

Rationale Clauses (RatCs), like the one in (1a), are used to express someone's intention behind the event expressed in the matrix clause. A common paraphrase uses a causal clause with an expression of intent: *because she wants to donate the profits*. If the matrix clause describes an event that cannot be brought about by intentional action alone (or by natural design), the clause is heavily degraded (1b). A felicitous interpretation would require Susi (or some other agent) to have rigged the lottery in her favor.

- (1) a. *Susi investiert in Bitcoin, um die Gewinne spenden zu können.*  
Susi invests in Bitcoin UM the profits donate to be.able  
'Susi invests in Bitcoin to be able to donate the profits.'
- b. # *Susi hat im Lotto gewonnen, um ihre Schulden zurückzahlen zu können.*  
Susi has in.the lottery won UM her debt pay.back to  
be.able  
'Susi won the lottery to be able to pay back her debt.'

This changes if the whole clause is embedded under an attitude verb like *hope*, *want*, *wish*, or *demand* ('intentional' priority modalities in the sense of Portner (2007)), here illustrated with the example of *hope*.

- (2) a. *Peter<sub>1</sub> hofft, dass Susi<sub>2</sub> in Bitcoin investiert, um PRO<sub>2</sub> die Gewinne spenden zu können.*  
Peter hopes that Susi in Bitcoin invests UM PRO the profits  
donate to be.able  
'Peter hopes that Susi invests in Bitcoin to be able to donate the profits.'
- b. *Peter<sub>1</sub> hofft, dass Susi<sub>2</sub> im Lotto gewinnt, um PRO<sub>2</sub> ihre Schulden zurückzahlen zu können.*  
Peter hopes that Susi in.the lottery wins UM PRO her debt  
pay.back to be.able  
'Peter hopes that Susi wins the lottery so that she is able to pay back her debt.'

(2b) is acceptable, unlike the unembedded version (1b). But that is because it does not mean that Peter hopes for Susi to win because she wants to pay back her debt. Instead, the PC receives a consecutive reading: Peter hopes that Susi wins the lottery, so that she can pay back her debt, a reading that was not available for (1b), I label this reading the 'harmonic reading'. Turning to (2a), we see that this clause is actually ambiguous. Besides the consecutive reading attested for (2b), it also has the 'normal' PC reading that was already available in (1a), where Peter hopes for Susi to be motivated by the will to donate. The harmonic reading available for (2b) can also be witnessed under other 'priority attitudes', but not under, say, *believe*:

- (3) a. *Peter will, dass Susi gewinnt, um den Einzug ins Viertelfinale perfekt zu machen.*  
Peter wants that Susi wins UM the entry into.the quarter-finals  
perfect to make  
'Peter wants for Susi to win so that she moves into the quarter-finals.'

- b. *Peter verlangt, dass Susi den Raum verlässt, um ihn nicht zu stören.*  
Peter demands that Susi the room leaves UM him not to disturb  
‘Peter demands that Susi leave the room so that she doesn’t bother him.’
- c. # *Peter glaubt, dass Susi im Lotto gewinnt, um ihre Schulden zurückzahlen zu können.*  
Peter believes that Susi in.the lottery wins UM her debt  
pay.back to be.able  
intended: ‘Peter believes that Susi wins the lottery so that she is able to pay back her debt.’

Considering the control facts of these clauses, we can rule out that the RatC actually modifies the higher clause containing the attitude verb, with PRO being controlled contextually (... because **he** wants for **her** to pay back her debt). Recent syntactic research has shown that control of PRO in RatCs in English (Landau 2017; Green 2019) and German (Høyem 2018) is largely determined grammatically, i.e. RatCs are subject to Obligatory Control in the sense of Landau (2015). OC requires PRO to be in the c-command domain of its controller. When no possible controller is available in the relevant domain, Non-Obligatory Control (NOC) is possible. While there is no consensus on the question exactly when and why NOC is possible, there is a consensus that the controller in NOC has to be [+human]. But in the cases at hand the controller can be [-human] as well (4), requiring OC and therefore that the RatC be in the c-command domain of the relevant controller.

- (4) *Peter hofft, dass die Stadthalle<sub>1</sub> renoviert wird, um PRO<sub>1</sub> als Drehort für seinen neuen Film dienen zu können.*  
Peter hopes that the town hall renovated gets UM PRO as film.location  
für seinen neuen Film dienen zu können.  
for his new film serve to can  
‘Peter hopes that the town hall gets renovated so that it can serve as a location for his new film.’

To account for the harmonic reading, I want to propose an event-relative modal semantics (Hacquard 2006; Kratzer 2013) for German RatCs, similar to the idea in Nissenbaum (2005). While the modal base is always determined by the local event variable that the RatC combines with (= future alternatives of the world in which the event takes place), the ordering source is allowed to anaphorically depend on the attitude event. This combines the idea of an anaphoric ordering source for ‘anankastic’ relative clauses from Busch (2017) with the approach by Alonso-Ovalle and Menéndez-Benito (2018), who treat the event variable of Spanish modal indefinites as a free variable co-referential with either the local agentive event or a higher modal event.

- (5) a.  $\llbracket \text{um } p \rrbracket = \lambda e: \mathbf{e}_1 \text{ has intentional content. } \forall w' \in \text{BEST}_{g(\mathbf{e}_1)}(f_{hist}(e)) [p(w')]$   
b.  $\llbracket (2b) \rrbracket = \exists \mathbf{e} [\text{HOPE}_{w^0}(\mathbf{e}, \text{peter}) \ \& \ \forall w' \in \text{BOUL}(\mathbf{e}) [\exists \mathbf{e}' [\text{WIN}_{w'}(\text{susi}, \mathbf{e}') \ \& \ \forall w'' \in \text{BEST}_{g(\mathbf{e})}(f_{hist}(\mathbf{e}')) [\exists \mathbf{e}'' [\text{PAY-BACK}_{w''}(\text{susi}, \mathbf{e}'')]]]]]$   
c.  $\llbracket \#(1b) \rrbracket = \exists \mathbf{e} [\text{WIN}_{w^0}(\text{susi}, \mathbf{e}) \ \& \ \forall w' \in \text{BEST}_{g(\mathbf{e})}(f_{hist}(\mathbf{e})) [\exists \mathbf{e}' [\text{PAY-BACK}_{w'}(\text{susi}, \mathbf{e}')] ]]]]$

The RatC recruits the relevant intentions associated with an event. In the usual case those are the intentions involved in bringing about the (volitional) matrix event. The infelicitousness of (2b) is explained by the lack of intentionality in winning the lottery.

With the availability of an appropriate higher event, the sentence receives a sensible ‘consecutive’ interpretation (2b): Peter hopes for an event (Susi winning the lottery) that has as its (according to Peter) best outcome Susi’s paying back her debt. The causal inference that we get in cases like (1a) is related to the fact that we refer to the intentions that were involved in the bringing about of the event. It was brought about because of those intentions. The lack of such an inference for (2b) is explained by the absence of such a link. If the embedded event is volitional, as in (2a), a local construal of the ordering source is possible as well. Here, it makes sense to assume that Peter hopes that Susi invests in Bitcoin with the intention to make a donation, i.e. the ‘normal’ RatC interpretation (6).

$$(6) \quad \llbracket (2a) \rrbracket = \exists \mathbf{e} [\text{HOPE}_{w^0}(\mathbf{e}, \text{peter}) \ \& \ \forall w' \in \text{BOUL}(\mathbf{e}) [\exists \mathbf{e}' [\text{INVEST}_{w'}(\text{susi}, \mathbf{e}') \ \& \ \forall w'' \in \text{BEST}_{g(\mathbf{e}')}(\text{f}_{\text{hist}}(\mathbf{e}')) [\exists \mathbf{e}'' [\text{DONATE}_{w''}(\text{susi}, \mathbf{e}'')]]]]]]]$$

This account gives a simple explanation of the behaviour of RatCs embedded under ‘intentional’ attitude verbs drawing on existing literature on ‘harmonic’ modal interpretations. The argument for embedding rests on partly controversial control data. If further syntactic tests turn out to speak in favour of a modification of the matrix clause, a propositional operator approach (as opposed to an event modification approach) becomes viable again. I will point out some problems and possible directions.

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