

If vs. *When*, *Wenn* vs. *Als*: Microvariation in the Semantics of Conditional and Temporal Complementizers in English and German*

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1. Introduction

In this paper, I compare the functions that the English complementizers *if* and *when*, on the one hand, and German *wenn* and *als*, on the other, have in episodic as well as in generic and adverbially quantified sentences. My claim is that all these complementizers take situation predicates as arguments, but differ with respect to the conditions they impose on these situation predicates.

I show that while in German uniqueness is the decisive category determining the choice of the respective complementizer, the important point in English is whether the speaker is sure that the respective situation predicate applies to a situation that is located within (what s/he takes to be) the actual world.

2. The Situation in English

2.1 The Distribution of *If*

It is well-known that *if*-clauses in English can be the antecedents of indicative as well as subjunctive conditionals like the ones in (1) and (2):

- (1) a. If Paul's new wife is a philosopher, she earns a lot of money.
b. If Paul's new wife was a philosopher, she would earn a lot of money.
- (2) a. If Paul comes to Mary's party tonight, he will meet Peter.
b. If Paul came to Mary's party tonight, he would meet Peter.

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Now, according to the traditional account, indicative conditionals have the truth conditions of material implication, which can be stated as follows: $\neg(A \wedge \neg B)$, where A is the antecedent, and B the consequent. The problem with this account is that it predicts conditionals to be true as soon as the antecedent is false or the consequent is true, which is extremely counterintuitive in most cases: (1a), for example, would be true in a situation where Paul's new wife isn't a philosopher (whether she earns a lot of money or not) as well as in a situation where she earns a lot of money (whether she is a philosopher or not). This, however, is in conflict with the intuition that the truth of conditionals depends on the question whether there is some connection between the state of affairs described by the antecedent and the state of affairs described by the consequent, and not on the isolated truth or falsity of its two parts (see Bennett 2003 and the references cited therein for detailed discussion).

It has therefore been suggested (based on Lewis' (1973) analysis of counterfactuals) that indicative as well as subjunctive conditionals express universal quantification over possible worlds in which the antecedent is true and which (possibly) differ from the actual world only as much as is necessary to allow the antecedent to be true. They are true if in all these worlds the consequent is true as well (Warmbrod 1983; Nolan 2003; cf. Stalnaker 1975 for a related, but slightly different view). According to this view, the only difference between indicative and subjunctive conditionals is that while in the first case it is simply left open whether (the speaker believes that) the antecedent is true in the actual world as well, subjunctives presuppose that (the speaker believes that) the antecedent is false in the actual world.¹

In addition to marking the antecedents of conditionals, *if* can also occur in clauses that apparently function as the antecedents of various quantifiers, as shown in (3) and (4) (see Lewis 1975 and Kratzer 1981 and 1986):

- (3) If a farmer owns a horse, he is always/usually/often rich.
- (4) If Mary is not in her office, she must/should be at home.

The sentences in (3) have prominent readings that can be paraphrased as "All/most/many farmers who own a horse are rich", i.e. the respective adverbial quantifier seems to quantify over horse-owning farmers. Under the assumption that indefinites are not quantifiers with existential force, but rather introduce free variables that are restricted by the denotation of the respective NP, and that quantificational adverbs (Q-adverbs) are unselective binders (see Kamp 1981 and Heim 1982), this can be taken to show that in sentences like the ones in (3) the *if*-clause is interpreted as the restrictor of the respective Q-adverb.

¹ According to another line of analysis, which seems to be the most popular one among philosophers of language (cf. Bennett 2003), indicatives and subjunctives are radically different: while subjunctives are analysed along the lines of Lewis (1973) (see above), indicatives are claimed to have no truth conditions at all, but rather felicity conditions. They convey that hypothetically adding the antecedent proposition to her stock of beliefs (and doing the minimal adjustments that are necessary to remain consistent) causes the speaker to accord a high probability of being true as well to the consequent proposition, and invite the hearer to check whether this holds of him as well.

In the case of (4), on the other hand, the *if*-clause seems to restrict the respective modal verb, which – according to the by-now standard view of Kratzer (1981) – denotes a quantifier over either epistemically or deontically accessible worlds (the *modal base*) which are closest to some ideal/stereotype (the *ordering source*). The epistemic readings of the sentences in (4) thus can be paraphrased as “All/most stereotypically best worlds in which everything the hearer believes in the actual world is true *and in which Mary is not in her office* are worlds where Mary is at home”.

Kratzer (1986) offers an analysis that accounts for all occurrences of *if* discussed so far: according to her, *if* does not have any meaning of its own, but rather just serves to indicate that the respective clause is to be interpreted as the restrictor of some quantifier. These quantifiers are overt in cases like (3) and (4). In cases like (1) and (2), on the other hand, Kratzer (1986) assumes a covert counterpart of epistemic *must* to be present, which brings her analysis of conditionals (roughly) in line with the view mentioned above.

2. 2. The Distribution of *When*

In episodic sentences, *when*-clauses introduce situations/events that temporally overlap with the situation introduced by the respective matrix clause (cf. Bonomi 1997), as shown in (5) and (6):

- (5) When Mary came home yesterday evening, the refrigerator was empty.
- (6) When Peter was a child, he admired Superman.

Note that the temporal relation is reversed in the two cases: the most plausible interpretation of (5) is that the antecedent situation is contained within the matrix situation, while it is the other way around in (6). Both cases are accounted for under the assumption that overlap is required, and that the exact temporal relation depends both on the nature of the respective predicates and on world knowledge and context (see Bonomi 1997 for detailed discussion).

In adverbially quantified and generic sentences, *when*-clauses can either be interpreted as the restrictor of the respective Q-adverb or generic operator², or as the frame within which the situations/events quantified over are located. The first case is exemplified by (7), the second one by (8):

- (7) When Mary comes home from her office, the refrigerator is always/usually/often empty.
- (8) When Mary was a child, the refrigerator was always/usually often empty.

But, crucially, *when*-clauses cannot be interpreted as the restrictors of overt or covert quantifiers over possible worlds, as is evidenced by the contrast between (9) and (10):

² Marginally, they can also be interpreted as the nuclear scope of the respective quantifier (cf. Johnston 1994).

- (9) When John is not in his office, he must be at home.
- (10) If John is not in his office, he must be at home.

(9) only receives a generic reading that can be paraphrased as: generally, in situations where John is not in his office, it is the case that in all (stereotypically best) epistemically accessible worlds where John is not in his office in that situation, there is a temporally overlapping situation where he is at home. (10), on the other hand, is ambiguous between such a reading and an episodic reading that can be paraphrased as: in all (stereotypically best) epistemically accessible worlds where John is not in his office at the time of utterance, he is at home. This contrast can only be accounted for under the assumption that while *if*-clauses can restrict quantifiers over possible worlds directly, *when*-clauses always have to be interpreted as restricting overt or covert quantifiers over situations.

The following contrast between *if* and *when* is instructive, too: (11) can only be interpreted as conveying that the speaker is sure that the plane will land, while (12) can only be interpreted as conveying that she considers this to be an open question.

- (11) When the plane lands, Mary will call her husband.
- (12) If the plane lands, Mary will call her husband.

If one follows the standard assumption that a covert existential quantifier over situations/events is present in episodic sentences and if one furthermore assumes that quantification over possible worlds is pointless in a situation where the speaker is sure that the respective proposition holds in the actual world, this contrast shows two things: on the one hand, *when*-clauses are not allowed to restrict quantifiers over possible worlds. On the other hand, *if*-clauses are not allowed to restrict existential quantifiers over situations.

2.3. *If vs. When*

A way to account for the differences between *if* and *when* that might seem plausible at first would roughly run as follows: both complementizers take situation predicates as arguments, but differ with respect to the conditions they impose on their arguments. In the case of *if*, the respective predicate has to characterize more than one situation, while in the case of *when* the situations it characterized all have to be located within w_0 (which is the actual world by default).

The first possibility to fulfill the requirement imposed by *if* is via binding by frequency adverbs like *usually*, *always*, *often*, etc. or by the covert generic operator. The second possibility is via binding by an overt quantifier over possible worlds. In this case the condition is fulfilled because in each of the worlds quantified over there is a situation of the required kind. What is excluded is binding by a covert existential quantifier (i.e. an ordinary episodic interpretation), as it would be misleading to use this quantifier if there was more than one situation characterized by the respective predicate. In the case of

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when, on the other hand, binding by all sorts of overt or covert quantifiers over situations (including the existential quantifier) is allowed, while binding by quantifiers over possible worlds is excluded, as such a quantification would be pointless in a case where the speaker is sure that the respective predicate holds of a situation in the actual world (see above).

This makes the following prediction: there should be no differences between *if* and *when* in adverbially quantified and generic sentences that do not contain additional modal operators. In many cases, this seems to be borne out, as evidenced by (13) and (14):

- (13) If/When a farmer owns a horse, he is always rich.
- (14) If/When Mary goes to a party, she usually takes Jane with her.

But not always:

- (15) Last week was very strange: ??If/When Mary came home from her office, the refrigerator was always empty.
- (16) Peter hated the conference: Always, ??if/when he had a smart question, somebody else asked it first.

In the case of (15) and (16), the *if*-variants are both very odd and in contrast to the *when*-variants do not show the expected *Q(quantificational)V(ariability)E(ffect)s*. Rather, (15), for example, only has an odd reading according to which the refrigerator's being empty all of the time depends on Mary's coming home at some specific occasion, i.e. the *if*-clause is unable to restrict the adverbial quantifier and can only be interpreted in the restrictor of a covert quantifier over possible worlds.

Note that the oddity of the *if*-variants in (15) and (16) cannot simply be due to the fact that the situations to be quantified over are located within a specific interval, as is evidenced by (17) and (18):

- (17) ??If/when Caesar woke up in the morning, he usually had tea (cf. Lewis 1975 and von Stechow and Iatridou 2002).
- (18) ??If/when a professor gives a lecture, she is usually happy.

The pattern in (17) and (18) is reminiscent of a pattern observed by von Stechow and Iatridou (2002) in connection with sentences where *if*-clauses seem to restrict quantificational determiners like *every* and *most*. According to them, *if*-sentences are unacceptable if it is not an open question whether the individuals quantified over by the respective quantificational determiner satisfy the respective situation predicate. The same reasoning can be applied to the cases under discussion, modulo the fact that the domain of quantification consists of situations, not of individuals: for each of the situations quantified over, it has to be an open question whether they satisfy the situation predicate denoted by the complement of *if*.

In order to implement this insight, let us follow von Stechow and Iatridou's (2002) analysis of sentences with quantificational determiners in assuming that *if*-clauses cannot restrict *all* quantifiers, but only quantifiers over possible worlds. This is assured as follows: I assume that *if* takes situation predicates as arguments that have to satisfy the presupposition that the speaker does not know for sure that there is a situation satisfying this predicate, i.e. not *all* of her belief worlds may contain such a situation (the details are given below). Under the assumption that Q-adverbs only quantify over situations that are located within (what the speaker takes to be) the actual world, this leaves binding by quantifiers over possible worlds as the only option.

This has the consequence that not only in sentences with quantificational determiners, but also in sentences with adverbial quantifiers the respective quantifier cannot be restricted by the *if*-clause directly. Rather, some other element has to be present which is interpreted in the restrictor of the quantifier, while the *if*-clause is interpreted in the restrictor of a covert modal operator which is interpreted in the nuclear scope of the quantifier. Now, while in the case of determiner quantifiers the restrictor is given in the form of the NP-complement of the respective determiner, it is less obvious in the case of Q-adverbs which part of the clause is to be interpreted as the restrictor.

Following Chierchia (1995), I assume that material c-commanding a Q-adverb at LF is interpreted in its restrictor, while material c-commanded by it at LF is interpreted in its nuclear scope. Furthermore, I assume with Chierchia (1995) that Q-adverbs are adjoined to the matrix clause they are contained in at LF, while topical material is adjoined above the respective Q-adverb at LF (see also Hinterwimmer 2005 for detailed discussion). Now, in a case like the *if*-variant of (13) above (which is repeated below as (19a)), the indefinite *a farmer* is plausibly interpreted as the topic of the sentence – at least if it is de-accented, while the main accent within the *if*-clause falls on the direct object *a horse*, which is the default case (see von Stechow 1994, Rooth 1995, Krifka 1995, Chierchia 1995 and Krifka 2001 for discussion of how intonation influences the interpretation of indefinites in adverbially quantified sentences). This has the consequence that at LF the sentence looks as given (in simplified form) in (19b)³⁴:

- (19) a. If a farmer owns a horse, he is always rich.
b. [[A farmer]_i; [always [if [a horse]_j; [a farmer]_i owns [a horse]_j he is rich]]]

Note that moving the indefinite *a farmer* out of the antecedent of the conditional at first sight seems to violate the adjunct-island constraint (cf. Ross 1967): it is well-known that *wh*-phrases may not be moved out of conditional antecedents, and that (most) quantifiers cannot be interpreted with scope over conditional antecedents either. It is, however, also well-known that unmodified indefinites and numerals that are contained within *if*-clauses can be interpreted specifically. This can be taken as an indication that it is possible to move such indefinites out of the *if*-clauses they are contained in at LF, and

³ Note that I follow Chomsky (1995) and much subsequent work in assuming that moved DPs leave behind full copies.

⁴ The indefinite *a horse* has to be moved out of its object position via QR in order to be interpreted.

adjoin them to the matrix clause (cf. Endriss and Haida 2001 and the references cited therein). Furthermore, in Bavarian German items like proper names, definites, indefinites and prepositional phrases can be moved out of conditional antecedents and adjoined to the matrix clause overtly – a phenomenon, which Bayer (2001) dubs “emphatic topicalization”. I therefore assume that while wh-movement and Quantifier Raising out of *if*-clauses is prohibited, topic movement is allowed.⁵

Returning to the interpretation of (19b), I make the following assumptions: First, not only verbal, but also nominal (and adjectival) predicates contain a situation variable that may be bound by a Q-adverb (cf. Percus 2000 and Elbourne 2001). Second, indefinites c-commanding a Q-adverb at LF may be turned into situation predicates via a simple type shift, namely by applying the predicate $\lambda x. \lambda s. in(x)(s)$ to them. Third, the copies left behind by moved DPs are turned into definite descriptions at LF, as has been argued for by Fox (2002) and Sauerland (2004) for entirely different reasons: the original determiner is deleted and replaced by the definite determiner. Third, there are in principle two ways to deal with the chains created by moved DPs (see Hinterwimmer 2005 and Hinterwimmer 2006 for detailed discussion): according to the first one, the predicate denoted by the NP contained within the lower copy is intersected with the predicate $\lambda x. \lambda s. identical\text{-}to(x)(y)(s)$, y being a variable that is bound by a lambda-operator inserted directly beneath the higher copy (cf. Fox 2002, Sauerland 2004 and Elbourne 2005 for details). According to the second one, the two copies are just interpreted as they are, i.e. the lower copy is interpreted as an ordinary definite description, and no lambda operator is inserted beneath the higher copy.

While the first strategy has the result of turning the sister of the moved DP into a predicate that (the denotation of) the higher copy can be applied to if it is a quantifier (i.e. it is equivalent to the analysis of Quantifier Raising assumed by Heim and Kratzer 1998), the second strategy only leads to an interpretable result if an adverbial quantifier is present that takes two situation predicates as arguments: the one denoted by the constituent that c-commands it at LF, and the one denoted by the part of the clause it c-commands at LF.

In the case of (19b), the copy of the indefinite *a farmer* that c-commands the Q-adverb is turned into a situation predicate via the type shift mentioned above, i.e. it is interpreted as $\lambda x. \lambda s. \exists x [farmer(x)(s) \wedge in(x)(s)]$, which is equivalent to $\lambda x. \lambda s. \exists x [farmer(x)(s)]$, while the lower copy is interpreted as an ordinary definite description (i.e. according to the second strategy from above). Note that the NP-complement of the (inserted) definite determiner contains a situation variable that can be bound by the c-commanding Q-adverb. This has the consequence that its denotation varies with the situations quantified over (see Hinterwimmer 2005, 2006 for details), i.e. it is interpreted as $ix.farmer(x)(s)$, s being the situation variable that is bound by the Q-adverb.

⁵ See Ebert and Endriss (2004) for a detailed discussion of why unmodified indefinites and numerals are the only quantificational DPs that can be interpreted as topics.

The chain created by moving the object indefinite *a horse*, on the other hand, is interpreted according to the second strategy (see below), i.e. the lower copy is interpreted as $\lambda z.horse(z)(s) \wedge identical\text{-to}(z)(y)(s)$, while a lambda-operator binding the variable y is inserted directly beneath the higher copy. As far as the interpretation of the pronoun *he* is concerned, I follow Elbourne (2001, 2005) in assuming that pronouns are nothing but definite descriptions that have undergone NP-ellipsis, i.e. I assume that *he* gets the same interpretation as the lower copy of *a farmer*. Finally, I make the following assumptions with respect to the interpretation of Q-adverbs: they quantify over minimal situations exclusively (cf. von Stechow 1994), and they take their arguments in reverse order (seen from the perspective of determiner quantification), i.e. they combine with their nuclear scopes first (cf. Chierchia 1995). The denotation of *always* is given in (20):

$$(20) \quad [[\text{always}]] = \lambda P_{\langle s, t \rangle} . \lambda Q_{\langle s, t \rangle} . \lambda s^* \forall s [s \leq s^* \wedge s \in \min\{s' : Q(s')\} \\ \rightarrow \exists s'' [s' \leq s'' \wedge s'' \in \min\{s''' : P(s''')\}]]$$

This leaves us with the question of how the conditional in the nuclear scope of the Q-adverb in (19b) is to be interpreted. As already mentioned above, I assume that *if* takes situation predicates as arguments which fulfill the following presupposition: the speaker is not sure that there is a situation satisfying the respective predicate in (what she takes to be) the actual world, i.e. it is presupposed that not all of the speaker's belief worlds contain such a situation. In addition to that, I assume that *if* takes an object as its second argument which results from applying a quantifier over possible worlds/situations to its nuclear scope⁶, and applies this object to its first argument, as shown in (21). This assumption in combination with the presupposition just mentioned and with the assumption that quantifiers over possible worlds take their arguments in reverse order, too, ensures that *if*-clauses end up in the restrictor of overt or covert quantifiers over possible worlds.

$$(21) \quad [[\text{if}]] = \lambda P_{\langle s, t \rangle} : \neg \forall w' \in B_{sp, w_0} : \exists s' \leq w' [P(s')]. \lambda P_{\langle s, t \rangle} . \lambda \mathcal{R}_{\langle \langle s, t \rangle, \langle s, t \rangle \rangle} . \mathcal{R}(P),$$

where B_{sp, w_0} is the set of worlds where all propositions the speaker believes in w_0 are true.

Now, remember that in cases like (19a), where the conditional does not contain an overt modal operator, I assume a covert universal quantifier over epistemically accessible worlds, i.e. a covert counterpart of epistemic *must* (which is given as MUST below, to be present, the denotation of which is given (in simplified form⁷) in (22):

$$(22) \quad [[\text{must}]] = [[\text{MUST}]] = \lambda P_{\langle s, t \rangle} . \lambda Q_{\langle s, t \rangle} . \lambda s^* . \forall w' [w' \in \cap f(sp)(s^*) \wedge \exists s \leq w' [Q(s)] \\ \rightarrow \exists s' \leq w' [P(s')]],$$

where f is the modal base function and $\cap f(sp)(s^*)$ for the cases under discussion is the set of worlds where everything the speaker believes in s^* is true.

⁶ Remember that according to Kratzer (1989), worlds are nothing but maximal situations.

⁷ The ordering source, which requires the worlds quantified over to be closest to some ideal (see Kratzer 1981 for details) is omitted in order to enhance the readability of the formulas to follow.

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Putting everything together, we get (23b) as the – slightly simplified⁸ – denotation of (19a), which is repeated as (23a). Note that the s^* variable introduced by *must*, which in the default case is resolved to the actual world, is bound by the Q-adverb in the case under discussion:

- (23) a. If a farmer owns a horse, he is always rich.
 b. $\lambda s^* \forall s [s \leq s^* \wedge \exists x[\text{farmer}(x)(s) \rightarrow \exists s' [s \leq s' \wedge \forall w' [w' \in \cap f(\text{sp})(s') \wedge \exists s'' \leq w' [\exists y [\text{horse}(y)(s'') \wedge \text{own}(\text{tx.horse}(z)(s'') \wedge \text{identical-to}(z)(y)(s'')) (\text{tx.farmer}(x)(s))(s'') \rightarrow \exists s''' \leq w' [\text{is-rich}((\text{tx.farmer}(x)(s))(s'''))]]]]]]]]]$
 c. “All (minimal) situations s that contain a farmer can be extended to a (minimal) situation s' such that all worlds where everything the speaker believes with respect to s' is true and where the unique individual that is a farmer in s owns a horse are also worlds where the unique individual that is a farmer in s is rich”.

Under the assumption that the object in (23b) is applied to the actual world by default, as a consequence of which s^* is resolved to the actual world, the presupposition associated with *if* is presumably satisfied: it is plausible to assume that it is not part of the speaker’s knowledge that all (minimal) situations containing a farmer in the actual world can be extended to a (minimal) situation where this farmer owns a horse. After all, it is not part of standard world knowledge that every farmer owns a horse.

In the case of the *if*-variant of an example like (18), on the other hand, which is repeated below as (24), this presupposition is presumably violated: as it is part of standard world knowledge that professors give lectures, every (minimal) situation containing a professor in the actual world can be extended to a minimal situation where this professor gives a lecture. The speaker can therefore be assumed to be sure that for each professor in the actual world there is at least one situation where this professor gives a lecture. This explains the oddity of the *if*-variant of (24).

- (24) ??If/When a professor gives a lecture, she is usually happy.

Finally, the *if*-variants of the examples in (15), (16) and (17), which are repeated as (25), (26) and (27), all have in common that for each of them it is plausible to assume that the presupposition associated with *if* is violated, as there is no set of topical situations such that with respect to each of those situations it is an open question whether they satisfy the respective situation predicate.

- (25) ??If/when Caesar woke up in the morning, he usually had tea.
 (26) Last week was very strange: ??If/When Mary came home from her office, the refrigerator was always empty.
 (27) Peter hated the conference: Always, ??if/when he had a smart question, somebody else asked it first.

⁸ The minimality conditions (see (20) above) have been omitted in order to enhance readability.

In the case of (25), for example, the Q-adverb presumably quantifies over morning situations containing Caesar. But as it is clear that Caesar wakes up every morning, it is not an open question whether the situation predicate is satisfied with respect to the situations quantified over (cf. von Stechow and Iatridou 2002). In the case of (26), on the other hand, the only situations that are available for the Q-adverb to quantify over are the situations of Mary coming home from her office themselves, and the situation is similar in (27).

Concerning the *when*-variants of the above examples, I assume that *when* only differs from *if* insofar as it is not associated with a presupposition that would keep it from taking situation predicates as arguments that the speaker assumes to be satisfied in the actual world. *When*-clauses therefore can become the restrictors of all sorts of overt or covert quantifiers over situations⁹, and an example like (24) is interpreted as shown (in simplified form) in (28b).

- (28) a. $[[\text{When}]] = \lambda P_{\langle s, t \rangle} \cdot \lambda \mathcal{R}_{\langle \langle s, t \rangle, t \rangle} \cdot \mathcal{R}(P)$
 b. $\lambda s^* \forall s [s \leq s^* \wedge \exists x [\text{professor}(x)(s) \wedge \text{gives-lecture}(x)(s)]$
 $\rightarrow \exists s' [s \leq s' \wedge \text{is-happy}(\lambda x. \text{professor}(x)(s))(s')]]$

Concerning the question why *when*-clauses cannot restrict quantifiers over possible worlds, I assume that this is due to the availability of the more specific complementizer *if*, which due to its presupposition is only compatible with quantification over possible worlds. The use of *when* is therefore blocked in non-modal environments. We thus have an account that not only explains how in some cases the illusion comes about that Q-adverbs quantify over *if*-clauses directly, and that therefore *if* and *when* are interchangeable in adverbially quantified sentences, but that also explains why in some cases this illusion breaks down.

3. The Situation in German: *Wenn* vs. *Als*

Interestingly, the analysis first proposed for *if* by Kratzer (1986) seems to work for German *wenn*: *wenn*-clauses are acceptable as the restrictors of overt and covert modal operators as well as of Q-adverbs, as evidenced by the examples in (29).

- (29) a. Wenn Maria Philosophin ist, verdient sie viel Geld.
 “If Maria is a philosopher, she earns a lot of money.”
 b. Wenn Maria nicht in ihrem Büro ist, muß sie zu Hause sein.
 “If Maria is not in her office, she must be at home.”
 c. Wenn eine Professorin eine Vorlesung hält, ist sie meistens glücklich.
 “When a professor gives a lecture, she is usually happy.”

⁹ Note that I assume that temporal overlap is not part of the meaning of *when*, but rather part of the meaning of the respective situation quantifier, as it is required that the restrictor situations are parts of the nucleus situations (see (20) above).

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Note that (29c), which is the German counterpart of example (18), the *if*-variant of which was unacceptable in English, is fine, too. This holds for all *wenn*-counterparts of the examples above which were unacceptable with *if*:

- (30) a. Peter haßte die Konferenz: Immer, wenn er eine schlaue Frage hatte, stellte sie jemand anders zuerst.
 “Peter hated the conference: Always, when (/??if) he had a smart question, somebody else asked it first”.
- b. Die letzte Woche war sehr seltsam: Immer, wenn Mary aus dem Büro nach Hause kam, war der Kühlschrank leer.
 “Last week was very strange: Always, when (/??if) Mary came home from the office, the refrigerator was empty”.
- c. Wenn Cäsar morgens aufwachte, trank er meistens Tee.
 “When (/??if) Caesar woke up in the morning, he usually had tea”.

Wenn-clauses are also used in order to refer to single future situations that in the speaker’s view will surely occur:

- (31) Wenn ich heute Abend nach Hause komme, nehme ich erst mal ein Bad.
 „When I come home tonight, I will take a bath first”.

But in order to refer to single past situations, *als* instead of *wenn* has to be used:

- (32) a. Als/*Wenn Maria gestern nach Hause kam, war der Kühlschrank leer. (Only has a conditional reading.)
 “When Maria came home yesterday, the refrigerator was empty”.
- b. Als Maria noch ein Kind war, war der Kühlschrank meistens leer.
 “When Maria was still a child, the refrigerator was always empty”.

In order to account for this pattern, I propose that *wenn* has the same denotation as *when*, the differences being due to the fact that while *when* is blocked by the more specific *if* in modal environments, *wenn* is blocked by the more specific *als*, which presupposes the existence of a unique situation of the respective kind (cf. Vikner 2004), in exactly those environments where this presupposition is fulfilled.

- (33) a. [[Wenn]] = [[When]] = $\lambda P_{\langle s, t \rangle}. \lambda \mathfrak{R}_{\langle \langle s, t \rangle, \langle s, t \rangle \rangle}. \mathfrak{R}(P)$
 b. [[Als]] = $\lambda P_{\langle s, t \rangle}. \exists s [P(s) \wedge \forall s' [P(s') \rightarrow s = s']] . \lambda \mathfrak{R}_{\langle \langle s, t \rangle, \langle s, t \rangle \rangle}. \mathfrak{R}(P)$

Als therefore only allows binding by a covert existential quantifier, resulting in an episodic reading, and an example like (32b) is interpreted as given in (34):

- (34) $\lambda s^* \exists s [s \leq s^* \wedge \text{was-a-child}(\text{Mary})(s) \wedge \exists s' [s \leq s' \wedge \forall s'' [s'' \leq s' \wedge C(s'') \rightarrow \exists s''' [s'' \leq s''' \wedge \text{empty}(\iota x. \text{refrigerator}(x)(s'''))(s''')]]]]$

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