Clausal Complementation as a Compatibility Relation*

KEN SAFIR
Rutgers University

1 Introduction

The standard view of the relation between a predicate and its clausal complement is that the predicate selects the kinds of clauses it can take as a complement and not the other way around. Fundamentally then, the standard view is that the selection relation between predicates and their clausal complements is asymmetric. I argue in this short essay that at least in some cases, clausal complementation is a compatibility relation, such that a predicate and its clausal complement (CC) can only combine if each partner in this relation satisfies requirements imposed by the other. One reason that the predicate-CC relation has been treated as selection is infinitival complementation in languages like English. English has a rich variety of both predicates that take CCs and clausal types, as partially illustrated in (1-3).

(1) a. Boris believes that Rhonda is responsible.
b. Boris believes Rhonda to be responsible.
c. *Boris believes to be responsible.
d. *Boris believes for Rhonda to be responsible.
e. *Boris believes that Rhonda be responsible.

(2) a. Hildy hopes that Rhonda is responsible.
b. *Hildy hopes Rhonda to be responsible.
c. Hildy hopes to be responsible.
d. Hildy hopes for Rhonda to be responsible.
e. *Hildy hopes that Rhonda be responsible.

* **I would like to acknowledge support from NSF BCS-1324404 and NSF-BCS-1829122 supporting the Afranaph Project https://www.africananaphora.rutgers.edu/ as well as the audiences at TripleA 6 and the Rutgers Clausal Complementation Workshop in 2018. Special thanks to Justine Sikuku for contributing data and analysis for Lubukusu. Thanks also to Roger Schwarzschild for encouraging TripleA to invite me and Simon Charlow for discussion of some of these ideas when they were forming and trying to mitigate some of the ones that were later formed. They are not to be blamed for my blunders.**

Proceedings of *TripleA 6 (2019)*
Ed. by Neil Banerjee and Verena Hehl

(3) a. *Roland requires that Rhonda is responsible.
b. Roland requires Rhonda to be responsible.
c. *Roland requires to be responsible.
d. ?Roland requires for Rhonda to be responsible.
e. Roland requires that Rhonda be responsible.

Each predicate in (1-3) takes a complement that the others do not. A popular way to treat at least the infinitives is to assume that the infinitival complement varies according to the predicate, rather than to assume that the predicate varies according to the choice of infinitival form. Although there have been occasional attempts to assign particular semantic contributions to particular types of infinitives, a matter to which we return in section 5, the standard assumption is that the form and semantic force of the infinitival clause is molded by the predicate that selects it. This assumption about the relation between clausal complements and predicates, typically treated as an empirical observation about the variation, is what I will call the Asymmetric Selection Thesis (AST).

I begin, in section 2, by considering the (e) examples of (1-3), which are instances of the English inherent subjunctive (EIS). Contrary to AST, I will argue that the distribution of EIS clauses receives a more satisfactory explanation on the basis of what CC-taking predicates and EIS clauses require of each other for the complementation relation to be established. This is part way to an existence argument that what I call the Compatibility Thesis (CT), that is, that the semantic interpretation of some predicate-CC relations must be treated as a result of saturation relations in both compositional partners. In section 3 I show that Lubukusu actual clauses complementation should be treated as a compatibility relation and not uniquely as an asymmetric selection relation, though in that case, compatibility is broader relation than that required by CT. In the section 4 I discuss some boundary conditions on how predicate-CC relations must be represented in CT based on the accounts of actual clauses and EIS that I propose. Finally, in a more speculative vein, I briefly assess in section 6 what is at stake for a much stronger claim, not defended here, that CT applies to all predicate-CC relations. In other words, I consider the possibility that clausal selection is never asymmetric.

2 English Inherent Subjunctive

[10 pt space]

The English inherent subjunctive (EIS) is always a complement clause, it has a distinctive morphology (lack of agreement) and it always has a deontic meaning, evoking an obligation that some event or state of affairs come about. However, EIS is more restrictive than *must* as in (4).

(4) a. $[[must]]^{w,f} = \lambda p_{st}.\forall w' \in \cap f(w)$: $[p(w') = 1]$
b. $\cap f_{\text{deontic}}(w) = \lambda w'.w'$ is compatible with the laws in w

(5) a. John requires that Lyla leave
b. *Lyla leave./*That Lyla leave.
c. Lyla must leave.
d. *Warren will decide/determine/insure/decree that Lyla leave.
e. Warren will decide/determine/insure/decree that Lyla must leave.

At least two semantic restrictions hold of EIS that do not hold of *must*.

The first of these is the ***assistance requirement.*** Verbs that take EIS complements imply that what should come about is not in the power of the matrix clause subject, as, for example, is the case for *advise, demand, desire, insist, ask, beg, petition, prefer, propose, recommend, request, suggest,* and *urge*. However, if the matrix subject is the sufficient source to bring about the event or state of affairs, as in (5d,e), then EIS is unacceptable and indicative is acceptable. Compare the complementation of *require* as in (5a) and (3a). The same generalization holds for adjectives that take EIS, such as *adamant* and *insistent*, as well as those that take an expletive subject including *advisable, all right, appropriate, best, better, compulsory, crucial, desirable, essential, expedient, fitting, imperative, important, legitimate, mandatory, necessary, optional, okay, permissible, preferable, right, satisfactory, sufficient, urgent,* and *vital.* One way of describing the assistance requirement is to say that the agent of purpose needs an 'expeditor' who can bring the desired goal about. Notice also that the expeditor argument can sometimes be overt, e.g., *I demand of Bill that he be there*. When the expeditor is overt, however the presence of an overt pronoun bound by the *of*-object is preferred and the bindee must at least be an implicit argument in the complement, e.g., *I demand of my staff that all meals be served on time.*[1]

Another restriction on EIS interpretation is the ***agent of purpose requirement.***

(6) a. It is necessary that water boil at 100 degrees centigrade.
b. It is necessarily the case that water boils at 100 degrees centigrade.

It is difficult to get a reading of (6a) along the lines that there could be no other outcome on account of natural law (unless the whole sentence is the consequent of a conditional), whereas that reading is readily available for (6b). These contrast with adjectives like *likely, possible, obvious* and so forth that do not evoke a party interested in the outcome.

(7) *It is likely/possible/obvious that he be there.

For *likely*, there is no obligation involved, that is, there is no purpose that must be served by *that he be there*. Compare the other EIS compatible adjectives above.

These requirements induce a systematic shift in meaning when the same verb root takes both indicative and EIS complements, as illustrated by the contrast in (8).

(8) a. The lawyers insisted that Lyla must leave.
b. The lawyers have insisted that Lyla leave.

The difference is subtle, but (8a) can be taken to be advice, as in a situation where Lyla is involved in a scandal and the lawyers in the office of risk management are making a recommendation to the CEO, but (8b) is not understood as advice; It is a demand. Whenever a verb an EIS-taking verb can also describe a non-obligating conveying-information event, the choice of complement distinguishes the two readings:

(9) a. Addison advises/(strongly) suggests/insists/is adamant that Theo be there.
b. Addison advises/suggests/insists/is adamant that Theo might be there.

[1] The assistance requirement is related to the inference that the prejacent is irrealis. Compare *We require that the candidates be naturally blonde* vs. #*We require that Blake be naturally blonde*, where the first allows for a situation in which candidates will be selected based in this inherent property.

The meaning shift wrought by EIS can coerce an agent of purpose reading and/or the assistance requirement reading (see also Kratzer, 2016 for discussion of coercion in this sense). For example, *want, prefer* and *desire* are compatible with agent of purpose readings, though when these verbs take a DP complement they do not imply the need for assistance to bring about the desired state or possession of the object of desire. Infinitival complements do not require assistance either. When these verbs take an EIS complement (less easily for *want* for most American English speakers), the assistance requirement emerges. By contrast, *demand* implies all the matching requirements for EIS, i.e., Kees wants tulips that he does not have and that someone else can provide.

(10) a. Kees wants/prefers/desires tulips.
b. Kees wants/prefers/desires to buy tulips.
c. Kees wants/prefers/desires that there be tulips.
d. Kees demanded tulips.
e. Kees demanded that there be tulips.

Suppose for the purpose of discussion that we assume a version of Hintikka's operator approach to the semantics of propositional attitude verbs (PAVs) (setting aside presuppositions associated with *believe*).

(11) [[believe]] = $\lambda p_{st}.\lambda x_e.\lambda w_s.\forall w'[w' \in Dox_{x,w} \rightarrow p(w')=1]$

In this formulation, in all the belief (doxastic) worlds accessible the propositional attitude holder (PAH), the prejacent is true in those worlds. If we try to characterize the meaning of the verb *prefer* by the same formula, then the doxastic worlds would just be replaced by bouletic ones (desire worlds), but this would fall short of what the meaning of *prefer* requires when it takes an EIS complement. We need to satisfy the conditions in (12).

(12) **English Inherent Subjunctive**
The worlds of evaluation for the EIS prejacent are (a) worlds where the truth of the prejacent serves a purpose p and (b) in every $w \in W$, where W is the set of worlds accessible to the agent of p, the agent of p in w must be incapable of insuring without assistance that the prejacent is true in w.

If the worlds that are accessible to the PAH for the predicate P satisfy the restrictions (12a,b) imposed by EIS, then P can take EIS as a complement. Notice that the predicate (not, apparently, the conversational background) must provide an explicit or implicit PAH who is the agent of purpose and does not control the outcome (e.g. that the prejacent is true in all accessible worlds) without assistance.

(13) EIS has to be a subordinate clause because input from predicate P determines what worlds are accessible to the agent of purpose.

This is the reason that EIS is never a matrix clause – its requirements must match those of the predicate it is a complement of. The agent of purpose is not always an explicit argument for the predicate and for main clauses without an overt predicate-specified agent of purpose, an implicit

agent of purpose (implied by the predicate, if not overt in a PP, usually *to* or *for*) is sometimes taken to be the speaker, as in (6a). This suggests that the agent of purpose is a variable in the semantics of EIS that must be bound locally by the agent of purpose of the attitude predicate, implicit or explicit.

From what has been described so far, one could almost argue, using the logic mentioned earlier about the variation of infinitives, that EIS asymmetrically determines the syntactic predicates it appears with. Some EIS-compatible predicates have overt subjects and potential direct objects (*ask*), some have subjects and potential prepositional objects (*suggest to someone, demand of someone*) and some have no overt (prepositional) object (*prefer*). Some adjectives have subjects that are the interested parties (*adamant*) and others have expletive subjects (*crucial, necessary*) with potential PPs containing agent of purpose (*important to me*), and so forth. Since the syntactic predicates vary and EIS is constant, EIS appears to semantically select the predicates it co-occurs with. However, if the selection were thoroughly asymmetric, then we might expect EIS to coerce more predicates than it does. EIS does not coerce the verbs in (14).

(14) Seymour said/believed/hoped of Bill that he *(should) leave.

Thus the need for parameters of compatibility, whatever they are eventually determined to be.

If the existence argument for CT based on my account of EIS is correct, then certain more general conclusions can be drawn.

(15) a. There are clause types with a rigid semantics that delimits what sorts of predicates can co-occur with them.
b. The semantic contribution of a predicate and a clause type can together restrict the worlds in which the prejacent is true.
c. Choice of clausal complement type can result in a shift of the meaning of classes of predicates in predictable ways.

However, this argument is not quite "knock-down". It could always be said, somewhat tautologically, that all the predicates that meet the requirements of EIS are the ones that select them. Then it is just a matter of deciding that certain predicates can be stipulated to have more than one meaning, and under the appropriate meaning, EIS is selected. (i.e., there is no 'shift'). Thus could AST be maintained, as long as it is conceded that EIS is semantically compatible with the stipulated properties of the predicate. This would merely disguise what appears instead to be a compatibility relation *tout court*.

3 Lubukusu Actual Clauses

The inventory of clause types in Lubukusu is partially similar to English in that it has indicative, infinitive and subjunctive clause types, though the Lubukusu subjunctive does not have to be deontic.[2] However, Lubukusu also has a morphologically specific clause type that, like EIS, imposes particular interpretive limits on any predicate it is the complement of.

[2] The crosslinguistic variation in the semantics of morphologically specific subjunctive clause types will not be addressed here.

Actual clauses, as described by Safir, Baker and Sikuku (2012, to appear)[3] are complement clauses that have an inherent ***actuality entailment*** (see Bhatt, 1999, and Hacquard, 2006). A typical example of an actual clause is (16a).[4]

(16) a. Wekesa á-a-bólel-a Wafula a-a-cha
Wekesa SM.c1-PST-tell-fv Wafula SM.c1-ACT-go-fv
'Waekesa told Wafula to go' (and Wafula did go)
b. *Wekesa á-a-bólel-a Wafula a-a-cha ne kakhali Wafula sé
Wekesa SM.c1-PST-tell-fv Wafula SM.c1-ACT-go-fv and though Wafula NEG
á-a-ch-á tá
SM.c1-PST-go-fv not
'Wekesa told Wafula to go (and Wafula did go), but Wafula did not go.'[5]

As the English continuation suggests, actual clause interpretation requires that what x wants has come to pass according to the utterer of the sentence (UTT). If the proposition denoted by the actual clause (the actual clause proposition) is internally negated, the UTT is self-contradictory, so (16b) is unacceptable.

The morphology that is distinctive for actual clauses is a prefix which is realized in the same position where tense normally appears in Lubukusu verb morphology, that is, right after the subject marker (SM), as illustrated in (17). The paradigm of affixes that can occur in that morphological slot (and are in complementary distribution) are listed in (18) where SMs for classes 1 and 9 are illustrated.

(17) Template for verbs: SM-TNS-OM-ROOT-Extensions-(SBJV)/fv.

(18) Non-future tense and modality expression on Lubukusu verbs

	SM.c1-TNS-eat	SM.c9-TNS-eat	
Simple past:	álya	yálya	SM-a-Verb-a
Today past:	àliile,	eliile	SM-Verb-il-e
Recent past:	áalíile,	yálíile	SM-a-Verb-il-e
Perfective:	áàlya,	yáàlyà	SM-à-Verb-a
Actual:	**ààlyà,**	**yààlyà**	**SM-a-Verb-a**
Subjunctive:	ályé,	élyé	SM-Verb-e
Infinitive:	khulya	khulya	c15-Verb-a

What distinguishes actual morphology from the other pasts and perfect is that the vowel [aa] is both long and low. Actual clauses have the same subject agreement as indicatives do. Recently, morphologically specific complement clauses that induce actuality entailment have been reported for Swahili, Ekegusi (Western Bantu), and Keiyo (Southern Nilotic) by Sikuku, Wanyonyi and Safir (2019), where the same pattern reported in Safir et. al (to appear) and summarized in this essay, is attested.

[3] This essay was originally published on the Afranaph Project website after the volume in which it was supposed to appear was canceled. The order of authors was amended for the published version.

[4] All of the Lubukusu data in this essay were provided by Justine Sikuku over several years and all of this data and much more is available from the Afranaph Project. See Sikuku (2020).

[5] The star for these examples indicates unacceptability, but does not distinguish between syntactic and semantic ill-formedness. Here the illformedness is semantic and/or pragmatic, according to the analysis in the text.

In addition to the actuality entailment that they impose, actual clauses also have an ***aspectual existence entailment.*** The proposition that the actual clause complement denotes is not only true in the world of UTT; the event must also be complete, in progress, or report a state that is, in effect, or completed at the time of utterance. It also must be a positive event. An actual clause cannot be negated. For example, (16b) cannot mean that "Wekesa told Wafula to go and it is true that he did not go". The same is true for (19).

(19) *Wekesa ásubila ali Wafula se aalya eng'eni tá
Wekesa á-a-subil-a a-li Wafula se a-a-ly-a
Wekesa SM.c1-PRS-believe-fv AGR.c1-that Wafula NEG SM.c1-ACT-eat-fv
e-ng'eni tá
c3-fish NEG
'Wekesa believes that Wafula did not eat a fish (and he did not).'

Similarly, putting the matrix verb in a future tense is also incompatible with an actual clause complement, since in that case the event cannot have taken place at the moment of UTT's utterance. As the contrasting (b) sentences show, *khu*-infinitives (about which, more later), are all acceptable when the same predicates bear a future tense.

(20) a. *Wafula á-khá-eny/khak/pang-e a-a-bey-a Maria
Wafula SM.c1-FUT2-want/try/plan-fv SM.c1-ACT-marry-fv Mary
'Wafula will want ACT-marry Mary.'
b. Wafula á-khá-eny/khak/pang-e khu-bey-a Maria
Wafula SM.c1-FUT2-want/try/plan-fv c15-marry Mary
'Wafula will want/try/plan to marry Mary.'

Thus the two assumptions that have been made about what actual clauses entail for the propositions they denote (actual clause propositions) are as follows, roughly stated.

(21) a. The actual clause proposition is must be true in the world of UTT.
b. The event or state of affairs denoted by the actual clause proposition must be complete or in progress at the moment of speech by UTT.

Actuality entailment has been reported in some languages where perfectivity interacts with ability modals, as discussed by Hacquard (2006) for French (see also Bhatt, 1999, for more examples), and for Kartunnen's (1971) implicative verbs like that in (23).

(22) a. Pour aller au zoo, Jane pouvait prendre le train.
To go to the zoo, Jane can-past-IMPV take the train
b. Pour aller au zoo, Jane a pu prendre le train.
To go to the zoo, Jane can-past-PFV take the train
(23) Morris managed to go to the store.

As Hacquard (2006:13) puts it, "The truth conditions of [(22a)] are equivalent to its English translation: there is a world among all accessible worlds in which Jane goes to the zoo where she took the train to get there. This is compatible with a scenario in which Jane did not take the train

in reality (nor went to the zoo, for that matter). Things are different with [(22b)]: for the sentence to be true, Jane must have taken the train *in the actual world*. Any continuation stating that she, in fact, did not take the train, will come out as a contradiction." Similarly, if *Morris* managed to go to the store, then whatever difficulty there was in going to the store, *Morris* did go to the store.

Further particulars of the French construction or implicative verbs that induce an actuality entailment do not match the Lubukusu actual clauses, however. The French effect arises from an interaction between specific verbs and past perfective, while in Lubukusu, by contrast, actual clauses inherently have an actuality entailment no matter what predicates they are complements of. Moreover, unlike French, the morphology of actual clauses is the exponent that induces the interpretation, not any other combination of affixes or aspects. Finally, the French effect can hold in matrix clauses, but Lubukusu actual clauses cannot be matrix clauses (reminiscent of English EIS).

(23) *Wafula aalya kamatoore
Wafula a-a-li-a ka-ma-toore
Wafula SM.c1-ACT-eat-fv c6-c6-banana
'Wafula ate the bananas.'

Many predicates cannot take an actual clause complement. For example, the predicates in (24) are among those that permit actual clause complements and the predicates in (25) are among those that do not permit them.

(24) Wekesa á-eny-a/á-a-pang-a/á-a-khak-a a-a-ch-a engo
Wekesa SM.c1.PST-want/plan/try SM.c1-ACT-go-fv home
'Wekesa wanted/planned/tried to go home, and he did.'

(25) a. *Maria á-isindukh-a bali a-a-khil-a ku-mu-inyawe
Mary SM.c1.PST-surprise-fv that SM.c1-ACT-win c3-c3-game
'Mary was surprised that she ACT-won the game'

b. *Wekesa á-a-khílw-a/á-a-lób-a a-a-ch-a engo
Wekesa SM.c1-PST-fail-fv/refuse SM.c1-ACT-go-fv home
'Wekesa failed/refused to go home.'

The set of verbs that take actual clauses and as well as the class of verbs that never permit them turn out to be systematically distinguished. At minimum, the predicate must provide an accessibility relation between a PAH and a set of possible worlds including one where proposition P is true. The actual asserts that one of the possible worlds accessible to the PAH is the world of UTT and in that world P is true.

Setting aside, for the moment, the aspectual requirement, it appears that the distribution of actual clauses is limited at least by the way they function in discourse. As the translations indicate, UTT is committed to the truth of the actual clause proposition, but UTT does not presuppose that the addressee takes the actual clause to be true. In this respect, actual clauses have the force of assertions by UTT, even though they are embedded as propositional attitude complements. The incompatibility of actual clauses with factive predicates is predicted if actual clauses are embedded assertions. Shared presuppositions do not have to be asserted because they are already in the common ground.

(26) a. *Maria á-isony-a bali a-a-khil-a ku-mu-inyawe
Mary SM.c1.PST-regret-fv that SM.c1-ACT-win c3-c3-game
'Mary regretted that she ACT-won the game.'
b. *Maria á-a-sangal-a bali a-a-khil-a ku-mu-inyawe
Mary SM.c1.PST-happy-fv that SM.c1-ACT-win c3-c3-game
'Mary was happy that she ACT-won the game.'

We know *-isoni-, -sangal-,* and *isindukh* are factive because the presupposition of truth for the CC proposition survives negation of the matrix predicate, as in (23b) where the CC is an indicative clause.

(27) a. Alice á-isóny-a bali Wekesa á-a-béy-a Maria
Alice SM.c1-regret-fv that Wekesa SM.c1-PST-marry-fv Maria
'Alice does not regret that Wekesa married Mary.'
b. Alice sé á-isóny-a bali Wekesa á-a-béy-a Maria tá
Alice NEG SM.c1-regret-fv that Wekesa SM.c1-PST-marry-fv Maria not
'Alice does not regret that Wekesa married Mary.'

For both (27a) and (27b) the speaker presupposes both that Wekesa married Mary, that the addressee shares this presupposition, and that the reported experiencer takes it to be true.[6] Thus factive complements, unlike actual clauses, are incompatible with assertions. Put another way, actual clause complements can only be compatible with non-factive predicates, such as *bol-* 'tell', *subil-* 'believe', *khalak* 'decide', *eny-* 'want', *khak-* 'try' , *reb-* 'request', *ulil-* 'hear', and *pang-* 'plan', where the actual clause assertion can contribute to the common ground. The actual clause asserts that a proposition that is treated as possibly true (by the predicate) is asserted to be, in fact, true.[7]

Consider now the contribution of the predicate that takes an actual clause. It is always the case that the actual world in which the actual clause proposition is true must be a world made accessible to a PAH by virtue of the predicate it is a complement of. Those accessible worlds must be compatible with the two rigid semantic restrictions imposed by actual clauses, as in (28a,b).

(28) a. **The actuality entailment restriction:** One of the worlds accessible to the PAH is the actual world.
b. **The aspectual existence restriction:** The actual clause proposition must report an event that is complete at the time of utterance or that must be a state of affairs that holds at the time of utterance.

Thus any predicate that is incompatible with the possibility of its complement proposition being realized at the time of utterance will not permit an actual clause. Verbs like *–khilw-*, *-lob-* and *–khingilil-*, meaning 'fail', 'refuse', and 'prevent', respectively, which imply that the complement

[6] The experiencer's belief is not crucial for factivity or in what follows, e.g., *Walter was unaware that Gilda was guilty*. Similarly, when there is no explicit experiencer is missing, e.g. *It is well-known that Gilda is guilty*.
[7] Moreover, if matrix indicatives are unmarked assertions, perhaps that is why actual clauses, are not possible matrix clauses. It could be that actual clause morphology is redundant, and so cannot be used where the unmarked strategy is available.

proposition is not a realized event or state, do not permit actual clause complements, though they are fully compatible with infinitives.

(29) a. Wekesa á-a-khílw-a/á-a-lób-a khu-ch-a engo
Wekesa SM.c1-PST-fail-fv/refuse c15-go-fv home
'Wekesa failed/refused to go home.'
b. *Wekesa á-a-khílw-a/á-a-lób-a a-a-ch-a engo
Wekesa SM.c1-PST-fail-fv/refuse SM.c1-ACT-go-fv home
'Wekesa failed/refused to go home.'

(30) a. Wekesa á-a-khíngilil-a Maria khu-ch-a engo
Wekesa SM.c1-PST-prevent-fv Mary c15-go-fv home
'Wekesa prevented Mary from going home.'
b. *Wekesa á-a-khíngilil-a Maria a-a-ch-a engo
Wekesa SM.c1-PST-prevent-fv Mary SM.c1-ACT-go-fv home
'Wekesa prevented from Mary from going home, and she did (not)'

Thus, by virtue of what they mean, actual clauses only compatible with predicates that do not preclude the possibility that the events or states of affairs denoted by the prejacent could have taken place.

Finally, the rigid meaning of actual clauses can cause a predictable shift in the meaning of certain malleable matrix predicates. Consider the predicate *–nyál-* in Lubukusu.

(31) a. Wekesa á-a-nyál-a khu-khw-ombakh-a enju, ne kakhali
Wekesa SM.c1-PST-able-fv c15-c15-build-fv house and though
se á-a-nyóol-a bu-bw-aangu tá
NEG SM.c1-PST-find-fv c14-c14-chance not
'Wekesa was able to build the house, but he never got the chance.'
b. Wekesa á-a-nyál-a o-ombakh-a enju,
Wekesa SM.c1-PST-manage-fv SM.c1.ACT-build-fv house
*ne kakhali se á-a-nyóol-a bu-bw-aangu tá
and though NEG SM.c1-PST-find-fv c14-c14-chance not
'Wekesa managed/succeeded to build the house, *but he never got the chance.'

While the infinitive complement for *–nyál-* shows the same ambiguity we would expect for the English predicate *be able*. When *–nyál-* takes an actual clause complement its meaning shifts in a completely predictable way; If Wekesa's is able to bring about the building of the house and according to UTT, Wekesa has built the house, then Wekesa has succeeded. The verb *–nyál-* becomes implicative by virtue of its actual clause complement. The semantic contribution of *–nyál-* does not change.

However, the contribution of the matrix predicate is not enough to meet the restrictions imposed by actual clauses. Recall that actual clauses are not possible complements when future tense on the matrix predicate implies that the complement clause could not describe a realized event at the time of utterance. The aspectual existence restriction cannot shift the matrix tense because the future tense is not a property of the predicate.

32)*Wekesa	á-khá-nyál-a	o-ombakh-e	enju
Wekesa	SM.c1-FUT2-manage-fv	SM.c1.ACT-build-fv	house

This is evidence that selection by the matrix predicate or by the actual clause even together are not enough to determine the conditions in which the actual clause complementation is possible. Here the rigid meaning of the complement clause dictates the environment in which it is acceptable, which is incompatible with AST. Nonetheless, our account of predicate-CC relations still involves an intersection between the worlds accessible to PAH by the predicate and the world of UTT required as the world of evaluation by the actual clause. This argument for CT is unaffected.

4 Representing compatibility – speculations and research directions

I am not prepared to propose a combinatory semantic operation to get the right result for predicate-CC compatibility.[8] For example, it will be necessary to insure that that the universal force inherent to the EIS modal is uniquely compatible with predicates that introduce both an agent of purpose and an expediter. I am trained as a syntactician, so it is my nature to suggest a road to semantic interpretation is paved with a syntactic analysis. This is the path I will take, though my syntactic analysis is not more than a sketch for a future project, and a demonstration that there are no challenges peculiar to the CT account for the syntactic representations that will be needed.

If CT provides the right approach for EIS and actual clauses, then the two terms in the predicate-complement clause relation must somehow fit into each other, rather than just one filling a hole in the other, as in imposed by AST. One possibility, suggested earlier, is that the semantic structure of EIS contains a variable(s) corresponding to the entity or entities that can assure that the prejacent turns out to be true (the expediter), as well, perhaps as the agent of purpose (AOP). The predicate that combines successfully with EIS must facilitate binding of those variables which are excluded when they are not syntactically bound. Only predicates that have, or can be coerced to have, the right sort of implicit or explicit binders in their argument structure will be candidates to take EIS clauses.

In the case of actual clauses, indexicality to UTT (which enables an assertion) and the aspectual existence restriction suggests binding of the actual clause event to the context of UTT. Proposals of this form do not change assumptions about the complementation relation as sisterhood between predicate and complement clause. Once again, something in the clause must be bound, as in obligatory control, by an appropriate antecedent, but the bound argument does not require a different head-CC relation syntactically. The operator-binding approach comes more naturally to syntacticians, especially in light of recent attempts using it to account for control (e.g., Landau, 2015, a.o.), logophoricity (Anand, 2006, a.o, see Charnavel, 2019b, for a recent account with references), indexicality (e.g., Schlenker, 1999, Baker, 2008, Kratzer, 2009, a.o.) and perhaps other structures involving special roles (e.g. Charnavel, 2019a, for causal clauses).

[8] Simon Charlow, personal communication, suggests that the phenomena discussed here might be modeled in terms of presupposition projection or the avoidance of incoherence or both.

For example, consider the AOP and expediter roles of EIS. Suppose we add these roles to the left periphery of EIS (above or below the complementizer, but above here to be concise) as anaphoric pro (anapro) specifiers to heads that define their roles (EXPD=expediter head)).

(33) [$_{AOPP}$ anapro [AOP [$_{EXPDP}$ anapro [EXPD [$_{CP}$ that [DP [T.SBJV [$_{vP}$ …]]]]]]]]

Then these anaphoric specifiers, falling under whatever determines that anaphors are local, will have to be bound within the next phase, e.g., the vP containing that EIS-inducing predicate. The EIS clause will only be well-formed if the matrix predicate provides the right local binders. The structure in (33) is consistent with the observation that the antecedent of the AOP anaphor is frequently the matrix external argument, which, if it is vP-internal, will be within the phase containing the AOP anaphor in (33) (for adjectives like *necessary*, the AOP is independent of external argument). Thus the AOP anaphor will be locally bound. When the AOP antecedent is implicit, as in the case of adjectives like *necessary, important,* and *advisable*, the AOP will have to be introduced into the argument structure, or on top of the argument structure of the matrix predicate. We have seen that AOP can be introduced by PPs, much the way that benefactives are introduced to argument structures. Following the line of research introduced by Pylkkänen (2008), we might also introduce an AOP head into the vP spine, and originate AOP arguments lower than voice, but perhaps higher than other arguments. By the same reasoning, we might introduce an EXPD head low on the verbal spine, too low to get a structural Case perhaps. For the purposes of presentation, the structure of the verbal spine for a verb that is compatible with AOP and EXPD would look something like (34).

(34) [$_{VoiceP}$ EA [Voice [$_{AOPP}$ OP [AOP [$_{vP}$ [v [$_{EXPDP}$ OP [EXPD [Root X]]]]]]]]]

The structure in (33) would substitute for X in (34), so everything in X=(33) is c-commanded by the operators in (34), including the appropriate anaphors, thereby facilitating binding.

There is some independent evidence that predicates that take EIS do indeed have operators in their argument structure. Consider the contrast in (35).

(35) a. It is necessary that salt water freeze only at less than zero to prove your thesis.
b. #It is possible that salt water freezes only at less than zero to prove your thesis.

Here the nonsensical reading, where salt water intentionally freezes, is available to both sentences, but only *necessary* allows a matrix interpretation, which supports the existence of an an implicit AOP argument in the argument structure of *necessary*. For EIS-taking predicates that are transactional, an *in return*-clause can be licensed by a sentence internal transaction where the beneficiary is implied by the verb.

(36) a. *John* demanded money from Mary in return for *his* future support.
b. *John* required (of Bill) that *his* next car be red in return for *his* future support
c. ??*John* decided (*of Bill) that *his* next car must be red in return for *his* future support.

Where *his* of *his future support* is *his* bound by the subject, the matrix predicate must determine the transaction, but there is no sentence-internal transaction for *decide*. The optional *of DP*

argument of (36b) can thus implicit for verbs like *require*, but not for verbs like *decide*. This supports the existence of the expediter role in the argument structure of these verbs.

A number of problems would have to be solved to defend this structures in (33-34)[9] or ones like them with the same basic properties. Those basic properties are that variables introduced in the EIS have to be bound and arguments (or operators, if that is a better way to describe them) introduced in the verb spine of the matrix predicate must be compatible with the meaning of the verb root. The variables in EIS are introduced as anaphors, not pronouns, since they must be bound in the next clause up. That semantics has to incorporate the AOP and EXPD operators on the verb spine into the restrictions on the worlds where the prejacent is true and otherwise delimit the accessibility relation that the force and flavor of the EIS modal will restrict, which is a subtle task (see below). Given an approach like this, the syntax is still (a) clausal complementation formed by sisterhood with the root and (b) variable-binding into the complement, both of them representations familiar and, in principle, easy to construct in syntax. Thus it is possible to formulate an account of clausal complementation based on CT rather than AST without appeal to structural relations not also found in AST.

The issues related to actual clauses differ insofar as the antecedency is indexical and skips the clause of the predicate that takes the actual clause as a complement – it is not immediately local. Although I do not have space to demonstrate it here, the indexicality of actual clauses is not unbounded – the "actual world" corresponds to the first source of speech above the actual clause-taking predicate. That is, in the Lubukusu equivalent of "Wafula says that Wekesa wanted that Helen ACT-leave the city", then "Helen left the city" must be Wafula's assertion, not UTT for the whole sentence.[10] Likewise, the aspectual existence restriction then appears to relate to the world of the utterer of the source of speech (Wafula in this case). This may mean adding an operator into the verb spine of verbs of speech that includes the contextual information we assume for UTT, and this brings many complications and predictions for Lubukusu (e.g., about the interpretation of 1st person pronouns) which I have not yet studied. If this is so, then a bundle of contextual variables must be bound by the most local source of speech. Theories of indexical shift exist in the literature (e.g., Schlenker 1999, Anand, 2006, Kratzer 2009) that can be marshalled for this purpose, but customizing them to the issues raised by actual clauses is also beyond the scope of this essay. Once again, the key point is that there is nothing new in representing the relations that must be expressed that require a role for asymmetric selection rather than CT.

One semantic account that argues explicitly for what I am calling a symmetric approach to selection is Özyildiz (2017). Özyildiz explores certain PAVs in Turkish that are interpreted as factive if they have one sort of complement and non-factive if they have another. He rejects a homophony account (same verb, different selections) as non-explanatory, arguing instead that the complements in question (clausally interpreted nominals) will give rise to factive interpretation just in case the PAV has the right semantics and the CC happens to include a covert definite description in its semantics (his account also relies on variable-binding into the complement). Thus he explicitly argues that factivity arises from the semantic composition of

[9] For example, is the AOP argument in Spec AOPP bound by the EA or is the EA introduced lower and raised up into it when it is not an overt PP? Would the AOP and EXPD operators integrate properly into the account of structural Case that will be necessary? Is there reason to introduce AOPP and EXPDP at different points in the spine than I suggest in (33)? These matters are beyond the scope of this essay, though I expect to explore them in future work.

[10] I hope to address this issue in future work.

verbs and their complements (especially for the factive interpretations), rather than from a unique property of either one of them. While I do not necessarily endorse the technical features of the semantic analysis he proposes, his account of how accessibility relations (the set of doxastic alternatives) are established in the same way by the PAV for both factive and non-factive interpretations achieves a result that any account of EIS and actual clauses should emulate.

It is possible to take a different tack on predicate-CC relations that does not preserve the standard syntactic sisterhood account of the predicate-CC relation, but might also be seen as a CT approach. Kratzer (2016) would treat the predicate-CC relation as either a restriction on a nominal complement selected by the predicate (using a combinatory rule for restriction distinct from FA along the lines of Chung and Ladusaw, 2004) or a restriction on a "say" projection (see Grimshaw, 2015). In this account of factives, for example (see also Moulton, 2009), the CC is actually a restriction on a nominal (e.g., for clausal complements of epistemic verbs). Kratzer treats the modality of propositional attitudes as residing in the complement clause, not the PAV, though the restricted nominal presumably matches the requirements that the predicate imposes on any nominal (based, e.g., on the inference that if John believes that P, then John believes something).[11] It is in this sense that it is an CT approach. In the case of EIS, it is natural to assume that the modal force and flavour of the propositional attitude context is contributed by the complement clause, as long as some relation insures that EIS is paired with predicates that license the right inferences and that provide a set of accessible worlds. In short, this way of addressing the semantic questions by rethinking the syntax is another way of developing a CT account.

However, EIS cannot be uniformly analyzed as an adjunct to a nominal object (contra specific proposals along the lines of Moulton, 2009, for example).

(37) a. Ira was insistent/adamant that Mary be there.
b. That Beatrice be there, *which* Ira has insisted *t*, will not be necessary.
c. *That Beatrice be there, *which* Ira is/was insistent *t*, will not be necessary.
d. That John be late, *which* [*t* is necessary]/**which* [it is necessary *t*]

EIS is present in contexts where no nominal is possible (nor could the trace of a CP somehow count as a nominal or as type e, assuming, as in Moulton, 2015: 319, that these are CP proforms). Moulton (2015:307) mentions *fear* and *afraid* as taking clausal complements that can be replaced by *so* (in his story, these CCs are not referential, unlike factives, which allow *it*), but he does not really discuss clausal complements to adjectives, which, in English, do not take a nominal complement at all. This syntactic objection extends to all adjectives that take indicatives, e.g., *hopeful, worried, desirous, happy, etc* whether they are factive or not. If the traces in (37b,c) could be of type e, then (37c,d) should be acceptable. In the absence of an account of how adjectives take clausal complements,[12] these considerations argue against analyzing EIS complementation as a syntactic nominal with an adjunct propositional restriction.

[11] Matthews (2018) calls the position that *believing that P* is parallel to *believing something* "relationist" insofar as the *that*-clause is purported to saturate the object argument like a noun. His position, however, is actually more like Kratzer's in that he argues the that clause is in apposition to a nominal shell that has incorporated into a light verb, e.g. [[have-belief$_i$] [[t$_i$] [that…]]] where *have-belief* spells out as *believe.* On this account, the PAH is not in a direct relation to a complement CP by comparison with a complement DP.

[12] See also Kastner (2015: 159), who explicitly sets aside adjectives in his account of the relation between nominals and factive complements. Similarly, Kratzer (2016) does not discuss them.

That some CCs do not correspond to nominals does not necessarily preclude the possibility that CCs like EIS are restrictions on verbs or vPs in the manner of verbs of speech, possibility raised by Kratzer (2016). Notice, however, that though predicates that take EIS can describe requests, the expediter argument is not always an addressee. For adjectives like *better* and *important*, the expediter argument is thoroughly implicit and not the object of a request or a speech act addressee, nor is it for *desire* or *prefer*. Perhaps these issues can be addressed effectively by a more nuanced approach to what counts as a speech report or act, but I leave the matter here, as it is a matter of execution that does not compromise CT.

5 How general is CT?

As discussed in the introduction, one of the reasons that AST is proposed to account for clausal complementation is that the variety of infinitival complements that are possible in English seems to be determined by the semantic class of the CC-taking predicate. This requires assuming that all infinitives have intrinsically the same potential for semantic content, largely filled in or licensed by the verbs that select them.

From the CT perspective, a rather different tack suggests itself, namely, that infinitives are a morphological class, but do not necessarily represent the same semantic class. If each of the possible infinitival complements listed in (1-3) (a subset of those possible in English) imposes its own requirements on the semantics of the predicate it is a complement of, then the same strategy used for EIS in this essay could be more general. One hypothesis along these lines is that infinitives that project more syntactic structure have more semantic layers than infinitives with less syntactic structure. On this account, the infinitive can only project as much structure as is compatible with the semantics of the CC-taking predicate. In particular, Wurmbrand (2014) distinguishes infinitives that have only a modal *woll* layer (yielding future oriented readings like *plan*) from those that have a tense layer on top of the modal (yielding tense simultaneous to the matrix, as with *seem*). As far as CT is concerned, the distinction between infinitive types does not have to be one of size as long as different infinitive CCs have inherent semantics that dictate different compatibility relations with the predicates that take them as complements.[13]

Finally, the question arises as to what determines that one sort of verb can be coerced while another cannot. A verb like *say* cannot be coerced to take EIS as a complement while *insist* can. However, *say* when it takes an indicative complement is reportative, yet the same verb is directive when it takes an infinitive.

(38) a. Simon says that it is a step forward.
b. Simon says to step forward.

From the CT perspective, we might say that there is a class of verbs of saying that are underspecified for reportative or directive speech acts and that the directive or reportative meaning emerges as the CC and the predicate compose. If the CC complement of *say* is an inherently directive infinitive, then *say* composes to form a directive meaning, whereas with an indicative it can only compose to produce a report. Many verbs of saying work this way, particularly if they allow addressee arguments, including DP objects or *to*-DP or *at*-DP

[13] See also de Cuba (2017) who argues that complement clauses that he calls "referential" are structurally smaller than non-referential clauses.

arguments (*tell, mutter, yell, shout, warn*, etc.). One could imagine an account along the lines of section 4. It could be that part of what the hypothesized directive infinitive requires is an addressee argument in the CC-taking predicate that binds a directee variable in the structure of the infinitive. If something like this is on the right track, then CT has a broad and fundamental role to play in all clausal complementation.[14]

6 Conclusion

My goal in this essay has been to show that certain predicate-CC relations require a relation between the semantic restrictions on predicates and the semantic restrictions on CCs such that the composition of predicate-CC relations has a compatible result. The actual clause case goes beyond just predicate-CC compatibility, but also requires compatibility with the tense and aspect of the matrix clause. I have modelled these relations in the syntax of complementation where CCs are sisters to the predicates they are composed with. For EIS and Lubukusu actual clauses, I have argued that some of the rigid semantic restrictions of these clauses can be accounted for by operator-variable relations. This involves enriching the verbal spine of matrix predicates with operators and the left periphery of actuals and EIS with anaphoric variables. Finally I have suggested that if we change our perspective on what is semantically inherent in clausal complement types, CT may apply very broadly to relations currently described as asymmetric clausal selection.

References

Anand, Pranav. 2006. De de se. Ph.D. dissertation. Cambridge: MIT.

Baker, Mark. 2008. *The syntax of agreement and concord*. Cambridge: Cambridge University Press.

Bhatt, Rajesh. 1999. Covert Modality in Non-Finite Contexts. Ph.D. dissertation. Philadelphia: University of Pennsylvania.

Charnavel, Isabelle.2019a Perspectives in causal clauses. *Natural language and linguistic theory*: 37:389-424.

Charnavel, Isabelle. 2019b. *Locality and logophoricity: A theory of exempt anaphora*. Oxford: Oxford University Press.

Chung, Sandra and William Ladusaw. 2003. *Restriction and saturation*. Cambridge: MIT Press.

De Cuba, Carlos. 2017. Noun complement clauses as referential modifiers. *Glossa* 2: 1-46.

Grimshaw, Jane. 2015. The Light Verbs SAY and *say*. In Toivonen, Csúri, van der Zee eds., 79-99, *Structures in the Mind*. Cambridge, MIT Press.

Hacquard, Valentine. 2006. Aspects of modality. Ph.D dissertation. Amherst: U. of Massachusetts.

Karttunen, Lauri. 1971. Implicative verbs. *Language* 47: 340-358, 1971.

Kastner, Itamar. 2015, Lingua 164: 156-188 159.

[14] This begs the question of whether or not CT applies to all complementation, including non-clausal nominal complementation. If the answer is "no", then nominal complementation is systematically asymmetric and that should have interesting consequences that are beyond the scope of this essay.

Kratzer, Angelika. 2009. Making a pronoun: Fake indexicals as windows into the properties of pronouns. *Linguistic inquiry* 40:187-237.

Kratzer, Angelika. 2016. Evidential Moods in Attitude and Speech Reports. https://works.bepress.com/angelika_kratzer/10/

Landau, Idan.2015. *A two-tiered theory of control.* Cambridge: MIT Press.

Matthews, Robert. 2018. *That*-clauses: Some bad news for relationalism about the attitudes. Ms. Rutgers University.

Moulton, Keir. 2009. Natural selection and the syntax of clausal complementation. Ph.D. dissertation. Amherst: University of Massachusetts.

Moulton, Keir. 2015. CPs: Copies and compositionality. *Linguistic Inquiry,* 46:305-342.

Özyildiz, Deniz. 2017. Attitude reports without true belief. In Dan Burgdorf, Jacob Collard, Sireemas Maspong and Brynhildur Stefánsdóttir, *Proceedings of SALT 27*, 397–417. LSA.

Pylkkänen, Liina. 2008. *Introducing arguments*. Cambridge: MIT Press.

Safir, Ken, Mark Baker and Justine Sikuku. To appear. Actual clauses in Lubukusu. In *Festschrift for Akin Akinlabi*, Oluseye Adesola, ed. Ibadan, Nigeria: Scholarship Publishing and Educational Consult, Ibadan, Nigeria. (with Mark Baker and Justine Sikuku).

Schlenker, Philippe. 1999. Propositional attitudes and indexicality: A cross-categorial approach. Ph.D dissertation, Cambridge: MIT.

Sikuku, Justine. 2020. Lubukusu data. In Ken Safir, ed., Afranaph Project https://www.afranaphdatabase.com/web/browse.php?mode=detail&answerset_id=Lubukusu&searchfor=answerset

Sikuku, Justine, Mulalu Wanyoni and Ken Safir. 2019. Actual clauses. Abstract of Presentation at Afranaph Development Workshop III, https://www.africananaphora.rutgers.edu/images/APDW3/Sikuku_Wanyonyi_Safir_Actual_Clauses.pdf.

Wurmbrand, Susi. 2014. Tense and aspect in English infinitives. *Linguistic inquiry* 45: 403-447.