good as a predicate of worlds[1]

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Abstract. The paper proposes a new semantics for *good*-predications involving finite *if*-and *that*-clauses. The proposal combines a standard semantics for conditionals with a standard semantics for the positive form of gradable adjectives and a minimal semantics for modal *good*. The predicted truth-conditions and conditions of use solve the mood puzzle presented in the first part of the paper. The remainder of the paper defends the classical notion of comparative goodness in terms of a comparison between possible worlds against Lassiter (2017)'s challenge.

Keywords: gradable adjectives, subjunctive conditionals, preference predicates, factivity.

1. Introduction

The topic of this paper are predicative constructions of the adjective *good* that involve *if*- and *that*-clauses with an indicative and past / subjunctive inflection related to the subject-position of *good*, as illustrated in (1).

(1)   a.   It is good that the cat is fat.
       b.   It is good if the cat is fat.
       c.   It would be good if the cat was / were fat.

For ease of reference, I will call these constructions "*good*-predications" and the finite clauses within "FIN-clauses". The general pattern of these constructions is characterized in (2):

(2) α = the cat be-INFL fat   FIN-clause

       a.   It is   good [that α-IND   ].
       b.   It is   good [if α-IND   ].
       c.   It would be good [if α-PAST / SUBJ].
                        good-predication

The main interest of this paper is the compositional semantics of *good*-predications and their interpretation at the syntax-semantics interface.

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2. The conditional nature of *good*-predications

2.1. *good* is unlike *likely*

In recent work, Daniel Lassiter has argued that the FIN-clauses of *good*-predications should be analysed as propositional arguments of the predicate *good* (see Lassiter, 2017). His assumption is that–although there are differences between *likely* and *good* with respect to their characteristic properties as scalar adjectives–at the syntax-semantics interface *likely* and *good* behave exactly alike, i.e., they both take clausal arguments that are semantically interpreted as their propositional arguments. (3) and (4) give the relevant details in a very simplified form:

(3)   a.   It is likely that α.
   $[_t$ **it is likely**$_{\langle\langle s,t\rangle,t\rangle}$ $[_{\langle s,t\rangle}$ **that** α $]]$
     b.   It is good that α.
   $[_t$ **it is good**$_{\langle\langle s,t\rangle,t\rangle}$ $[_{\langle s,t\rangle}$ **that** α $]]$

(4)   a. $[\![\textbf{likely}]\!]^w = \lambda p_{\langle s,t\rangle}.\ \text{LIKELY}_w(p)$
     b. $[\![\textbf{good}]\!]^w = \lambda p_{\langle s,t\rangle}.\ \text{GOOD}_w(p)$

I think this parallel treatment is misguided for two reasons. First, the range of FIN-clause types in *likely*-predications differs from the range of FIN-clause types in *good*-predications: While *likely* only allows *that*-clauses (5), *good* also allows *if*-clauses in indicative and subjunctive mood (6).

(5)   It is likely [that the cat is fat].   that α-IND

(6)   a.   It is good [that the cat is fat].   that α-IND
     b.   It is good [if the cat is fat].   if α-IND
     c.   It would be good [if the cat was / were fat].   if α-PAST / SUBJ

Second, *that*-clauses of *good*-predications are factive while *that*-clauses of *likely*-predications are not. Let's assume Mary says: "I don't know where John is." Against the background of this utterance she cannot presuppose that John is at the office. Compare now the follwing utterances (where # marks the infelicity against the assumed conversational background):

(7)   a.   It is (not) likely that John is at the office.   not factive
     b.   #It is (not) good that John is at the office.   factive
     c.   It is (not) good if John is at the office.   not factive

It seems that *good* and *likely* behave grammatically very differently.[2] The obvious question with respect to the *if*-clauses in *good*-predications is: Is there a relation to conditionals? And if so, how close is it?

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[2]I want to mention two other respects in which *good*-predications differ from *likely*-predications that fit the grammatical pattern of *good*-predications as described above. First, we find non-conditional subjunctive mood with *good*-predications but not with *likely*-predications.

(8)   It is good that your wedding <u>be</u> simple and <u>make</u> what is truly important stand out. http://www.usccb.org

2.2. *good*-predications have the outer appearance of conditionals

There are striking similarities between *good*-predications and conditionals. First of all, the pattern of "mood-matching" between the main predicate and the FIN-clause in *good*-predications mirrors the pattern of mood-matching between the antecedent and the consequent of conditionals, compare (10) with (11).

(10)　　a.　　John will-IND like the picture, if the cat is-IND fat.
　　　　　b.　　John would-SUBJ like the picture, if the cat was-PAST / were-SUBJ fat.

(11)　　a.　　It is-IND good, if the cat is-IND fat.
　　　　　b.　　It would-SUBJ be good, if the cat was-PAST / were-SUBJ fat.

As with conditionals, *would* seems to be disprefered in the *if*-clause.

(12)　　　　　　　　　　　　　　　　　　Search results for the strings on Google:
　　　　a.　　"It would be better if you were"　　　　　　　67.400.000
　　　　b.　　"It would be better if you would be"　　　　　　　　　0
　　　　c.　　"It were better if you were"　　　　　　　　　　　　10
　　　　d.　　"It were better if you would be"　　　　　　　　　　　0

2.3. *good*-predications have the use conditions of conditionals

Another similarity between *good*-predications and conditionals is that they have the same conditions of use. Let me first introduce the conditions of use for conditionals as characterized by Kratzer (1979) (where q is the proposition expressed by α and w is the world where the utterance is performed):

(13)　　Rule of use for indicative conditional sentences – An utterance of **must / necessarily, if** α, β will only be appropriate if q and its negation are both compatible with what is common knowledge in w.

(14)　　Rule of use for subjunctive conditionals –An utterance of **would, if** α, β will only be appropriate if the negation of q is compatible with what is common knowledge in w.

(15)　　Rule of use for counterfactuals – The use of a subjunctive conditional sentence is a counterfactual use if and only if q is incompatible with what is common knowledge in w.

With non-conditional subjunctive mood we do not necessarily get a factive reading for the *that*-clause.

　The second difference concerns the interaction with negation. Lassiter (2011) argues that *good* like *likely* is a neg-raising predicate. This seems to be at least doubtful for *good*-predications in subjunctive mood since the overt position of the negation affects the conditions of use. Let's take the following utterance as part of the conversational background: "The cat is fat." Against this background the sentences in (9a) and (9b) cannot be used interchangably since their conditions of use are crucially different, cf. the test in Lassiter (2011).

(9)　　a.　　It wouldn't be good if the cat were slim.
　　　　b.　　#It would be good if the cat weren't slim.

To illustrate the conditions of use, Kratzer (1979) introduces the following story:

> "The following story is reported about ancient Rome: When Caligula left the arena
> one day, suddenly the doors shut behind him and he was attacked by his own body-
> guards. The crowd in the arena heard him screaming but they could only guess
> what had happened."   Kratzer (1979)

From here on, I will modify her example slightly. Let's assume that there are three possible
outcomes of the story:

(16)   S1 = The doors open and the audience learns that Caligula is still alive.
        S2 = The doors stay closed and the audience won't know what happened.
        S3 = The doors open and Caligula is found dead.

The following pictures represent what is common knowledge in the corresponding situations
according to the outcomes characterized in (16).
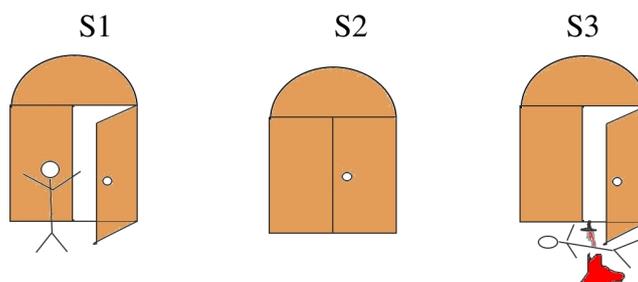
Imagine now Tullius (who wants to get promoted) uttering the sentences in (17) in the different
situations. If we check our intuitions about the appropriateness conditions for the different
types of conditionals, we find the following:

(17)   a.   [Since Caligula is   still alive], I will   get promoted. $\rightsquigarrow$ S1
        b.   [If   Caligula is   still alive], I will   get promoted. $\rightsquigarrow$ S2
        c.   [If   Caligula were still alive], I would get promoted. $\rightsquigarrow$ S2, S3

The table summarizes the use conditions dependent on the type of FIN-clause used.

α = Caligula be-INFL still alive		
type of FIN-clause	form	appropriate in
factive	since α-IND	S1
indicative conditional	if α-IND	S2
subjunctive conditional	if α-SUBJ/PAST	S2, S3

Table 1: use conditions dependent on the type of FIN-clause

If we now turn to the different types of *good*-predications and check our intuitions about the
appropriateness conditions, we find the same conditions of use depending on the type of FIN-
clause used.

(18)   a.   It is   good [that Caligula is   still alive].   ⤳ S1
        b.   It is   good [if   Caligula is   still alive].   ⤳ S2
        c.   It would be good [if   Caligula were still alive].   ⤳ S2, S3

2.4. The puzzle: unconditionally *good*

Although *good*-predications look like conditionals and share their conditions of use, their truth-conditions crucially differ from conditionals: While any conditional interpretation of *good*-predications will result in a shifted interpretation for the predicate *good*, the predicate *good* in a *good*-prediction on the relevant reading is interpreted with respect to the world of evaluation. This is not to say that sentences of the form in (18b) and (18c) cannot have an interpretation as a true conditional. This interpretation is sometimes called the "logical reading", Williams (1974), cf. (20a). On this reading the pronoun *it* is interpreted as anaphorically refering to some given situation in the discourse context. But this is not the relevant reading under discussion. There is agreement in the literature that the relevant reading is "non-logical" (see Pesetsky, 1991; Kaufmann, 2017b).[3] According to a popular paraphrase for this reading, the proposition expressed by the antecendent of the conditional also plays the role of the propositional argument of *good*, cf. (20b). The example is taken from Kaufmann (2017b):

(20)   *It would be good if Bill were here.*
        a.   logical reading:
              'If Bill were here it [⇒ the relevant situation] would be good.'
        b.   non-logical reading:
              'If Bill were here [that Bill is here] would be good.'"

At first sight, the interpretation suggested by this paraphrase seems to be a plausible candidate for the relevant non-logical interpretation. But this still doesn't give us the right truth-conditions. To see this, I give a more explicit version of the logical form corresponding to the paraphrase in (20b) annotated with semantic types for the extensions of the expressions.

(21)   a.   It is good if α.   non-logical reading
        b.   (**if** α) MUST $[_t$ [**that** α] **good**$_{\langle\langle s,t\rangle,t\rangle}$]

Independent of how one plans to spell out the truth-conditional contribution of the predicate *good*, it is clear from the LF that, since MUST is an intensional operator, we need to apply the rule of Intensional Functional Application to combine the intensional operator with a type t clausal argument (see Heim & Kratzer, 1998). This will result in a shifted interpretation for the predicate *good* in the sense of *under such and such circumstances it is good that ....* . But what we want to say when we utter a sentence like (21a) in the unmarked case is that it is *actually*

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[3]It has been observed for German that *good*-predications in subjunctive mood can occur with a V2-clause that is interpreted as an *if*-clause (see for example Meinunger, 2007).
(19)   Es wäre   gut,   er würde   noch leben.
        It be-SUBJ good he would-SUBJ still   live
        'It would be good if he were still alive.'
The use of a V2-clause disambiguates in favour of the relevant reading under discussion.

good if certain circumstances turn out to be the case.[4] The assessment of the goodness of the described circumstances is not shifted to another world. For example, the paraphrases in (22b) and (23b) readily have a cynical reading that welcomes Mary's recovery only under certain conditions. But this reading doesn't match the unmarked reading for (22a) and (22b).[5]

(22)   a.   It is good if Mary will recover again.
       b.   If Mary will recover again, [that she will recover again] is good.

(23)   a.   It would be good if Mary would recover again.
       b.   If Mary would recover again, [that she will recover again] would be good.

In general, sentences of the form *It is / would be good, if* φ in the unmarked case are used to express *actual preferences* for certain conditions and *not conditional preferences*. W.r.t. *good*-predications in subjunctive mood the empirical findings can be restated as a puzzle:

(24)   **The mood puzzle**
       How can it be explained that the main predicate of a *good*-predication in subjunctive mood (*it would be good* on the unmarked interpretation) is overtly marked with subjunctive mood, when at the same time the world argument of *good* doesn't get a shifted interpretation.

The background for this puzzle is that in conditionals the world argument of a predicate that is overtly marked with subjunctive mood *always* gets a shifted interpretation. This is true, both, for the antecendent and the consequent of conditionals. The question is: How can we account for the overt subjunctive marking of a predicate if its world argument doesn't get a shifted interpretation? What we need is a compositional semantics for *good*-predications that a) gives us the right distribution of the overt mood morphology b) makes sense of the use conditions associated with the different types of FIN-clauses and c) gets the unshifted interpretation of *good* right, i.e., solves the mood puzzle.

3. The Proposal

The proposal has two parts: First, I propose that *good*-predications involve conditional operators. This allows us to account for the mood distribution, the restriction of *would* to the matrix-clause and the conditions of use associated with indicative and subjunctive mood. Both, with conditionals and *good*-predications these properties can be uniformly attributed to the conditional operator involved. Second, I propose that modal *good* denotes a relation between possible worlds. In particular, I will treat modal *good* in parallel to Arnim von Stechow's treatment of the temporal gradable adjective *spät* in von Stechow (2006): While *spät* is predicated of times, modal *good* is predicated of worlds. As a consequence of this treatment, the modal operator and the *good*-predicate have to be combined by Extensional Functional Application–instead of Intensional Functional Application–resulting in an unshifted interpretation of the (anchoring) world argument of modal *good*.

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[4]The "unmarked case" is the case in which *it* doesn't get an anaphoric interpretation.
[5]Similar observations have been made by Pullum (1987), Grosz (2012), Kaufmann (2017a).

The section is devided in five subsections: First, I introduce my assumptions about the interpretation of the conditional operator involved. Then, I present the semantics for *good*. In a third part, I show how the semantic composition of the conditional operator and modal *good* results in an unshifted interpretation for the world of evaluation of modal *good*. In subsection four, I discuss the predictions of this proposal for a simple example. In the last subsection, I summarize how the proposal accounts for the mood puzzle.

3.1. *good*-predications involve conditional operators

To be able to spell out the details of the proposal, I have to make some assumptions about the interpretation of conditionals. The proposal itself doesn't commit me to a particular theory. Any theory that explains the distribution of mood in indicative and subjunctive conditionals and accounts for their conditions of use will do. For the exploratory purpose of this paper, I choose to go with a basic Kratzer-style semantics for conditionals that takes conditional antecedents to be restrictors of overt or covert modal operators, Kratzer (1981, 2012). In (25), I give the general form of indicative and subjunctive conditionals on such an account.

(25)   a.   (**if** α) MUST β Indicative
       b.   (**if** α) WOULD β Subjunctive

For Kratzer, both MUST and WOULD are special cases of a modal necessity-operator NEC. NEC is interpreted relative to two conversational backgrounds f and g, where f functions as the modal base and g as the ordering source, (26).[6]

(26) $[\![\text{NEC } \beta]\!]^{f,g} = \lambda w.\ \forall w' \in \bigcap f(w)\colon \exists w'' \in \bigcap f(w)\colon w'' \leq_{g(w)} w' \wedge \forall w''' \in \bigcap f(w)\colon$
       $w''' \leq_{g(w)} w'' \rightarrow [\![\beta]\!]^{f,g}(w''')$ Kratzer (2012)

The contribution of the *if*-clause is that it adds another premise to the conversational background f that functions as the modal base (27).[7]

(27) $[\![(\textbf{if } \alpha)\ \beta]\!]^{f,g} = [\![\beta]\!]^{f^*,g}$, where $f^*(w) = f(w) \cup \{||\alpha||^{f,g}\}$, for all $w \in W$ Kratzer (2012)

The resulting semantics for the general case is given in (28):

(28) $[\![(\textbf{if } \alpha)\ \text{NEC } \beta]\!]^{f,g} = \lambda w.\ \forall w' \in \bigcap f^*(w)\colon \exists w'' \in \bigcap f^*(w)\colon w'' \leq_{g(w)} w' \wedge$
       $\forall w''' \in \bigcap f^*(w)\colon w''' \leq_{g(w)} w'' \rightarrow [\![\beta]\!](w'''),$
       where $f^*(w) = f(w) \cup \{||\alpha||^{f,g}\}$, for all $w \in W$

The differences between indicative (=MUST) and subjunctive (=WOULD) conditionals on Kratzer's account come about by a particular choice for the modal base f and the ordering

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[6] $w \leq_A w'$ iff $\{p \in A\colon w' \in p\} \subseteq \{p \in A\colon w \in p\}$

[7] $||\alpha||^{f,g} =_{def} \{w \in W\colon [\![\alpha]\!]^{f,g}(w)\}$. If the interpretation of α is not sensitive to the conversational backgrounds f and g, I will simply write $||\alpha||$ instead of $||\alpha||^{f,g}$.

source g. For example, under the assumption that the modal base f is an empty conversational background and the ordering source g is a totally realistic conversational background[8], we get the following truth conditions for the subjunctive conditional in (29a):

(29) a. If Caligula was / were still alive, Tullius would be rich.
      b. $[\![$(**if Caligula alive**) WOULD **Tullius rich**$]\!]^{f,g} =$
          $\lambda w. \forall w' \in ||\textbf{Caligula alive}||: \exists w'' \in ||\textbf{Caligula alive}||: w'' \leq_{g(w)} w' \wedge$
          $\forall w''' \in ||\textbf{Caligula alive}||: w''' \leq_{g(w)} w'' \rightarrow \text{rich}_{w'''}(\text{Tullius})$
          'Every $||\textbf{Caligula alive}||$-world that is at least as close to an ideal determined by the facts in the world of evaluation w (represented by the set of propositions $g(w)$) as any other $||\textbf{Caligula alive}||$-world is a world in which Tullius is rich.'

Against this background I propose the following logical forms for indicative and subjunctive *good*-predications.

(30) a. It is good if Caligula is alive.   Indicative
      b. (**if Caligula alive**) MUST   [POS **good**]

(31) a. It is would be good if Caligula was / were alive.   Subjunctive
      b. (**if Caligula alive**) WOULD [POS **good**]

The crucial differences between conditonals and *good*-predications that result in an unshifted interpretation of the world argument of modal *good* have to be attributed to the semantics of modal *good*. This is the topic of the next section.

3.2. Modal *good* as a predicate of worlds

Good is a gradable adjective. Like other gradable adjectives it combines with a POS-morphem in its positive form. As a background for the discussion, I want to first introduce some assumptions about the semantics of gradable adjectives and their positive forms following von Stechow (2006).[9]

3.2.1. Degree adjectives: *tall*

I want to illustrate the assumptions that I take to be the background for the following discussion for the gradable adjective *tall*. The semantics of the adjective *tall* involves a measure function HEIGHT that maps an individual to its maximal degree of tallness. *Tall* denotes a relation between an individual x and a degree d such that the maximal degree of tallness of x given by

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[8]"A counterfactual is characterized by an empty modal base f and a totally realistic odering source g." (Kratzer, 2012: p. 66)

[9]As in the case of conditionals, the proposal in this paper is not commited to a particular semantics for gradable adjectives. Other proposals in the literature (see for example the references in von Stechow, 2006; Beck, 2010) would serve the purpose of this paper as well.
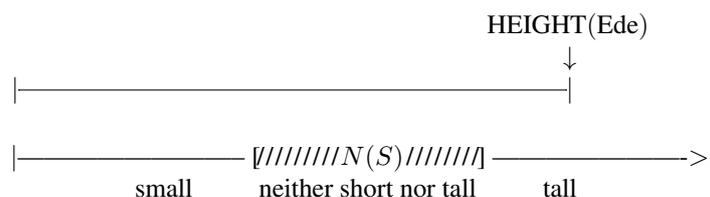
HEIGHT(x) is at least as high as d, cf. (32).[10]

(32) $[\![\mathbf{tall_S}]\!]^g = \lambda d: d \in g(\mathrm{S}) \wedge g(\mathrm{S}) \subseteq S_{\mathbf{tall}}.\ \lambda x \in D_e.\ \mathrm{HEIGHT}(x) \geq d$,
             where $g(\mathrm{S})$ is a contexually salient subinterval on the tallness scale $S_{\mathbf{tall}}$

Following von Stechow (2006), the positive form of the adjective introduces an operator POS. Semantically, POS specifies a neutral interval $N(S)$ of degrees on the tallness scale $S_{\mathbf{tall}}$ that are neither short nor tall. The denotation of [POS **tall**] when applied to an individual x returns true iff the maximal degree of tallness of the individual x is higher than any degree in the neutral interval $N(S)$. On a reading for (34a) where Ede's height is judged against the interval $N(S)$ the sentence is true iff Ede's maximal degree of tallness exceeds any degree of tallness in the contextually given interval $N(S)$.

(33) $[\![\mathrm{POS_{N,S}}]\!]^g = \lambda A_{\langle d,t \rangle}.\ \forall d \in N(S)\!: A(d)$ von Stechow (2006)

(34)   a.   Ede is tall.   von Stechow (2006)
             b. $\mathrm{POS_{N,S}}\ \lambda d.\mathbf{tall_S}(d)(\mathbf{Ede})$
             c. $[\![(34\mathrm{b})]\!] = 1$ iff $\forall d \in N(S)\!: \mathrm{HEIGHT}(\mathrm{Ede}) \geq d$

$$\text{HEIGHT(Ede)}$$
$$\downarrow$$
$$|\!\!-\!\!|$$
$$|\!\!-\!\!-\!\!-\!\!-\!\!-\!\!-\!\!- [\!/\!/\!/\!/\!/\!/\!/\!/N(S)/\!/\!/\!/\!/\!/\!/\!/] -\!\!-\!\!-\!\!-\!\!-\!\!-\!\!->\!|$$
$$\text{small}\qquad\text{neither short nor tall}\qquad\text{tall}$$

3.2.2. Times as degrees: *spät* ('late')

In von Stechow (2006), the gradable temporal adjective *spät* ('late') is analyzed in analogy to *tall* with the difference that *spät* doesn't relate an individual and a degree but instead two times.

(35)   'late': type $\langle i, \langle i, t \rangle \rangle$ (official rule)   von Stechow (2006)
             $[\![\mathbf{sp\ddot{a}t_I}]\!] = \lambda t' \in \mathrm{I} \subseteq \mathrm{T}.\ \lambda t \in \mathrm{I}.\ t \geq t'$

The basic idea is that in the temporal domain times can treated as degrees (see the discussion in von Stechow (2006) for further details). Consequently, the temporal version of the POS-morphem according to von Stechow (2006) is a quantifier over times (as degrees):

(36) $[\![\mathrm{POS_{I,N}}]\!] = \lambda P_{\langle i,t \rangle}.\ \forall t \in N(I)\!: P(t)$ von Stechow (2006)

The resulting semantics is illustrated for the example in (37).

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[10]In this section, $[\![\cdot]\!]$ is a function from expressions of English to their extensions – and not as before (and later on) to their intensions.

(37)   Es war spät. 'It was late.'   von Stechow (2006)
        $\text{POS}_{\text{I,N}}\ \lambda_2\ [\ \text{PAST}_5\ [\ t_2\ \textbf{late}\ ]]$
        $\forall t \in N(I)\colon \text{Past}_5 \geq t$
        |...........................(.........)........Past$_5$.............> |
            early $N(I)$ late

3.2.3. A minimal semantics for modal *good*

I propose that a relational semantics in the spirit of von Stechow's semantics for *spät* can straightforwardly be transfered to modal *good* if we substitute worlds for times.[11] Under this assumption, modal *good* simply expresses a relation between worlds according to an ideal specified by a contextually given conversational background f. The relevant conversational background can be deontic, teleological or bouletic (see Lassiter (2017) for a discussion of the range of possible readings). I want to call this the "minimal semantics" for modal *good*.[12,13]

(39)   Minimal semantics for modal *good*
        $[\![\textbf{good}]\!]^f = \lambda w.\ \lambda w'.\ \lambda w''.\ w'' \leq_{f(w)} w'$

As in the temporal case the corresponding POS-operator is sensitive for the ordering of its argument. I give the adjusted version for the POS-operator in the modal domain (=POS$_\square$) in (40), where NEUTRAL$_{w,R}$ specifies the set of "neutral" worlds (that are neither good nor bad) in w with respect to the given order relation R.

(40) $[\![\text{POS}_\square]\!] = \lambda w.\ \lambda R_{\langle s, \langle s, t \rangle \rangle}.\ \lambda w'.\ \forall w'' \in \text{NEUTRAL}_{w,R}\colon R(w'')(w')$

The resulting semantics for POS$_\square$ **good** is as in (41):

(41) $[\![\text{POS}_\square\ \textbf{good}]\!]^f = \lambda w.\ \lambda w'.\ \forall w'' \in \text{NEUTRAL}_{w, \leq_{f(w)}}\colon w' \leq_{f(w)} w''$

Good by itself is not a modal quantifier on the proposed account; but if we combine **good** with POS$_\square$ the resulting semantics is the predicative core of an upper end degree modal in the sense of Kratzer (2012):

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[11]If we were to take degrees as equivalence classes of individuals (see Cresswell, 1976)), we could define a meassure function GOOD$_{\leq_{f(w)}}$ that maps a world to its corresponding degree (=equivalence class) according to the order relation $\leq_{f(w)}$. This would allow us to restate the semantics of *good* in a more conventional format involving a meassure function: $[\![\textbf{good}]\!]^f = \lambda w.\ \lambda d.\ \lambda w'.\ \text{GOOD}_{\leq_{f(w)}}(w') \geq d$. With the right adjustements, this can be done without affecting the overall truth-conditions.

[12]In analogy to the semantics of *früh* ('early') as the antonym of *spät* ('late'), we can follow von Stechow (2006) and define the meaning of *bad* via the "internal negation" of *good*.

(38) $[\![\textbf{bad}]\!] = [\![\neg\textbf{good}]\!]$, where $[\![\neg]\!] = \lambda w.\ \lambda R.\ \lambda w'.\ \lambda w''.\ \neg R(w')(w'')$

[13]Unlike Lassiter (2017), I do not assume that modal *good* needs any special treatment. What makes modal *good* modal is that it is predicated of worlds instead of individuals. I assume that the semantics of modal *good* is a special case of a general semantics for the gradable adjective *good* that covers the individual and the modal domain. Spacial restrictions prevent me from going into further details.

> „[...] a modal without dual could also be a degree expression covering the upper end of a scale of degrees of probabilities or preferences. Such upper-end degree modals could correspond to notions like, "it is (somewhat) probable," or, "it is (somewhat) desirable." We would then expect there to be a certain amount of vagueness with respect to the lower bound of the range of probabilities allowed.“ (Kratzer, 2012: p. 46)

The vagueness mentioned by Kratzer can be attributed to the vagueness coming with $\text{POS}_\square$. If we apply the denotation of $\text{POS}_\square$ **good** to a world w^*, we get the truth conditions in (42).

(42) $[\![\text{POS}_\square \text{ } \mathbf{good}]\!]^f(w)(w^*) = 1$ iff $\forall w' \in \text{NEUTRAL}_{w, \leq_{f(w)}}: w^* \leq_{f(w)} w'$

For a case where this can be represented by Lewisian spheres (see Kratzer (1979) for a discussion when this is the case) and the predication is true this can be visualized as follows:
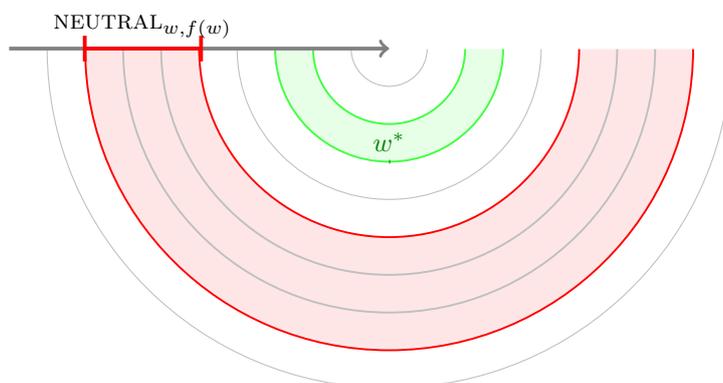
3.3. The composition

The standard mode of semantic composition that I'm assuming as a background for the discussion is Extensional Functional Application, as in (43), cf. Heim and Kratzer (1998).

(43)   Extensional Functional Application (=EFA)
        $[\![(\alpha \text{ } \beta)]\!] = \lambda w. \text{ } [\![\alpha]\!](w)([\![\beta]\!](w))$

Intensional operators like modal necessity-operators usually combine with their prejacent by Intensional Functional Application for type reasons, cf. (45) under the assumption that $[\![\text{NEC}]\!]^{f,g}$ is of type $\langle s, \langle \langle s, t \rangle, t \rangle \rangle$.

(44)   Intensional Functional Application (=IFA)
        $[\![(\alpha \text{ } \beta)]\!] = \lambda w. \text{ } [\![\alpha]\!](w)([\![\beta]\!])$

(45) $[\![\text{NEC } \beta]\!]^{f,g} = \lambda w. \text{ } [\![\text{NEC}]\!]^{f,g}(w)([\![\beta]\!]^{f,g})$

Crucially, in the case where the prejacent is [$\text{POS}_\square$ **good**] IFA would result in a type mismatch since $[\![[\text{POS}_\square \text{ } \mathbf{good}]]\!]$ is of type $\langle s, \langle s, t \rangle \rangle$. Here only EFA results in a semantically wellformed composition.

(46) $[\![\text{NEC} [\text{POS}_\Box \, \textbf{good}]\!]^{f,g,h} = \lambda w. \, [\![\text{NEC}]\!]^{f,g,h}(w)([\![\text{POS}_\Box \, \textbf{good}]\!]^{f,g,h}(w))$

The result of the composition via EFA is as follows:

(47) $[\![(\textbf{if } \alpha) \, \text{NEC} [\text{POS}_\Box \, \textbf{good}]\!]^{f,g,h} =$
$\lambda w. \, \forall w' \in \bigcap f^*(w): \exists w'' \in \bigcap f^*(w): w'' \leq_{g(w)} w' \wedge \forall w''' \in \bigcap f^*(w):$
$w''' \leq_{g(w)} w'' \rightarrow \forall w'''' \in \text{NEUTRAL}_{w,\leq_{h(w)}}: w''' \leq_{h(w)} w'''',$
where $f^*(w) = f(w) \cup \{||\alpha||^{f,g}\}$, for all $w \in W$

This is the general semantics for *good*-predications with *if*-FIN-clauses that I propose. As with conditonals, the differences between indicative and subjunctive *good*-predications are related to different choices for the conversational backgrounds f and g. That $\text{POS}_\Box$ **good** can be thought of as the predicative core of an upper end degree modal can be seen now more clearly if we take a look at the special case where f and g are empty conversational backgrounds.

(48) $[\![(\textbf{if } \alpha) \, \text{NEC} [\text{POS}_\Box \, \textbf{good}]\!]^h = \lambda w. \, \forall w' \in ||\alpha||: \forall w'' \in \text{NEUTRAL}_{w,\leq_{h(w)}}: w' \leq_{h(w)} w''$
'Every $||\alpha||$-world lies above the neutral range of worlds according to an ideal determined by the conversational background h in the world of evaluation w.'

3.4. The predictions

I want to illustrate the predictions of the theory for the example in (49).

(49)   It would be good if Caligula were alive.

Let's assume we are in S3 of (16): The doors of the arena open and Caligula is found dead. Let's assume that, despite the tragedy of the circumstances, what is on Tullius' mind in this situation is his plan to get promoted. He considers his chances: If Caligula were still alive, he would get the promotion that Caligula had promised him. But since Caligula is dead, his chances of getting promoted are unclear since the next ruler might have his own protégés. Against the background of these facts (represented by g) and his plan of getting promoted (represented by h), he utters the sentence in (49). The sentence is true in this situation if the following truth-conditions hold:

(50) $[\![(\textbf{if Caligula alive}) \, \text{WOULD} [\text{POS}_\Box \, \textbf{good}]\!]^{f,g,h} =$
$\lambda w. \, \forall w' \in ||\textbf{Caligula alive}||: \exists w'' \in ||\textbf{Caligula alive}||: w'' \leq_{g(w)} w' \wedge$
$\forall w''' \in ||\textbf{Caligula alive}||: w''' \leq_{g(w)} w'' \rightarrow$
$\forall w'''' \in \text{NEUTRAL}_{w,\leq_{h(w)}}: w''' \leq_{h(w)} w''''$
where f is the empty conversational background
'Every $||\textbf{Caligula alive}||$-world that is at least as close to an ideal determined by the facts in the world of evaluation w–represented by $g(w)$–as any other $||\textbf{Caligula alive}||$-world is a world that is as least as good according to an ideal characterized by Tullius' plans in w of getting promoted–represented by $h(w)$–as any other world in a set of neutral worlds according to the same ideal.'[14]

At first glance the predictions of this proposal seem to be notoriously vague. But notice that we have identified at least two elements in this construction that are independently known to be sources of vagueness: conditionals and the POS-operator. So every approach that wants to derive the truth conditions compositionally against the background of standard assumptions about these elements is in for a high degree of vagueness and context-sensitivity. In other words, the predicted vagueness and context-sensitivity is not a bug, it's a feature.

3.5. Summary

The ingredients for the solution to the mood puzzle are: a) a standard semantics for conditionals b) a standard semantics for the POS-operator and c) a minimal semantics for modal *good*. Although *good* by itself is not a modal, the combination of modal *good* with the POS-operator results in a semantics akin to an upper end degree modal. This explains the modal character of *good* in its positive form. The similarities of *good*-predications to conditionals (the mood distribution, the restriction of modal *would* to the matrix clause and the conditions of use depending on the choice of mood) can be attributed to the conditional operator involved. The unshifted interpretation of the world of evaluation of modal *good* (that we observed in the unmarked case) is predicted on the minimal account for modal *good* since the semantic composition of the conditional with modal *good* calls for Extensional Functional Application for type reasons. The resulting semantics gives us reasonable truth conditions for *good*-predications that predict a certain degree of vagueness that can be traced back to the vagueness that we find with conditionals and the positive form of gradable adjectives.

4. Factive *that*-clauses as restrictors

What should we say about *that*-clauses? First, if the predicate *good*, as in the case of conditionals, is a predicate of worlds, then the factivity of *good*-predications with a *that*-clause cannot be attributed to the predicate *good* but has to be attributed to the *that*-clause. Second, the contribution of the rest of the construction including the *that*-clause cannot be a plain proposition for type reasons. One way to go would be to assume that a factive *that*-clause denotes a fact as a particular as proposed in Kratzer (2006). Another way to go is to assume that we do have a factive propositional *that*-clause after all: *that* α introduces the presupposition that $[\![\alpha]\!](w) = 1$, i.e., that α is true in the world of evaluation w. In addition, the *that*-clause restricts a covert

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[14]In German, *gut* ('good') can sometimes have an interpretation in the sense of *schon gut* ('good enough', literally: 'already good'). I want to call this a "sufficiency-interpretation". Let's assume a situation where 15-year old Karin says to her mother: 'I have already cleaned my room. Shall I help you clean the kitchen?' Her mother replies:

(51)   Nein. Es ist gut, wenn du   dein Zimmer aufgeräumt hast.
          No. It is good if   you your room   cleaned   have.

If we assume that there is a silent *schon* ('already') involved and give it a semantics in analogy to von Stechow (2006)'s semantics for *schon spät* ('already late'), we get very good predictions for the sufficiency-interpretation.

   Let me emphasize that the proposal is also compatible with a usage where *good* is used to express indifference as in the following example:

(52)   It is good if Mary is in town but it is also good if she isn't. I don't care.

Depending on the given conversational background an utterance of (52) could be used to communicate that Mary's being in town won't affect the success of my plans since everything has been sufficiently taken care of. Spacial restrictions prevent me from going into more detail on this point. I would like to thank Magda Kaufmann for pointing out to me examples of this kind.

modal MUST as in the case of indicative conditionals. This is what I'm going to assume here.[15]

(53) $[\![(\textbf{that } \alpha) \text{ MUST } \beta]\!]^{f,g,h} =$
$\lambda w: [\![\alpha]\!]^{f,g}(w). \forall w' \in \bigcap f^*(w): \exists w'' \in \bigcap f^*(w): w'' \leq_{g(w)} w' \land \forall w''' \in \bigcap f^*(w):$
$w''' \leq_{g(w)} w'' \to \forall w'''' \in \text{NEUTRAL}_{w,\leq_{h(w)}}: w''' \leq_{h(w)} w'''',$
where $f^*(w) = f(w) \cup \{||\alpha||^{f,g}\}$, for all $w \in W$ compare with (28)

5. A remark on Percus (2000)'s Generalization X

In a nutshell: What allows us to solve the mood puzzle, i.e., account for the conditional nature of *good*-predications while at the same time to keep the world of evaluation for modal *good* unshifted, is the assumption that the conditional operator in *good*-predications is not used as an *adverbial* binder but as if it were an *adnominal* binder. This can be seen more cleary if we represent the world arguments directly in the syntactic structure as in Percus (2000).

(54)   a.   Conditional used as adverbial binder
            λ_1 (**if** λ_2 [w_2 **Caligula alive**]) WOULD$_{w_1}$ λ_3 [w_3 **Tullius** POS **rich**]
        b.   Conditional used as adnominal binder
            λ_1 (**if** λ_2 [w_2 **Caligula alive**]) WOULD$_{w_1}$ WH$_3$ [w_1 w_3 POS **good**]

The binding constellation in (54b) is in conflict with Generalization X from Percus (2000): "**Generalization X:** The situation pronoun that a verb selects for must be coindexed with the nearest λ above it." Since the closest binder for the world argument that the predicate *good* selects for is the binder index of the relative pronoun WH$_3$, the generalization seems to be violated. This is even more obvious in the reformulation of the generalization (Percus, 2000: p. 228) that directly refers to relative pronouns: "the relative pronoun whose movement makes the VP into a proposition must move from the situation position in the structure the verb projects". Under the perspective of the distinction in (54), we can add now the following amendment: "…except for when the predicate selects for another world argument in a thematic position."

6. Lassiter's challenge

The proposal as I have presented it so far is commited to the classical notion of comparative goodness as a comparison between possible worlds. Lassiter (2017) argues that any account based on this notion is doomed on principled grounds. In this section I want to a) introduce what I take to be the most challenging problem from Lassiter's discussion, b) sketch Lassiter's semantics for *good* and how it attempts to solve this problem, c) point out some problems for his proposal related to the data discussed in this paper, and d) suggest a new place where to look for a solution to his challenge. The main focus of Lassiter's critique of the classical notion of comparative goodness are the accounts in Lewis (1973) and Kratzer (1981, 2012). As Lassiter (2017) shows, the degree scales that we derive from an order over possible worlds assumed by the classical proposals are not the right kind of scales that we need to account for the gradibility behaviour of modal *good*. Lassiter (2017) shows that *good* behaves like a relative adjective. To account for this behavior we need at least interval scales. The translation of the order relations

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[15]I follow the convention in Heim and Kratzer (1998) and add the factive presupposition after a colon.

in premise and order semantics gives us ordinal scales at best. This objection directly carries over to the proposal in this paper. Here is a sketch of what Lassiter proposes to solve this problem. He starts out by characterizing a value function V which takes possible worlds to real numbers. V tells us "exactly how good it would be for the world to be like that". The relevant notion of goodness could be moral goodness, instrumental goodness, desirability for a given individual etc. Since Lassiter assumes that the things that we predicate goodness and badness of are propositions, he needs a way to lift a scale representing the values of worlds to a scale representing the values of propositions:

> "In decision theory, a standard way to do this is **expected value**: a weighted average of the values of the worlds in the proposition, representing our best guess about how good things will be if the proposition obtains. The weights are given by the conditional probabilities of the various worlds, assuming that the proposition obtains.
>
> (7.22)   The **expected value** of a proposition φ, relative to a domain D, is a weighted average of the actual values of worlds in $\varphi \cap D$.
>
> $$\mathbb{E}_V(\varphi) = \sum_{w \in \varphi \cap D} V(w) \times \text{prob}(\{w\} \mid \varphi \cap D).$$
>
> [...] In many cases of interest, the domain D can be equated with the epistemically possible worlds."   (Lassiter, 2017: p. 187)

The function $\mathbb{E}_V$ is at the heart of Lassiter's semantics for modal *good*. Let me comment on the four ingredients of this function from the point of view of the discussion in this paper. I will begin with the value function V: This function is Lassiter's first step to solving the scale problem. Nothing that I have said in this paper is in conflict with the assumption of a measure function GOOD (see footnote 11) that has V at its core. Second, the epistemic domain D that Lassiter refers to is naturally accounted for on this account by the conversational backgrounds of the conditional operators involved. Lassiter doesn't discuss *good*-predications with subjunctive mood. But in analogy to the indicative case, I assume that a domain revision associated with subjunctive mood would also have to be attributed to the domain D as a part of the semantics of *good*. Here is a general argument from ellipsis that the interpretable feature associated with subjunctive mood couldn't originate with modal *good*. We find *good*-comparatives with a factive and a counterfactual FIN-clause, (55). If the interpretable feature associated with the revision of the quantificational domain were associated with *good*, the condition of LF-identity for ellipsis would be violated, (55a).[16] On the account in this paper, LF-identity is respected, (55b).[17]

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[16] Also, we would have to assume agreement from below.

[17] I assume that the interpretable features that license indicative and subjunctive mood originate with the conditional operator. We can think of MUST as NEC-Ind and WOULD as NEC-Subj, where "Ind" and "Subj" stand for the corresponding interpretable features.

(55)   It is better that Caligula is alive than if he weren't alive.

  a. [er [[if α][T~[Subj]~ be good-Subj]]][[that β][T~[Ind]~ be good-Ind]]
                         ↑_____| ↑_____|

  b. [er [[NEC-Subj if α][T~[Subj]~ be good -------]]][[NEC-Ind that β][T~[Ind]~ be good   ]]
             |_____↑ |_____↑

Third, let's consider the conditional probabilities. The data in this paper point to a problem for Lassiter's account. Let's assume we are in situation S3, cf. (16), in which it is common knowledge that Caligula isn't alive anymore. Now consider an utterance of (56).

(56)   It would be better if Caligula were still alive.

Since with the utterance of (56) against the assumed conversational background it is presupposed that Caligula is not alive anymore, the probability of Caligula being alive is 0. What I take this to show is that the assignment of probability–if probability assignments play a role–has to be sensitive to the conditions of use associated with the type of FIN-clause. If the corresponding semantic adjustements were attributed to the adjective *good* itself, we would run again in the problem from ellipsis mentioned above. The last aspect of the function $\mathbb{E}_V$ at the heart of Lassiter's proposal is the sum-function $\sum$. Here something very similar to what Lassiter has in mind is in reach for the proposal in this paper. What I haven't considered so far is an alternative to the quantificational theory of conditionals: an account of conditionals that treats them as plural definite descriptions (see for example Schlenker, 2004). There is independent evidence that such an account is on the right track (see Schlenker, 2004). Under this assumption, the interpretation of a sentence like (57a) would be similar to a comparative sentence with plural definite descriptions as in (57b).

(57)   a.   It is better if it is raining than if it is snowing.
         b.   The girls are taller than the boys.

The sentence in (57b) can be true even if it's not the case that for every girl it is true that she is taller than every boy. There is a discussion in recent literature how to account for the different readings of comparatives with plural DPs like (57b) (see Dotlačil and Nouwen, 2016 and the literature cited there). Dotlačil and Nouwen (2016) propose that we can account for them if we assume pluralities of degrees. Tools of this sort that have an independent motivation suggest that there might be a direct answer to the scale problem after all.[18,19] My plea in this paper is that we shouldn't dismiss the idea that *good* is predicated of worlds before we have explored all the theoretical options, in particular, before we have considered what the predictions are if we take into account recent developments in the semantics of conditionals and the semantics of comparatives with plural/quantificational DPs.

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[18]There are other relevant and important recent developments that could contribute to the proposal in this paper from the discussion of quantifiers in *than*-clauses, see for example Beck (2010). These considerations are directly relevant, if we stay with a quantificational theory of conditionals.

[19]In Kaufmann (2017b) we find a proposal for *good*-predications in Japanese, approaching this topic from a propositional-argument-view, that arrives at a very similar conclusion as the account in this paper, if we switch from a quantificational analyis of conditionals to an analysis of conditionals as plural definite descriptions.

7. A few remarks on the similarities between *good*-predications and desire reports

The proposal in this paper derives truth conditions for *good*-predications that are very similar to the semantics that Heim (1992) assumes for desire reports. The basic idea of her proposal is that there is a "hidden conditional in every desire report". The parallels can be seen very clearly if we take a look at her informal paraphrases (to which I added italics).

(58)   a.   John wants you to leave. $\rightsquigarrow$ 'John thinks that *if you leave he will be in a* more *desirable world* than if you don't leave.'

        b.   John wishes you were gone. $\rightsquigarrow$ 'John thinks that *if you were gone he would be in a* more *desirable world* than he is in because you are not gone'

        c.   John is glad you are gone $\rightsquigarrow$ 'John thinks that *because you are gone he is in a* more *desirable world* than he would be in if you were not gone'

want corresponds to a *good*-predication with an *if*-FIN-clause in indicative mood, *wish* corresponds to a *good*-predication with an *if*-FIN-clause in subjunctive mood and *glad* corresponds to a *good*-predication with a *that*-FIN-clause in indicative mood. We even find a parallel in the conditions of use for the corresponding hidden FIN-clauses (which in case of the desire reports are relativized to the belief of the attitude holder).[20] If we look at the details of Heim's semantics, we see that the way the conditional combines with the desire predicate on her account corresponds to the proposed adnominal interpretation for the conditional.

(59) $w \in [\![a \textbf{ wants } \phi]\!]$ iff for every $w' \in \text{Dox}_a(w)$: $\text{Sim}_{w'}([\![\phi]\!]) <_{a,w} \text{Sim}_{w'}(W \setminus [\![\phi]\!])$

I want to mention two more parallels from German. In German, a counterfactual wish can be expressed either with *wünschte* ('wish') or *wollte* ('want'). In both cases these verbs are overtly marked with subjunctive mood. The overt subjunctive marking doesn't go along with a shifted interpretation of the world of evaluation of the matrix predicate; the corresponding interpretation is the same as in English.

(60)   Ich wünschte / wollte,   du wärest hier.
        I   wish.SUBJ / want.SUBJ you were   here

There is additional evidence in support of the assumption that the overt subjunctive forms of German desire verbs in subjunctive mood are a reflex of their hidden counterfactual semantics. In German, subjunctive forms in conditionals can be expressed analytically with *würden* ('would') + infinitival. If we try to do this with the subjunctive forms of 'wish' and 'want', (61), we loose the unmarked interpretation and the sentences get a conditional interpretation in the sense of *under such and such circumstances would I wish . . . .*

(61)   Ich würde wünschen / wollen, du wärest hier.
        I   would want   / wish   you were   here

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[20]In all three cases (conditionals, *good*-predications and desire reports) the conditions of use can be traced back to an overt or hidden conditional operator.

8. Conclusion

In this paper I have argued that we can account for the similarities and differences between conditionals and *good*-predications if we assume that *good*-predications combine a standard semantics for conditionals with a standard semantics for the positive form of gradable adjectives and a minimal semantics for modal *good* that takes *good* to be a predicate of possible worlds.

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