to have/use the guns to shoot quail

- Only 'instrumental' IRCs can be translated using *um* in German (and *pour* in French, as pointed out by a reviewer).
- Outlook: Maybe (18) is eventually different from (17), requiring a similar analysis as German *um*-clauses.

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Adnominal Purpose Clauses in German

Thank you for listening!
Any questions?