"Advantage": Obligatory Binding Into Finite Complements?

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1 Introduction

1.1 Basic Data

It is characteristic of infinitival complement clauses —so-called control structures— to show obligatory binding, rather than coreference, of the empty subject position. What that means, among other things, is that in verb phrase ellipsis, control structures only show what is called sloppy identity, manifest for example by the pragmatic oddness of the sentences in (1) (marked by '#'), as they entail that the stadium beer vendors themselves play at home.

(1)   a.   The team is happy to be playing at home. # The beer vendors are, too.
          b.   #The team, like the beer vendors, is happy to be playing at home.

A strict construal here would be the pragmatically sensible one: that the stadium beer vendors are happy that *the team* is playing at home. Equally characteristically, this construal is possible if the infinitival, subject-less complement is replaced by a synonymous finite clause, as in (2).

(2)   a.   The team is happy that they play at home. The beer vendors are, too.
          b.   The Rapid team, like us/the beer vendors, is happy that they play at home

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This state of affairs is readily explained if one assumes that the infinitival complement clauses in (1) always denote a *property* (the property of playing at home), whereas the finite clauses in (2) may denote a proposition (that the team plays at home); assumptions which, in turn, seem reasonable, given that the property denoting clause lacks a(n overt) subject, whereas the proposition denoting one has the shape of a regular declarative clause.[1]

The starting point for the present paper is the, I believe novel, observation that the complement clauses to the noun *advantage* only allow for a sloppy reading, whether infinite, (3) (as expected), *or finite*: (4)!

(3)   a.   Rapid has the advantage to be playing/of playing at home. # The stadium beer vendors do, too.
        b.   #The Rapid team, like the stadium beer vendors, has the advantage of playing at home.

(4)   a.   Rapid has the advantage that they play at home. # The stadium beer vendors do, too.
        b.   #The Rapid team, like the stadium beer vendors, has the advantage that they play at home.

Put differently, the subject pronouns in (4) behave like they are obligatorily bound (or 'controlled') by the matrix subject. This is entirely unexpected since pronouns generally have, as we saw in (2), the *option* of being interpreted as referential (rather than bound). There is, to the best of my knowledge, no such thing as obligatory control of an overt pronoun in English, nor, accordingly, a standard analytical mechanism for modelling it.

In this paper I will argue that, indeed, there is no need for a basic mechanism of obligatory control of a pronoun. Rather, the effect will be shown to result from the lexical semantics of the word *advantage* in combination with its syntactic environment in these examples.

Before proceeding I should point out that there are some arguable cases of obligatory *binding* of pronouns in English, namely resumptive pronouns, and pronouns in the embedded clauses of so-called copy raising constructions.[2] What I said above was that there are no cases of obligatory *control* of pronouns, by which

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[1]Finite complements, too, *allow* for a sloppy reading, namely if the subject pronoun *they* is 're-bound' to the local subject in the ellipsis site. So strictly speaking, the finite clauses denote functions from variable assignments to propositions (and the infinitival ones functions, possibly constant ones, from variable assignments to properties).

[2]See Asudeh (2002), Asudeh and Toivonen (2012), Landau (2011), Potsdam and Runner (2001), Rogers (1971, 1972, 1974), Sells (1984) a.o.

I mean obligatory binding of pronouns *which bear a distinct thematic role from their binder*. As we will see in the remainder of this paper, there is plenty of evidence that the matrix subject bears its own thematic role, which I will call the KEY, in the matrix clause and is neither raised nor *wh*-moved from the embedded clause.

To give just two pieces of evidence here: the *advantage*-construction under investigation excludes idioms, (5-b), (arguing against copy raising); and the dependent pronoun in the embedded clause need not be in subject position, (6) (arguing against *wh*-movement —since the element in the matrix clearly bears the local subject case— as well as raising).

(5) a. It is an advantage that the shit hasn't hit the fan yet.
     b. *The shit has the advantage that it hasn't hit the fan yet.

(6) This mop has the advantage that even narrow corners can be reached with *its* elastic, pointy brush tips.

1.2   The Dependency Requirement

On closer inspection it turns out that the obligatory sloppy identity observed in (4) is reducible to a more general property of the construction, which I will call the DEPENDENCY REQUIREMENT: Even without ellipsis or an *unlike...* phrase, the embedded clause needs to contain a dependent element, i.e. an element that is bound by something in the matrix clause (bindee marked by italics below).

(7) (Ms. Smith and Mr. Wörtlschläger, both residents of the US, are getting married; both decided to keep their maiden name.)
     a. The bride will have the advantage that *her* married name will be 'Smith' (which people know how to pronounce).
     b. The bride will have the advantage that people will know how to pronounce *her* married name.
     c. #The bride will have the advantage that people know how to pronounce the name 'Smith'.

(8) a. Venezuela has the advantage, that *it* has oil, the price of which is quite high.
     b. Venezuela profits from the fact that oil prices are quite high.
     c. #Venezuela has the advantage that oil prices are quite high.

In both cases the (b)-examples are there to convey a sense of what the (c)-examples *ought* to mean, were they acceptable (note that (8-b), because it does not involve the word *advantage*, does not need to have a dependent element). In fact, we can even re-state these meanings in the form of (9) and (10).

(9)   It is/will be an advantage for the bride that people are able to pronounce the name Smith

(10)   It is an advantage for Venezuela that oil prices are quite high.

What (9) and (10) combined show, then, is that it is neither a direct consequence of the intended meanings, nor of the semantics of the word *advantage* in general that there has to be a dependent element in the embedded clause. The requirement applies to sentences of the form *X has the advantage that...*, or, as I will argue below, more generally sentences in which there is a syntactic *possessor* of the advantage.

Whatever the reasons for the Dependency Requirement, the facts in (4) are very plausibly reducible to it: If the required dependency happens to be between the matrix subject and the embedded subject pronoun, then any variation in the reference of the matrix subject —be it by VP ellipsis or an *unlike*-PP— will have the dependent pronoun co-vary. So, for example, the resolved ellipsis in (4-a), schematized in (11), will not meet the Dependency Requirement unless the pronoun *they* is 're-bound' to the matrix subject.

(11)   ...the stadium beer vendors do ~~have the advantage that~~ *they* ~~play at home~~, too.

My main task in this paper, then, is to derive the Dependency Requirement, which will in turn entail obligatory sloppy ellipsis as a 'by-product'.

Before I proceed, it is worthwhile to point out some more properties of the phenomenon illustrated by the examples just discussed. First, the examples in (7) (and (6) before them) show that the dependent pronoun in the embedded clause need not be in subject position (unlike in control structures). Second, the dependent element need not be expressed by a(n overt) pronoun; (8-c) may be accepted if we imagine that, for example, it is good to pay a lot for oil, and Venezuela's advantage is that oil prices are high *there* (which is why we should go there). This kind of construal is easy to get in the pragmatically more plausible (12-a) (covert dependent included for perspicuity). That indeed the possibility of this construal hinges on a hidden dependent 'there' in the embedded clause is further evidenced by the unacceptability of (12-b), where such a construal is excluded again.

(12)   a.   Venezuela has the advantage that oil prices are quite low ⟨*there*⟩.
         b.   #Venezuela has the advantage that oil prices are quite low world wide.

Third an finally, (9) and (10), as said before, show that there is a role for the syntactic construction to play in this phenomenon. Not every use of the word *advantage* requires a dependent element in the embedded *that*-clause.

2 Preview of the Analysis

The explanation for the dependency requirement I want to argue for hinges on the idea that *advantage* denotes an inherently comparative concept, and that as a consequence of that, its semantics involves two (or more) instances of evaluating the embedded clause, once as true and once as false.

(13)   (Nora, daughter of famous musician Ravi, hopes to land a record contract.)
        Nora has the advantage that her father is a world-famous recording artist.
        a.   it is/would be advantageous (for Nora) to have a world-famous recording artist father
        b.   her father is a famous recording artist
        c.   other aspiring artists' fathers are not famous recording artists

The 'other aspiring artists' mentioned in clause (13-c) are, of course, the people that Nora has the advantage over; (13-c) says how: what constitutes Nora's advantage does not hold for them.

Consider now what happens if the embedded clause expressed what would appear to be the same thought, but without a dependent element.

(14)   Nora has the advantage that Ravi Shankar is a world-famous recording artist.
        a.   it is/would be advantageous (for Nora) that Ravi Shankar is a famous recording artist
        b.   Ravi Shankar is a famous recording artist
        c.   Ravi Shankar is not a famous recording artist

Like (13-c), (14-c) should say what is true (and advantageous) in Nora's case, but not other people's. But evidently, this yields a contradiction here, since it is the same proposition in both cases. The dependent element in (13) comes to the rescue: the true proposition in (13-b) and the false proposition in (13-c) are not the same. I will now spell this out further.

3 Advantageous Semantics

Part of the difficulty of disentangling the semantics of the constructions discussed here is that *advantage* allows for a plethora of thematic dependents, which can at time be hard to keep apart. I will therefore do my best to introduce them in the most reader-friendly order, and omit those that seem irrelevant for the analysis at hand.

3.1 Basic Two-Place Advantage

What I would argue to be the semantically basic case of *advantage* is illustrated in (15) and (16) (examples in quotes are found in the British National Corpus or on the WorldWideWeb using Google).

(15)   "Fulham manager Felix Magath has admitted that it is an advantage for his side that Saturday's opponents Chelsea travelled to Istanbul on Wednesday in the Champions League."

(16)   "It is an added advantage for Bhutanese that Australia is an English speaking country."

In both of these examples, the DP introduced by *for* denotes what I will call the BENEFICIARY, while the *that*-clause denotes the CONTENT of the advantage. Note that neither example involves a dependent element in the Content clause (which is fine, because they are not of the form *have the advantage that...*).

I approximate the meaning of the word *advantage* in these examples in (17).

(17)   SEMANTICS OF ADVANTAGE, PRELIMINARY VERSION
        proposition $cont$ is an advantage for individual ben in world w if

        a. ben's interests in w are better served if $cont$ than if not $cont$,   and
        b. $cont$ is true in w

Clause (17-a) can be spelled out more precisely given standard modal semantics (e.g. Kratzer, 1981), for example as in (18).

(18)   (17-a) made more precise:
        ...if, for every w-closest world $w^{-cont} \in W \setminus cont$ (i.e. in which $cont$ is false), there is a world $w^{+cont} \in cont$ (in which $cont$ is true), s.t. w^{+cont} meets strictly more of ben's desires than w^{-cont}.

        a. w_1 meets more of ben's desires in w than w_2 if, given a set $\text{BUL}_w(ben)$ of desires, i.e. propositions which ben wants in w to be true, whichever desires $\in BUL_w(ben)$ are true in w_2 are true in w_1, but not *vice versa*
        b.   among a set of worlds W, $w_1 \in W$ is closer to w than $w_2 \in W$ iff every fact that is true in w and w_2 is also true in w_1, but not *vice versa*
        c. w_1 is among the w-closest worlds in W if there is no $w_2 \in W$ which is closer to w than w_1

The syntax of examples like (15) and (16) is an equative with the *that*-clause as its subject and *an advantage for...* as its predicate. Its logical form I assume to

be along the line of (19):

(19) there is a proposition p, which is an advantage for $\left\{ \begin{array}{c} \text{the Bhutanese} \\ \text{Magath's side} \end{array} \right\}$,

and p equals $\left\{ \begin{array}{c} \text{that Chelsea travelled to Istanbul last Wednesday} \\ \text{that Australia is an English speaking country} \end{array} \right\}$

3.1.1 Apparent One-Place Advantage

In case the Beneficiary is not syntactically expressed (by a *for*-PP), it is understood to be 'people in general'.

(20) "It is an advantage that the continuing education programme is a qualifying programme."

Accordingly, the meaning of (20) is in essence: there is a proposition p, and everyone would prefer p being the case over p not being the case, p is in fact the case, and p is that the continuing education programme is a qualifying programme.

3.1.2 Infinitival-Complements

Similarly unspectacular is what happens when *advantage* is combined with an infinitival clause: the subject of the infinitival clause is assumed to depend on, or co-vary with, the Beneficiary of *advantage*:

(21) a. "It is an advantage for a migratory eel to have a wide tolerance range."
    '...that *the migratory eel* has a wide tolerance range'
  b. "When asked whether it is an advantage for the president to conclude his or her mandate while still in a productive age, Kwasniewski replied..."
    '...that *the president* conclude...'

(22) advantage for x to Q $\equiv$ advantage for x that x Q

Where there is an infinitival clause and no Beneficiary, a general 'advantage property' results:

(23) a. "Yes, it is an advantage to be a lefty, but perhaps it is not as great of an advantage as we thought."
  b. "This essentially reduces the question to whether it is an advantage to be serving in the first game of the first set."

(24) advantage to Q $\equiv$ advantage for people x in general that x Q

Note that with infinitival complements, the factive entailment of *advantage* disappears. While (20) entails that the continuing education program is a qualifying program, (23-a), while entailing that anyone would profit from being left-handed, does not entail that everyone *is* in fact left-handed. However, the Reality check in (17-b) wrongly predicts just that. I will return to this in 4.2, where I discuss independent reasons to weaken the Reality Check so that it no longer entails the truth of *cont* in general. The truth entailment (or presupposition) of the finite cases then will be derived from independent factors.

3.2 The Key

We now turn to a third argument of *advantage*, which will turn out be crucial to the analysis to be proposed, and which I will call the KEY. In (25-a) and (25-b) the Key is expressed by the DP in the *of*-PPs (underlined).

(25)   a.   It is an advantage of <u>X-Trak</u> that it will be completely mobile on Smartphones. (So get X-Trak rather than Y-Trak!)

        b.   It is an advantage of <u>Smartphones and Smart Tablets</u> that X-Trak will be completely mobile on them. (So get a Smart Tablet, rather than a Very Stupid Tablet!)

Note first that it is obligatory for the Key in the embedding clause to have a co-varying element in the embedded clause (*it* and *them*, respectively). Furthermore, a discernible meaning difference correlates with the choice of Key, which I tried to bring out more clearly in the parenthesized continuations in (25). (25-a) compares the suitability of X-Trak for our purposes to that of other programs (and presupposes that it is advantageous for any program to be completely mobile on Smartphones); (25-b), on the other hand, compares the suitability of different devices for our purposes (and presupposes that we should have a device on which X-Trak is completely mobile). The Key-less variant in (26) is neutral in this regard.

(26)   "It is an advantage that X-Trak will...be completely mobile on Smartphones and Smart Tablets."

Indeed, many types of advantages work plausibly with one key, but not another (as well as without any).

(27)   It is an advantage that the liver can easily absorb this drug.   *neutral*

        a.   It is an advantage of this drug that the liver can easily absorb it.

        b.   #It is an advantage of the liver that it can easily absorb this drug.

(27-a) compares the suitability of this drug to that of other drugs —quite plausibly. (27-b) would compare the suitability of the liver to that of other organs, presupposing that it is an advantage for every organ if it can absorb this particular drug. This seems so implausible as to render (27-b) bizarre.[3]

The comparative nature of the Key will be central to its semantic modelling. I propose that the presence of a Key k always entails the semantic presence of (contextually identifiable) ALTERNATIVE KEYS —those over which k has the advantage that $cont$. The content $cont$ is an advantage of k over the Alternative Keys ak_1, ak_2 etc. if $cont$ would be an advantage with any k, ak_1, ak_2, but $cont$ in fact only holds with k. More formally, I revise and expand the earlier (17) to (28).

(28) SEMANTICS OF ADVANTAGE   (REVISED, YET NON-FINAL)
      $cont$ is an advantage for individual x in world w under key k if for all $key \in \{ak_1, ak_2, \ldots\} \cup \{k\}$

   a. x's interests in w are better served if $cont \oplus key$ than if not $cont \oplus key$,   and
   b. $cont \oplus key$ is true in $w \leftrightarrow key = k$

This definition is applied to (27-a) in (29); to keep things simple, I have included a Beneficiary here as well ('@' here and henceforth stands for the evaluation world ('the real world') of the embedding clause).

(29) It is an advantage of this drug for Kim that the liver can easily absorb it.
      for all $key \in \{$thisdrug, thatdrug$\}$

   a. Kim's @-profits if key is easily absorbed by the liver   and
   b. key is indeed easily absorbed by the liver if and only if key=thisdrug

From (29) it follows that only this drug is in fact easily absorbed by the liver, but that both this drug and that drug are/would be better (for Kim) if they are/were easily absorbed by the liver (than if not).

   To keep things manageable throughout the rest of this paper, I will henceforth use the shorthand 'x w-profits if p' for 'x's interests in w are better served if p than if not p' (or the more precise rendering given underneath (17-b)). (28-a)/(29-a) will henceforth simply be referred to as the ADVANTAGE CLAIM, and (28-b)/(29-b) the REALITY CHECK.

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[3]Though one could imagine, for example, a scenario in which a patient needs an injection of a particular drug, which could be injected into the liver, or into the kidneys. This would fit the bill for making the meaning of (27-b) suitable.

The $\oplus$ sign in (28) corresponds to the word 'with' in the prose above (28). Semantically, $cont$ can just be thought of as a property, and $cont \oplus key$ or '$cont$ with key' as, '$cont$ applies to key', '$cont$ holds of key' or simply $cont(key)$.

In reality, however, $cont$, being the meaning of a finite clause, must be a function from assignments to propositions, and $cont \oplus key$ abbreviates $\lambda w.cont(g[i \to key])(w)$ for some index i (g being the assignment relative to which *advantage...* is evaluated).[4] That way, any element in the complement clause that contributes $cont$ can bear the index i and hence be 'bound' by key.

The identification of the set of Alternative Keys is, as I said before, a pragmatic one; it follows from (28), however, that $cont$, the Content, must not be true with (of) any alternative key (unless that alternative key happens to be the Key); otherwise (28-b) —'$p \oplus ak$ is true $\leftrightarrow ak = k$'— is false, and so is the entire sentence.

The empirical predictions of that can be illustrated as follows: if a sales person and a customer are standing in front of a wall of electric guitars, the sales person could felicitously utter (30).

(30)   These guitars have the advantage that they can be easily amplified, or played with headphones.

Here the Alternative Keys could be the acoustic guitars, of which one may wish that they be equally easily amplifiable and could be played with headphones, but they cannot. If, however, the salesperson were to point at five out of the dozens of electrics while saying (30), this would be odd, since pragmatically, the other electric guitars would be strongly suggested to be Alternative Keys, but since they, too, are easily amplified etc., they cannot be Alternative Keys if the sentence is to be true, by the semantics in (28).

More generally, (28) entails that for an utterance like (30) to be felicitous, some Alternative Key must exist with which $cont$ does not hold, and at least strongly implies that those alternative keys can be identified by the addressee, and that contextually obvious candidates are among them.

Given all of this, it is now clear why the embedded clause with *X has the advantage that...* has to be evaluated twice, and with different resulting truth values: if the embedded clause is equally true with two different keys, the sentence is false by (28-b). We have thus derived that there must be a dependent element in the clause that *advantage* embeds, *whenever there is a Key*.

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[4]How to do this in the compositional semantics is not a question crucial to this paper. For concreteness, we can define a variable binder prefix v s.t. $[\![v_i \, \alpha]\!]^g =_{def} \lambda x.[\![\alpha]\!]^{g[i \to x]}$ to be adjoined between *advantage* and its complement.

My empirical diagnosis is that any form of grammatical possessor is interpreted as a semantic Key, and hence triggers the dependency requirement. This includes the complement of (DP-internal) *of*, prenominal genitives, and the subject of *have*.

(31)   a.   *This method* has the advantage that...
         b.   It is *this method's* advantage that...
         c.   It is an advantage of *this method* that...

The constructions in (32), on the other hand, do not involve a possessor, and hence no (overt, see below) Key:

(32)   a.   It is an advantage that *this method* ...
         b.   The advantage that *this method* is cheap is outweighed by the risks it involves.

We have seen in (9) and (10) above already that examples with an indefinite article of the form (32-a) do not show the Dependency Requirement; (32-b) moreover shows that even cases with a definite article may occur without a dependent element, provided they do not involve a possessor/Key. Conversely, case (31-c), illustrated in (33-a), shows that the dependency requirement can also occur with indefinite *an advantage*. (33-b), finally, illustrates case (31-b).

(33)   a.   It is an advantage of this door that my cats cannot open it.
         b.   This door's main advantage is that my cats cannot open it.

3.3   Bound Keys

One of the things that obscures the relevance of the Key for understanding the semantics of *advantage* is that the Key, may, but need not, be identical to the Beneficiary. While in (34-a), for example, the Beneficiary is implicit ('for anyone/for the club/for the fans'), *our players* in (34-b) is both the Key *and* the Beneficiary.

(34)   a.   The new stadium has the advantage that it holds more people.
         b.   Our players have the advantage that they play at home.

(35) 'syntacticizes' this analysis of (34-b): the possessor subject of *have (the advantage)* is simultaneously interpreted as the Key and the Beneficiary; the capital J index on the pronoun informally indicates that *they* is not bound by the Key (that would give us a 'strict' reading) but by the key variable introduced by the semantics of *advantage*. The resulting interpretation is paraphrased in (36).

(35)   [our players]$_j$ have [the advantage (for) pro_j (of) pro_j (among $\{pro_j$, the other team's players$\}$) = they$_J$ play at home]

(36)   for both our players and the other team's players, it is/would be an advantage for *them* if *they* played at home, and *they* in fact play at home if and only if *they* = our players

While I do not claim that (35) is the actual syntactic structure of (34-b), it does embody two more claims I would defend. First, that the Content (i.e. the *that*-clause) in (34-b) semantically functions like a non-restrictive relative: *advantage that they play at home* denotes the singleton set containing that *cont* which is an advantage for our players and is identical to 'that [insert team name here]'s players play at home'; this is the reason we can only get *advantage that...* with a definite article.[5] Second that the *of*-PP is in some sense 'lower' than the *for*-PP, and therefore the DP following *of* cannot 'co-bind', as it were, the Beneficiary. Thus while (37-a), like (34-b), can be interpreted with *our team* as Key and Beneficiary, (37-b) can, I believe, only be understood to have *our team* be the Key to an advantage for someone else (e.g. us fans).

(37)   a.   Our team's advantage that they play at home (should not make them feel too secure).
        b.   The advantage of our team that they play at home (should not...).

This concludes my analysis of the Dependency Requirement with constructions of the form *X has the advantage that...*. However, more can be said about the semantics of *(have the) advantage*, which sheds light on some apparent counterexamples as well as, perhaps, the Key-less cases.

4   Propositional Keys

4.1   Basics

It is possible to have the Key expressed by a second *that*-clause, as in (38).

(38)   a.   "The fact that the transmitter is only active for part of the time has the advantage that the drain on the battery of the mobile station is not as great as if the transmitter was radiating a signal continuously."
        b.   "...that the current trial is not randomized has the major advantage that you are guaranteed to get the treatment if you enroll."

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[5]Note that I am only talking about the DP internal clauses like in (34-b) here. In cases like (31-c), (32-a) and (33-a) the *that* clause is not internal to DP, but the subject of an equative.

Infinitival clauses under *the advantage* as in (3) on the other hand, too, function like non-restrictive relatives: *the advantage to be playing at home* is the advantage which is: that one plays at home.

c. "...that the charge socket is identical to the car standard has the advantage that the *C evolution* can be charged at charge stations."

In favor of the claim that the subject clauses here are Keys, note that, for example, (38-c) can be paraphrased as in (39-a) or (39-b).

(39) a. the/an advantage of the fact that the charge socket is identical to the car standard is that the C evolution can be charged at charge stations

b. the/an advantage of having a charge socket that is identical to the car standard is that the C evolution can be charged at charge stations

On the face of it, there does not seem to be a dependent element in the Content (the second *that*-clause) in (38). A closer reflection on the meaning of these, however, suggests an analysis that is in keeping with our assumptions so far. I will illustrate this using an abbreviated version of the last example:

(40) That the socket is standard size has the advantage that the device can be charged in the car.

for any $key \in \{$the socket is standard size, the socket is bigger than standard size$\}$, it holds that

a. one/the customer @-profits if the device can be charged in the car-socket

b. **in the @-closest worlds w in which key is true**, the device can be charged in the car in $w \leftrightarrow (key=$that the socket is standard size)

The crucial change here, marked by boldface, is that the Reality Check clause —'Content is true iff $key=$Key'— is embedded in a (counter-factual) conditional involving the Propositional Key and its alternatives: 'if key is/were true, Content would be true if and only if $key=$Key'.

As is standard, the @-closest key-worlds are those worlds w in which key is true for which there are no w' in which key is true as well, but in which a proper superset of the propositions that are true in both @ and w are true.

If key is the true proposition 'that the socket is standard size', the @-closest worlds in which that holds is @ itself, and so, since $key=$Key, the Content must hold in @. If key is the false proposition 'that the socket is bigger than standard size', we go to the @-closest worlds in which the car socket *is* bigger than the standard, and in those worlds, Content must be false (since $key \neq$Key). So effectively, this says 'if the socket were bigger than the standard size, it would not be possible to charge the device in the car'.

This revision raises some questions regarding cases analyzed earlier in this paper. In particular, it no longer follows from (40-b) that the Key actually makes the Content true. Before I come back to those, though, I want to complete the exposition of the intensional semantics of *advantage*.

4.2   When Advantages Vary

A Propositional Key does more than just conditionalize the Reality Check. To appreciate this, consider the constructed example in (41).

(41)   That the mast is made of aluminum has the added advantage that that is compliant with the regulations of the Helgoland cup.

Suppose the mast could be made of aluminum or of carbon, the latter of which, however, is strictly forbidden in the Helgoland regatta. According to the semantics given so far, (41) should, among other things, entail the following:

(42)   a.   we/one @-profits if the mast being made of aluminum is compliant with the regulations of the Helgoland cup
       b.   we/one @-profits if the mast being made of carbon is compliant with the regulations of the Helgoland cup

But in fact we have absolutely no interest in carbon masts being allowed at the Helgoland cup, especially not in the real world, in which we have an aluminum mast. What serves, or would serve, our interests is that the Helgoland cup allows for *whatever kind of mast we have*. In other words, instead of (42), we want to have (43):

(43)   a.   *in worlds w in which our mast is made of aluminum* we/one w-profits if the mast being made of aluminum is compliant with the regulations of the Helgoland cup
       b.   *in worlds $w*$ in which our mast is made of carbon* we/one $w*$-profits if the mast being made of carbon is compliant with the regulations of the Helgoland cup

In other words, the Propositional Key should also influence the buletic or otherwise preferential background for the preference relation referenced in the semantics of *advantage*. (44) spells this out in a little more detail.

(44)   a.   for all @-closest aluminum-mast-worlds w, we w-profit if the mast being made of aluminum complies with Helgoland cup regulations, and

b. for all @-closest carbon-mast-worlds $w*$, we $w*$-profit if the mast being made of carbon complies with the Helgoland cup regulations

The Reality-check clause then works as before:

(45)   a. if the mast is made of aluminum then the aluminum mast complies with cup regulations iff 'that the mast is made of aluminum'='that the mast is made of aluminum',   and

        b. if the mast were made of carbon then the carbon mast would comply with cup regulations iff 'that the mast is made of carbon'='that the mast is made of aluminum'

After a little disentangling, this turn out to say that a mast made of aluminum complies with regulations, while a mast made of carbon would not.

In fact, strictly speaking it says that the aluminum mast *does or would* comply with regulations. If in the actual world we had a wooden mast, this would still be true as long as aluminum masts are allowed and carbon masts are not. That is to say, due to the potentially counter-factual conditional in the Reality-Check, we lost the truth entailment for the Content. This seems to me undesired for (41), which does entail that aluminum masts are permitted.

As a matter of fact, (41) entails something else, too, namely that the mast *is* in fact made of aluminum; and given that, it follows that aluminum masts are permitted (since the @-closest world in which the mast is made of aluminum then is @).

Why is the Key-proposition presupposed in this construction? Because, I assume, finite subject-clauses with correlate *it* are factive as a matter of grammar (see e.g. Kallulli, 2010). This also has the welcome result that variants with an infinitival subject clause like (21), (23) do not entail the truth of that clause, as observed above. For a minimal pair, (46) expresses that anyone would profit from being eligible for the Helgoland cup, and that *if* they have an aluminum mast, they would be (and otherwise, they wouldn't).

(46)   To have an aluminum mast has the advantage that that is compliant with the regulations of the Helgoland cup.

(46) does not, however, entail that anyone in fact *has* an aluminum mast (much less that people in general do), so the Reality Check merely entails that anyone *would* be compliant if they *were* to have an aluminum mast.

5 Back to Non-Propositional Keys

In the previous section, we revised the semantics of *advantage* one more time. The final definition is given in (47):

(47)   SEMANTICS OF ADVANTAGE   (FINAL VERSION)
       $cont$ is an advantage for individual x in world w under key k if for all $key \in \{ak_1, ak_2, \ldots\} \cup \{k\}$

    a.   in all w-closest worlds w_{key} in which key holds, x's interests in w_{key} are better served if $cont \oplus key$ than if not $cont \oplus key$,   and

    b.   in all w-closest worlds w_{key} in which key is true, $cont \oplus key$ is true in $w_{key} \leftrightarrow key = k$

We now return to cases without Propositional Keys. How do we treat them in the new semantics, which require a key-proposition in the Reality Check? In many cases, it is plausible to assume that a DP Key is in fact coerced into a proposition. Since that indirectly supports the proposal as it stands, we turn to those first.

5.1 DP-Keys with Coerced Key Propositions Affecting the Reality Check

(48) appears to be a case with a DP-Key, but no dependent element in the Content.

(48)   A suite with a baby monitor has the advantage that we can spend the night at the hotel bar.

Note that it will not do to postulate a covert location pronoun in the Content, for that would give us 'we can spend the night at the hotel bar in the suite with a baby monitor', which is incongruous.

But we can get the intuitively correct semantics if we coerce the DP *a suite with a baby monitor* into a proposition, 'that we have a suite with a baby monitor', with the obvious Alternative Key 'that we have a suite without a baby monitor'. In that case, the meaning we get is (49).

(49)   a.   Advantage Claim: whether our suite has a baby monitor or not, we'd prefer to be able to spend the night at the hotel bar
    b.   Reality Check
        (i)   if our suite has a baby monitor we can in fact spend the night at the bar iff 'that we have a suite with a baby monitor'='that we have a suite with a baby monitor' *(i.e.: we can)*
        (ii)   if our suite does not have a baby monitor, we can in fact spend the night at the bar iff 'that we do not have a suite with a baby

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monitor'='that we have a suite with a baby monitor' *(i.e.: we cannot)*

5.2 Coerced Propositional Keys With No Effect on the Reality Check

The reader might worry that the possibility of coercing a Propositional Key undermines our original account of the Dependency Requirement. If a Coerced Propositional Key can 'void' the Dependency Requirement, then how come we still observe its effect in many cases? As a case in question, let us reconsider (12-b), repeated in (50).

(50)   #Venezuela has the advantage that oil prices world-wide are low.

As above, we assume as the Coerced Propositional Key 'that we travel to key'; our Alternative Key will be —for no particular reason— Canada.

(51)   a.   Advantage Claim: whether we go to Venezuela or to Canada, we prefer low oil prices world-wide
         b.   Reality Check: if we go to Venezuela, oil is cheap world-wide, and if we go to Canada, oil is not cheap world-wide

(51-b) is obviously nonsense, assuming that world-wide oil prices do not depend on our travel choices. Generally, a Coerced Propositional Key will only (appear to) circumvent the Dependency Requirement if the truth of the Content depends on it. Effectively, the Content's truth value *does* co-vary with the Key by way of being interpreted in different worlds.

   Note incidentally that, as we would predict, the problem with (50) has nothing to do with the possibility of *coercing* a Propositional Key. If the sentence started with *that we travel to Venezuela has the advantage. . .* instead —i.e. with an overt Propositional Key— it would be just as weird.

5.3 Coerced Propositional Keys Affecting the Advantage Claim

In 4.2 we saw that the preferences in the Advantage Claim may crucially rely on a Propositional Key (what the mast was made of). If the claim made in this section —that DP-Keys may give rise to Coerced Propositional Keys— is correct, we should see such effects with DP-Keys as well. Examples like (52) show that this prediction is correct.

(52)   Graz has the advantage (for me) that it is quite close to Vienna.

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When I learned that SinFonIJA 2014 was to be held at Graz, I immediately entertained the thought expressed by (52): I intended to attend the conference, I live in Vienna, and I do not like to travel. On that score, I clearly prefer Graz to, say, Innsbruck.

At first glance, (52) should entail that I find being close to Vienna preferable for any city (among the Alternative Keys). But that is not the case. In fact, I do not even have the desire that Innsbruck be close to Vienna (any more than it is); I *would* merely have such a desire if Innsbruck were the location of a conference I intend to visit.

This is indeed what we get under rather straightforward assumptions: that the alternative-keys are Graz and, say, Innsbruck, and the Coerced Key Proposition is 'that SinFonIJA takes place at key'. The resulting meaning is (53):

(53) a. (i) in @-closest worlds w in which SinFonIJA is held at Graz, I w-profit if Graz is close to Vienna, and
      (ii) if SinFonIJA is held at Graz then Graz is close to Vienna iff Graz=Graz (*i.e.: it is close*)
   b. (i) in @-closest worlds w in which SinFonIJA is held in Innsbruck, I w-profit if Innsbruck is close to Vienna, and
      (ii) if SinFonIJA is held at Innsbruck then Innsbruck is close to Vienna iff Innsbruck=Graz (*i.e.: it is not close*)

This seems intuitively correct.

5.4 DP-Key-Beneficiary

In the DP-Key cases discussed in this section so far, the Key was distinct from the Beneficiary. It was argued that these are readily coerced into Propositional Keys, with desirable consequences. But what about the cases in which the Key is at the same time a Beneficiary? In these cases it seems less straightforward to come up with a plausible Coerced Propositional Key. Take (4-a), repeated here.

(54) Rapid has the advantage that they play at home.

(54) seems apt if Rapid Wien is playing Salzburg in Vienna. Currently, the semantics of this should be (55).

(55) for all $key \in \{$Rapid Wien, Red Bull Salzburg$\}$
   a. in @-closest worlds w s.t. $P(key)(w) = 1, key$ w-profits if key play at key's home, and
   b. in @-closest words w s.t. $P(key)(w) = 1, key$ plays at key's home in w iff key=Rapid Wien

P here is the function that coerces a Propositional Key from the Key and its Alternative Keys. But which function is it? There is an easy stipulation to get the semantics in (55) to come out equivalent to that in (28): Let P be a function that maps everything to a tautology — $\lambda x.\lambda w.1 = 1$, or $\lambda x.\lambda w.w \in W$. In that case, the @-closest world such that $P(key)$ holds of that world will always be @ itself, resulting in the original truth conditions.

I will assume this for the time being. An alternative, which I find more attractive, is to attempt to analyze (54) along the lines of (56).

(56)   for anyone, ben, for all $key \in \{$Rapid Wien, Red Bull Salzburg$\}$
      a.   if ben were key, ben would prefer that key play at key's home, and
      b.   if ben were key, key plays at key's home iff key=Rapid Wien

In words: if one were Rapid Wien, one would prefer for Rapid Wien to play in Vienna, and Rapid plays in Vienna; and if one were Red Bull Salzburg, one would prefer for Salzburg to play in Salzburg, and in fact Salzburg does not play in Salzburg. Or yet differently: Being Rapid Wien has the advantage that one plays at home.

The challenge with this analysis is to spell out what it means to 'be someone else'. On all interpretations of possible world semantics I am aware of, I am, in no possible world, identical to a football club. However, I can take the *perspective* of a football club. Technically, one might be able to model this using *centered propositions*, e.g. pairs of individuals and possible worlds, intuitively to be interpreted as being that individual in that world. Since the world does not change depending on which individual's perspective one is taking, this will by and large have the same effect as the official solution discussed above. The only empirical difference would be that the preferences might, in some cases, be slightly different. Whether or not this is an advantage depends on what one thinks of examples like (57), which Warren Beatty never said to Cher.

(57)   I wish I was your mirror. It has the advantage that it sees you undress every day.

Presumably, mirrors do not have preferences, and hence could not be Beneficiaries of advantages. (57) could be made sense of if for any *person* (including the speaker) it would be preferable to see Cher undress every day, i.e. to be/take the perspective of her mirror. However, I am not convinced that (57) is really possible in that sense, certainly not enough to argue for a particular analysis based on it. So I will leave exploring this option for future research.

6 Back to the Key-Less Cases

Propositional keys also provide the crucial ingredient, I submit, to the apparently key-less cases like (16), repeated here.

(58) "It is an added advantage for Bhutanese that Australia is an English speaking country."

I propose that the *that*-clause in (58) is in fact the Key *and* the Content. In other words, just like a DP-Key may simultaneously be interpreted as ('bind') the Beneficiary, a propositional key can simultaneously be interpreted as the content. This is schematized in (59).

(59) [that Australia...]$_j$ is an [advantage for the Bhutanese (of pro_j) (among $\{pro_j, altkeyprop\}$) $=pro_j$]

Accordingly, its meaning is predicted to be (60).

(60) a. in all @-closest-worlds w in which Australia is English-Speaking, the Bhutanese w-profit if Australia is English speaking, and if Australia is indeed English speaking then Australia is English speaking iff 'that Australia is English speaking' = 'that Australia is English speaking'

   b. in all @-closest-worlds w in which Australia is Spanish-Speaking, the Bhutanese w-profit if Australia is English speaking, and if Australia is Spanish speaking, Australia is English speaking if and only if 'that Australia is Spanish speaking' = 'that Australia is English speaking'

Tedious though it is to read, (60) expresses the intuitively correct truth conditions. Note that Key and Content, though both provided by the subject clause, figure differently in the truth conditions: In (60-b), the *key* variable is instantiated by the Alternative Key ('that Australia is Spanish-speaking'), whereas the Content remains constant. This is crucial for the semantics to come out right; it is rendered more transparently (hopefully) in (61).[6]

(61) $[\![S \text{ is an advantage for DP}]\!]^{@,\text{altkeys}}= 1$ iff ($[\![S]\!]^{@}=1$ and) for each $key \in$ altkeys$\cup\{[\![S]\!]\}$

   a. in @-closest worlds w in which key, $[\![DP]\!]^{@}$ w-prefers that $[\![S]\!]$ and

   b. in @-closest worlds w in which key, $key \leftrightarrow (key = [\![S]\!])$

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[6]For simplicity's sake I take the set of Alternative Keys **altkeys** to be a contextual parameter here.

It might seem arbitrary to reanalyze the subject clause in this example as the Key, rather than just the Content. But Key and Content, though semantically clearly distinguished, are not ontologically or metaphysically different, is it is hard, if not impossible, to distinguish them *a priori*. In fact, in many, if not all, cases it appears that the Key–Content relation is transitive (keeping the beneficiary constant, of course), see (62).

(62)   a.   That Australia is English-speaking has the advantage (for the Bhutanese) that they can communicate there.

           b.   That they can communicate in Australia has the advantage (for the Bhutanese) that they can do business there.

           c.   That they can do business in Australia has the advantage (for the Bhutanese) that they can participate in one of the world's biggest markets.

           $\rightarrow$ That Australia is English-speaking has the advantage (for the Bhutanese) that they can participate in one of the world's biggest markets.

Note though that the order in each Key–Content pair cannot reversed ('That they can communicate there has the advantage (for the Bhutanese) that Australia is English-speaking'), so they clearly are not the same semantically.

7   Summary and Outlook

In this paper I took a lengthy look at the semantics of the noun *advantage*. I argued that the initial puzzle —only sloppy readings in VP ellipsis, even for finite complement clauses— ultimately finds its explanation in the lexical semantics of the noun *advantage* itself: under a narrowly circumscribed set of circumstances, a non-varying reading of the embedded clause would necessarily yield an inconsistent meaning. To wit: If there is a syntactically expressed Key, or more precisely: If the Propositional Key and its Alternative Propositional Key do not alone suffice to change the truth conditions of the Content in the Reality Check.

From the view point of the syntax-semantics interface, however, a rather unusual fact remains: The semantic binder of the dependent element *they* in a case like (63) cannot be —on the analysis developed here— the DP *Rapid*, but must be, in a very real sense, something 'in' the noun *advantage*. The semantics of *advantage* in turn, instantiates the value for the pronoun, first with Rapid, and then with the Alternative Key(s).

(63)   Rapid has the advantage that *they* play at home.

What is more, *advantage* does not strictly *subcategorize* for a complement clause

with an unbound element, since there is the option of having Key-less sentences, as well as cases with Propositional Keys (4.1) 'rich' enough to change the truth value of the Content without a further dependent (which, if the analysis I proposed in 6 is on the right track, is also what is really going on in the Key-less cases). It appears that *advantage* really does semantically select for a function from assignments to propositions, with the *option* of binding an arbitrary index in the assignment to the Key. I know of no other item other than nominal quantifiers that show remotely that signature. Obviously, the implications of this merit further investigation.

References

Asudeh, Ash (2002). "Richard III." In *Proceedings of CLS 38*, 31–46. Chicago: University of Chicago.

Asudeh, Ash and Ida Toivonen (2012). "Copy raising and perception." *Natural Language & Linguistic Theory* 30(2):321–380.

Kallulli, Dalina (2010). "Belief Will Create Fact: On the Relation Between Givenness and Presupposition, and Other Remarks." *Theoretical Linguistics* 36(2/3):199–208.

Kratzer, Angelika (1981). "The Notional Category of Modality." In Hans Jürgen Eikmeyer and Hannes Rieser New Approaches in World Semantics, eds., *Words, Worlds, and Contexts*, 38–74. New York/Berlin: Walter De Gruyter.

Landau, Idan (2011). "Predication vs. aboutness in copy raising." *Natural Language & Linguistic Theory* 29(3):779–813.

Potsdam, Eric and Jeff Runner (2001). "Richard returns: copy raising and its implications." In *Papers from the 37th Regional Meeting of the Chicago Linguistic Society*, 453–468. Chicago, IL: Cls.

Rogers, Andy (1971). "Three Kinds of Physical Peception Verbs." In *Proceedings of CLS 7*, 206–222. Chicago: University of Chicago.

Rogers, Andy (1972). "Another Look at Flip Perception Verbs." In *Proceedings of CLS 8*, 303–315. Chicago: University of Chicago.

Rogers, Andy (1974). "A Transderivational Constraint on Richard?" In *Proceedings of CLS 10*, 551–558. Chicago: Chicago University Press.

Sells, Peter (1984). *Syntax and Semantics of Resumptive Pronouns*. Ph.D. thesis, UMass at Amherst.