

Counterfactuals, negation and polarity

Baker (1970) and Schwarz (2004) observe that a PPI is acceptable in the immediate scope of negation in the antecedent of a *would*-conditional as long as the antecedent is interpreted counterfactually. In (1-a) the PPI *already* is acceptable despite being in the scope of negation and the sentence is obligatorily understood to imply that I already have a bicycle. This is even more surprising since antecedents of *would*-conditionals are not required to be false, as discussed in Anderson (1951) and many others. The generalization is that the presence of the PPI in the scope of negation forces the counterfactuality of the antecedent. These observations apply to the consequent of a *would*-conditional as well. In (1-b), the PPI *already* occurs in the immediate scope of negation and the consequent must be interpreted counterfactually.

Let us call this type of *would*-conditionals (obligatorily counterfactual, with rescuing of PPIs) *negative counterfactuals* (NCs). Now, the properties of NCs are found in other languages as well. German “light negation” conditionals show the same properties as NCs in English. Schwarz and Bhatt (2006) argue that German has, in addition to a standard type of negation, what they call “light negation” (LN): unlike standard negation, LN (which is subject to specific licensing conditions) permits PPIs to appear in its immediate scope. What is important for our purposes is Schwarz’s observation that when LN occurs in the antecedent (or consequent) of a *would*-conditional, the antecedent (or the consequent) must be understood counterfactually. In (2) the presence of light negation (preceding the definite NP, which is not possible with standard negation) correlates with the counterfactuality of the antecedent (i.e. Fritz answered question 3). In (3), where standard negation occurs, counterfactuality is not obligatory.

Chinese *yaobushi* conditionals show a pattern very similar to English NCs and German LN counterfactuals. Compare the *yaobushi*-conditional in (5) to the conditional in (4) where the standard conditional complementizer *yaoshi* occurs. Just like standard antecedents of conditionals in English, antecedents of *yaoshi* conditionals in Chinese license NPIs. However, antecedents of *yaobushi* conditionals do not license NPIs as (5) shows. This is all the more surprising because *yaobushi* incorporates the actual negation *bu* (yao-bu-shi) (cf. *Ta bu piaoliang*, “She is not beautiful”). Interestingly, while PPIs are not licensed in the scope of negation, they are rescued in the antecedent of *yaobushi* conditionals, cf. (6) and (7). The similarity with the English and German cases can be strengthened even more: *yaobushi* conditionals must be interpreted counterfactually, as shown in (8). Crucially, both the antecedent and the consequent clauses must be interpreted counterfactually (see (9)). Note that this is true of the English conditionals as well: NCs have counterfactual antecedents and consequents, regardless of where the negation occurs. This is shown in (10-a) and (10-b).

Our proposal is that NCs in English, LN counterfactuals in German and *yaobushi* conditionals in Chinese all have the same structure and semantics. In particular, (i) a covert modal exhaustivity operator (EXH) strengthens the meaning of the conditional making the antecedent a sufficient and necessary condition for the consequent (if $\neg p$, q and if p , $\neg q$), as shown in (11); (ii) LN in German and its counterparts in English and Chinese are licensed by EXH; (iii) LN and its counterparts obligatorily associate with a factive operator Op_{fac} , triggering the factivity of the proposition in the scope of negation. The structure and (simplified) meaning of (1-a) is shown in (11). The obligatory counterfactuality of the consequent follows from the exhaustivity meaning of the conditional and the counterfactuality of the negative proposition in the antecedent: since all worlds in which I have a bike are required to be worlds where I do not buy one, and since the actual world is presupposed to be a world where I have a bike, it follows that it is true in the actual world that I don’t buy one. The presence of the factive operator always associated with light negation accounts for why PPIs, but not NPIs, are allowed to occur in the negative clause.

Our assumption about the “factivity” of light negation, i.e. its obligatory cooccurrence with a factive operator, is supported by examples such as (12-a) where negation cooccurs with the factive expression *for the fact that*. Crucially, this factive expression can only occur if negation is present, as shown by the ungrammaticality of (12-b), which cannot be due to the fact that the antecedent proposition is presupposed to be true by the speaker, since (12-c) is acceptable. For lack of space we cannot discuss these examples, but it will be shown that sentences like (12-a) have exactly the same properties as the light negation conditionals we discussed above.

- (1) a. If I didn’t already have a bicycle, I would go and buy one today. (Schwarz (2004))
b. If John had had an alibi, he wouldn’t have already been arrested.
- (2) Wenn Fritz nicht Frage 3 beantwortet hätte, wäre er durchgefallen. (LN)
if Fritz not question 3 answered have.subj be.subj he failed
“If Fritz hadn’t answered question 3, he would have failed” (Schwarz and Bhatt (2006))
- (3) Wenn Fritz Frage 3 nicht beantwortet hätte, wäre er durchgefallen.
“If Fritz hadn’t answered question 3, he would have failed”
- (4) Yaoshi ta xiangxin renheren, ta jiu bu hui shibai.
if he believe anyone, he then not will fail
“If he believes anyone, he will not fail”/“If he believed anyone, he would not fail”
- (5) *Yaobushi ta xiangxin renheren, ta jiu bu hui shibai.
if-not he believe anyone, he then not will fail
- (6) *Yaoshi ta bu xihuan yixieren, ta jiu bu hui lai.
If he not like someone, he then not will come
“If he didn’t like someone, he would not come”
- (7) Yaobushi ta he le yixie jiu, ta laopo bu hui zheme shengqi.
if-not he drink Prf some wine, he wife not will this be.mad
“If he hadn’t drunk some wine (which she did), his wife wouldn’t have been this mad”
- (8) #Yaobushi ta xiaoshihou duan-le tui, tade tui bu hui you ba. Qishi, yinwei tade tui mei.you ba, ta keneng mei duan-guo tui.
“If it were not the case that he broke his leg in his childhood, he would not have scars on his leg. Actually, since he doesn’t have scar on his leg, it is possible that he did not to break his leg before”
- (9) #Yaobushi mali kaoshi shibai, ta mama haishi hui ma ta.
if-not Mary test fail, her mother still will scold her
“If Mary hadn’t failed the test, her mother would still have scolded her.”
- (10) a. ??Even if John hadn’t received some help from his teachers, he would (still) have passed the exam.
b. ??If John had had an alibi—which he did—he would not have been already arrested.
- (11) a. *EXH*(NEG Op_{fac} (I already have a bicycle))(I go and buy one today)
b. $\forall w' \in W$: it’s not the case that I have a bicycle in w' , I go and buy one today in w' and $\forall w'' \in W$: I have a bike in w'' , I don’t go and buy one in w''
factive presupposition: I already have a bicycle in the actual world
- (12) a. If it weren’t for the fact that he has a bike, John would go and buy one.
b. *If it were for the fact that he has a bike, John would use it to go to work.
c. If John had a bike—which he does—he would use it to go to work.