Orphan Attributes

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1. Introducing Relative Stranding

The phenomenon that I refer to as *Relative Stranding* (RS) is illustrated by *Wirkung auf Kinder* ('effect on children'), *Informationen über die Männer* ('information about the men'), and *Argument gegen diese Initiative* ('argument against this initiative') in (1)–(3) (the examples in this paper are all from German, though I believe that similar arguments can be presented using English data):

(1) Der Einwand wird   aber   angesichts … der **Wirkung**, die
      the objection becomes however in view of   the *effect*   that
      Text und Bild   **auf** Kinder   haben, hinfällig. (R97/NOV.92219)
      text and picture *on* children have   obsolete
      'The objection, however, becomes obsolete, considering the effect that
      text and pictures have on children.'

(2) Ursula Reimer … haben die widersprüchlichen **Informationen**, die
      U.   R.   have the contradictory   *informations*   that
      sie **über** den Verbleib   der   Männer erhielt, zu dieser Reise
      she *about* the whereabouts of the men   received to this   journey
      veranlasst. (R99/SEP.70911)
      initiated
      'Ursula Reimer was prompted to take this journey by the contradictory
      information she got about the whereabouts of the men.'

(3) Das einzige **Argument**, das man bisher **gegen** diese Initiative
      the only   *argument*   that one so far *against* this   initiative
      vernommen hat,… ist wenig überzeugend. (E96/FEB.03534)
      heard   has   is little convincing
      'The only argument one has heard against this initiative so far is not
      very convincing.'

The crucial observation about these examples is that a PP attribute within the relative clause seems to modify the head noun of the DP containing the RC, parallel to the simple cases of attributive modification in (4):

(4) Wirkung auf DP   Information über DP   Argument gegen DP
      effect   on   information about   argument against

The purpose of this paper to explore this phenomenon in some depth, in particular become clear about the exact relation that holds between the PP attribute (henceforth simply *the PP*), the head noun (i.e. *effect, information, argument* etc.), and the DP in the specifier of the relative clause (henceforth simply the RelDP).

2. Attribute Stranding Under *Wh*-Movement

Wh-stranding, a construction similar to RS as presented in the previous section, is discussed in Fanselow (1987); Webelhuth (1992); Müller (1996); Pafel (1995) and most recently De Kuthy (2000, 2001); De Kuthy and Meurers (1999), among others. In these constructions, an adnominal PP attribute is stranded under *wh*-movement of its head noun:

(5)   a.   Was für eine **Wirkung** hatten diese Bilder **auf** die Kinder?
        what for an effect had these pictures on the children
        'What kind of an effect did these pictures have on the children?'
   b.   Welche **Informationen** hat sie **über** die Männer erhalten?
        which informations has she about the men gotten
        'What (kind of) information did she receive about the men?'
   c.   Wieviele **Argumente** hat man **gegen** die Initiative
        how many arguments has one against the initiative
        vorgebracht?
        advanced
        'How many argument were advanced against the initiative?'

Müller (1996) (and similarly Webelhuth (1992); Pafel (1995)) derives these constructions as instances of *remnant movement*. In a nutshell, the derivation proceeds in two steps: First, the attributive PP, say *über die Männer*, 'about the men', is extracted from the DP *welche Informationen*, 'what information' and undergoes scrambling (to a VP external position); then the DP remnant containing the trace, *welche Informationen* t_{PP}, is topicalized (i.e. moved to the clause initial position, say SpecC), crossing over the scrambled attribute PP (in addition, the finite verb *hat* is moved to the clause second position, which is of no relevance here):

(6)   sie [$_{DP}$ welche Information über die Männer] erhalten hat
        she which information about the men received has

 $\rightarrow$ sie *[über die Männer]$_1$* [welche Informationen t_1] erhalten hat

 $\rightarrow$ *[welche Informationen t_1]$_2$* hat sie [über die Männer]$_1$ t_2 erhalten

The analysis of De Kuthy (2000, 2001); De Kuthy and Meurers (1999) is similar in that it assumes a local relation between the PP and the N, but crucially

different in that it analyzes the dissociation of the PP (roughly: the first step in (6)) as a lexical process, an instance of *argument raising*. Since nothing in the present paper hinges on the choice between these analyses, I will assume the movement analysis above for the sake of representational simplicity; see the references given above for details and arguments.

3. The Scope of the Phenomenon

To get a reasonable data base for the present studies, I conducted a number of searches on the COSMAS data base of written German at the Institut für deutsche Sprache in Mannheim, Germany, searching for about a dozen nouns which typically occur with PP attributes, followed by a comma (all relative clauses in German are separated by commas) and the pertinent preposition within a window of five consecutive words. Of the twelve, I found clear instances of the construction for seven, *Wirkung auf, Information über, Argument gegen, Schuß auf, Gefühl für, Plan für* and *Angst vor* ('effect on', 'information about', 'argument against', 'shot at', 'feeling for', 'plan for', 'fear of'). What all these examples have in common is that the preposition involved is not the default adnominal preposition *von* (roughly similar to English 'of'), and that the PP cannot generally be replaced by an adnominal genitive DP to express the same grammatical function.[1]

Presumably, these cases are not all uniform. It is notable that the relative clauses found for some of these nouns all involve a very small number of extremely specific verbs, which, in non-relative clause environments, would be amenable to an analysis as *Funktionsverbgefüge* (FVG, roughly 'functional verbal phrases'). Examples of this class include the examples found with *Angst haben, Wirkung haben/ausüben, Gefühle hegen, Schüsse abgeben* and *Pläne machen* (see (7) for translations). Indicative of FVGs is that the verb contributes either no discernible meaning at all, or that the meaning of verb plus object is highly idiosyncratic, and the whole complex can be replaced by a simple verb, which, tellingly, selects for the same preposition as its complement:

(7)   a.   Angst haben vor — sich fürchten vor   (fear of — fear)
        b.   Wirkung haben/ausüben auf — wirken auf   (fear of — fear)
        c.   Gefühle hegen für — empfinden/fühlen für (feeling for — feel)
        d.   Schüsse abgeben auf — schiessen auf   (shot at — shoot)
        e.   Pläne machen für — planen für   (plan for — plan)

An extreme case in this regard is the verb *hegen* in *Gefühle hegen*, 'harbor

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1.   For example, one can say *das Argument gegen Peter* and *das Argument von Peter* or *das Argument Peters*, 'the argument of Peter/Peter's', but the latter two mean 'Peter's argument' rather than 'the argument against Peter'.

feelings' , which only occurs with this noun and perhaps a few other frozen expressions (such as *hegen und pflegen*, 'harbor and foster'). In other cases, such as *ausüben* and *abgeben* the verbs are rather productive, but have different meanings when used with objects other than *Wirkung* and *Schüsse*.[2]

Accordingly, these verbs sound strange or zeugmatic when combined with a general noun such as an indefinite pronoun, a bare quantifier or a *wh*-expression:

(8)   a.   #Was hegt   Godehard für die Baronin? (Nur   die
            what harbored G.   for the baroness (Only the
            allerzärtlichsten Gefühle.)
            most tender   feelings)

      b.   #Wir haben einiges   auf die Tiere   abgegeben. (Zum
            we   have   quite a bit on the animals given   (For
            Beispiel Schüsse.)
            example shots)

I will call these instances of RS, as well as the nouns that occur in them *class 1*. Class 1 cases then sharply contrast with *class 2* cases, which in my sample are *Argumente für* and *Informationen über*. These occur with a wider range of different verbs and verbal constructions — seven for 'arguments', four for 'information' — and more are easily made up on the spot. When combined with indefinite and *wh*-pronouns, they form fine sentences, at least with a number of verbs (judgements on these are slippery, and no examples were found in the corpus):

(9)   a.   Es wurde einiges   gegen   diese Initiative vorgebracht.
            it was   quite a bit against this   initiative advanced

      b.   Was hast du über die Männer zusammengtragen?
            what have you about the men   collected

In the discussion to follow, I will illustrate mainly with class 2 cases, i.e. *information* and *argument*. The discussion carries largely over to the class 1 cases, however, and where these differ, I will explicitly note that.

4. Preliminaries to the Analysis of RS

Before going on the provide an actual analysis of RS, it is useful to become clear about just what the analysis should encode. Underlying most existing analyses of *wh*-stranding is the idea that at some level of syntactic representation, a local relation should hold between the attributive PP and the

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2.   *Ausüben* means roughly 'pursue', 'practice' or 'exert'. *Abgeben* simply means 'to give away'.

head N of the DP it modifies. Why should this be the case? There are two potential reasons:

(SmD) Semantic Dependency: the N meaning and the PP meaning need to be composed in a local configuration.

(SlD) Selectional Dependency: the N selects for the PP

We can reasonably assume that selectional dependencies entail a semantic dependency. Accordingly, (SmD) is a proper sub-assumption of (SlD).

Finally, we should not discard the possibility that the PP is neither semantically nor syntactically dependent on the N directly:

(NoD) No Dependency: the PP meaning isn't directly composed with the N meaning at all. Rather the PP functions as an adverbial modifier, i.e. it combines with the verbal meaning.

According to (NoD), the fact that PP and DP seem rather independent when it comes to movement is not surprising: They simply don't entertain any local relation whatsoever.[3]

(NoD) seems an attractive solution in particular for the class 2 cases, i.e. those that freely occur with *wh*-expression, indefinite pronouns etc. In the next subsection I will show that (NoD) runs into some problems, and is probably not feasible.

4.1. Against (NoD)

There is a simple implementation of (NoD) which I want to dismiss on grounds of intuitive semantic implausibility, namely the idea that the PP in stranding constructions are event modifiers of sorts, i.e. have no direct semantic link with the DP argument. Semantically, these PPs are clearly *not* event modifiers: If the arguments against the theory were ignored, it's the arguments that are against his theory, not the ignoring. If information about the program is leaking, it is the the information that is about the program, not the event of leaking.

A more plausible analysis would be one that links the semantics of the PP to one of the argument slots of the verbal predicate, in a way somewhat similar to a secondary predicate like *serve the soup hot*. Assume for example that *ignore* translates as in (10a), and *against the theory* is simply the set of entities that are against the theory (whatever that means), as in (10b), then the PP can combine with the verb to form (10c):

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3. This doesn't necessarily mean that they can't. The sentences in which the PP directly follows the N are simply ambiguous between a $[_{VP}[_{DP}\ D\ [_{NP}\ N\ PP]]\ V]$ structure and a $[_{VP}[_{DP}\ D\ [_{NP}\ N]]\ [\ PP\ V]]$ structure. In sentences where they are discontinuous, only the latter can be the source structure.

(10) a. ignore: $\lambda x \lambda y.ignore'(x)(y)$

   b. against the theory: $\lambda z.against'(the'(theory'))(z)$ $\boxed{= a.t.t'}$

   c. ignore against the theory: $\lambda x \lambda y.ignore'(x)(y) \wedge a.t.t'(x)$

Formula (10c) denotes a function that maps an entity x onto the empty set if x is not a theory, and onto the set of those who ignore x, if it is. Combine this with, say, *an argument*, and the result is (11), as it should be:

(11) $\lambda y.\exists x[argument(x) \wedge ignore'(x)(y) \wedge a.t.t'(x)]$

Note that this meaning is the same we would compose if we combined N and PP:

(12) a. argument: $\lambda x.argument'(x)$

   b. argument against the theory: $\lambda x.argument'(x) \wedge a.t.t'(x)$

         (from (12a) and (10b) by intersective modification)

   c. an argument against the theory:

        $\lambda P.\exists x[argument'(x) \wedge a.t.t'(x) \wedge P(x)]$

   d. ignore an argument against the theory:

      $\lambda y.\exists x[argument'(x) \wedge a.t.t'(x) \wedge ignore'(x)(y)]$

Unfortunately, however these meanings will only be equivalent if the determiner of the DP containing the NP is symmetric. Instead of a proof, let me just give an illustrative example. Take (13):

(13) weil Kurt jedes Argument gegen die Theorie ignorierte

   a. against the theory ignored (=(10c)):

           $\lambda x \lambda y.ignore'(x)(y) \wedge a.t.t'(x)$

   b. every argument: $\lambda P.\forall x[arg'(x) \rightarrow P(x)]$

   c. every argument against the theory ignored:

      $\lambda y.\forall x[arg'(x) \rightarrow ignore'(x)(y) \wedge a.t.t'(x)]$

   d. Kurt every argument against the theory ignored:

      $\forall x[arg'(x) \rightarrow ignore'(x)(kurt') \wedge a.t.t'(x)]$

The meaning derived for this sentence, expressed by the translation in (13d), is intuitively wrong. It should be the case that as long as Kurt ignores every argument against the theory, the sentence is true, but according to (13d) it is true only if moreover every argument is against the theory.[4]

  I conclude that neither version of (NoD) is very promising, despite its

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4. An interesting twist about this flaw is that it doesn't make itself felt in RS, because arguably, PP movement out of a DP never happens if the determiner of DP isn't symmetric. The empirical generalization would thus appear to be:

(i) DP+[PP+V] composition is possible only where the result is equivalent to [$_{DP}$ D [NP+PP]]+V composition.

initial appeal and promise of a rather simple analysis. Moreover, the failure of it as illustrated in examples like (13) shows us exactly why at least (SmD) from above must hold: To derive the correct meanings for all these cases, the meaning of the PP modifier must combine with that of the N *before the N meaning combines with the determiner*. This is precisely what is meant by 'composed in a local configuration' in (SmD).

4.2. Against SlD

As said above, (SlD) assumes that the PP attribute is syntactically selected by the head noun of the DP. This is intuitively plausible: After all, we often quote these as *Argumente gegen*, *Informationen über*, *Wirkung auf* etc. Moreover, at least in some cases it seems that the particular choice of P is pretty randomly determined by the head N (why, for example, is it *Wirkung auf*, lit. 'effect on', rather than 'effect for', or, for that matter 'effect under'?).

There is, however, the weaker alternative (SmD), according to which the syntactic relation between N and PP is simply modification. Let me point out that quite a bit hinges on this choice. In short, if the relation between N and PP is always *bona fide* syntactic selection, then there is no way around having an equally *bona fide* local relation between the lexical N and the PP in the syntax at some point. If, on the other hand, their relation is merely a semantic one, it can in principle be mediated through a predication relation.

There is a direct empirical reason to prefer (SmD). (SlD) essentially treats the N in these constructions as relational nouns: the *against* PP is an argument to *argument*, the *on* PP an argument to *effect* and so on. Note now that all N–PP combinations we find in RS occur more or less felicitously in copular constructions of the form *DP is PP* (some class 1 cases are somewhat degraded, a fact for which I have no explanation):

(14)   a.   Seine Argumente sind gegen   die Initiative.
              his   arguments   are   against the initiative
        b.   Die Informationen sind über   die Männer.
              the informations   are   about the men

(15)   a.   Ihre größte   Angst ist vor dem Sterben.
              her greatest fear   is of the dying
        b.   ?Seine Wirkung ist hauptsächlich auf Frauen.
               his   effect   is mainly   on women

Observe now that true PP arguments to relational Ns cannot occur in the post-copular position (Pafel, 1995):

I wouldn't even know, however, how to capture this generalization in the theory.

(16)   a.   der Bruder von meiner Freundin
              the brother of   my   girlfriend
        b. ∗Der Bruder ist von meiner Freundin.
              the brother is of   my   girlfriend

(17)   a.   die Zerstörung von Rom
              the destruction of   Rome
        b. ∗Die brutalste   Zerstörung war von Rom.
              the most brutal destruction was of   Rome

This contrast already hints at a genuine difference between nouns that truly select a PP complement, and those in our classes 1 and 2. We can probably go a little deeper here: The reason why (16b) and (17b) are out is presumably that the VP in copular sentences denotes a property, or a function from individuals to truth values. The copular itself either denotes a relation between individuals and properties (predicational copular sentences), or between two individuals (identificational copular sentences). Now, if the post copular PP in (16b) and (17b) were to be interpreted as an argument to the head N of the subject, the VP would have to denote a function from properties to truth values, and the copular itself a relation between properties and individuals, which (16b) and (17b) suggest it patently doesn't.

Note in addition that even if the post copular PP *could* be interpreted as an argument to the head N of the subject DP, the resulting interpretation would be wrong. This is rather clear intuitively: (15a) doesn't mean 'her biggest fear of dying is' or 'her biggest fear of dying exists'; and even (14b) doesn't mean that the information about the men exists, but rather that the information that there is is about the men.

We can make the same argument more formally, using again non-symmetric quantifiers. (18) below says that more arguments were against the initiative than for it (or for or against anything else). If we were to interpret the PP as a DP internal argument to N, we would predict it to mean that most arguments against the initiative are (or exists), which is blatant nonsense:

(18)   Die meisten Argumente waren gegen   die Initiative.
        the most   arguments were against the initiative

It is important to keep this argument against (SlD) apart from the argument involving asymmetric quantifiers launched against (NoR) above. There it was shown that PPs in regular sentences involving class 1 and class 2 nouns must be interpreted within the restriction of the determiner. In this subsection it was shown that the PP in copular sentences must be interpreted as part of the predicate, and hence within the nuclear scope of the quantifier. There is, however, no contradiction here: Like any N modifier, these PPs can occur within

NP or as post copular material in a copular sentences, with differences in interpretation. The conclusion is simply that even the the NP internal construals are modification structures, not complementation structures.

5. Two Analyses

If the conclusions we reached in the previous sections are sound and correct, we should give an analysis of RS on which the PP originates as a modifier within the argument DP and the derivation of the DP PP V order proceeds in two steps from the underlying [$_{DP}$ D [$_{NP}$ N PP]] V structure.
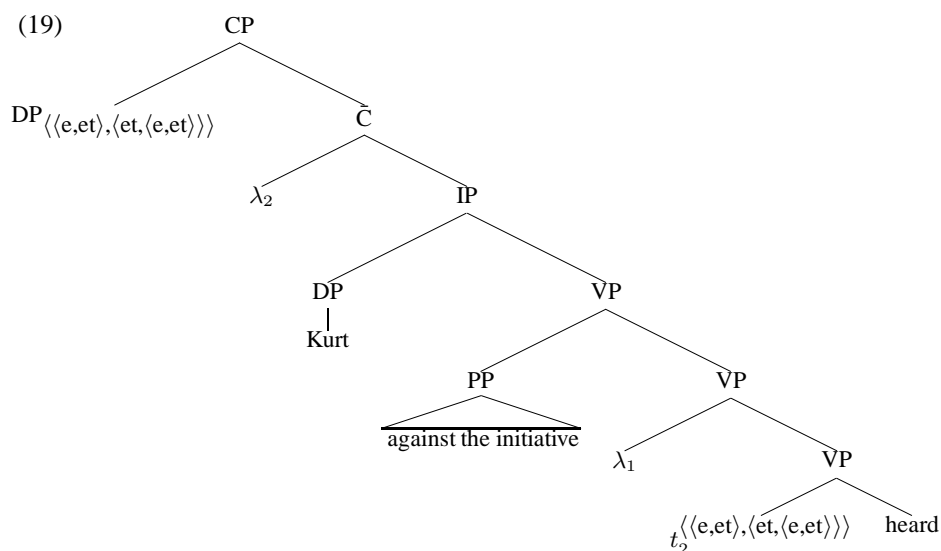
Before doing so, however, I have to make a disclaimer. In what follows, we will not give a serious compositional semantics for these constructions. The reason has nothing to do with RS, but with the properties of remnant movement structures in general, in particular the fact that the trace of the PP is not c-commanded by the PP after fronting of the remnant category. A semantics to treat these in full generality will be extremely complex and, as far as I can see, somewhat stipulative. This holds for all kinds of remnant movement constructions (topicalization, *wh*-movement and relativization) and both analyses I will discuss.

Concretely, I will assume a criminally complex and specific type for the DP that undergoes movement to SpecC, moreover one that is specific to constructions in which the object of a transitive verb undergoes remnant movement after extraction of a PP modifier. This type will be $\langle\langle e,et\rangle,\langle et,\langle e,et\rangle\rangle\rangle$, in words: a function from transitive verb meanings to functions from modifier meanings to transitive verb meanings.[5]

The trace left by movement of DP to SpecC will be of that same type. The overall structure for *(Argumente) die Kurt gegen die Initiative vernahm*, 'arguments which Kurt heard against the initiative', thus looks like (19):

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5.   This corresponds to the following reasoning: A relative clause denotes a property (type $\langle et\rangle$); the RelDP is an object, which means is would ordinarily take transitive verb meaning (type $\langle e,et\rangle$) to yields a VP meaning (type $\langle et\rangle$); except that this clause in the end should denote a property, as just said, rather than a truth value, which means object and tV should yield something which takes a subject meaning and yields itself a property; that gives us $\langle\langle e,et\rangle,\langle e,et\rangle\rangle$. Now, in addition, the RelDP contains the trace of the PP, which we assume to denote a property as well; therefore, RelDP must take another property argument, yielding its final type:

$$\langle \underbrace{\langle e,et\rangle}_{trans.verb} ,\langle \underbrace{et}_{PPmodif.} ,\langle \underbrace{e}_{subject}, \underbrace{et}_{rel.clause} \rangle\rangle\rangle$$

(19)   CP

DP$_{\langle\langle e,et\rangle,\langle et,\langle e,et\rangle\rangle\rangle}$ C̄

                              λ_2 IP

                          DP   VP

                          Kurt   PP   VP

                              against the initiative λ_1 VP

                                                      $t_2^{\langle\langle e,et\rangle,\langle et,\langle e,et\rangle\rangle\rangle}$ heard

IP will compose to translate as in (20), where T_2 is a variable of the infamous type $\langle\langle e,et\rangle,\langle et,\langle e,et\rangle\rangle\rangle$:

(20) $((T_2(heard'))(against'(the'(initiative'))))(kurt')$

The movement index of DP, λ_2, the movement index of DP, triggers abstraction over this variable giving us (21):

(21) $\lambda T_2.((T_2(heard'))(against'(the'(initiative'))))(kurt')$

This, then is the meaning of C̄, which combines with that of RelDP to yield a relative clause meaning. Now the question is just what RelDP is, and what it denotes. There are two choices.

5.1. A True Head Raising Analysis (HRA)

Let us start with a full blown HRA of relative clauses, as proposed in Vergnaud (1974) and revived by Kayne (1994) and many following him. The following derivation gives an idea of what such an analysis might look like (note that the first three steps in (22) are entirely parallel to those in (6) above):

(22)   Kurt die$_{rel}$ Argumente gegen   die Initiative vernahm
         K.   RelP arguments against the initiative heard

   →   Kurt *[gegen die Initiative]*$_1$ [die Argumente t_1] vernahm

   →   *[die Argumente t_1]*$_2$ Kurt [gegen die Initiative]$_1$ t_2 vernahm

→   [$_{CP}$[$_{DP}$[$_{NP}$ *Argumente]*$_3$[$_{DP}$ die t_3 t_1]$_2$] Kurt [gegen die Initiative]$_1$ t_2 vernahm]]

The RelDP is thus of the form (23), which I assume to translate as (24):

(23)
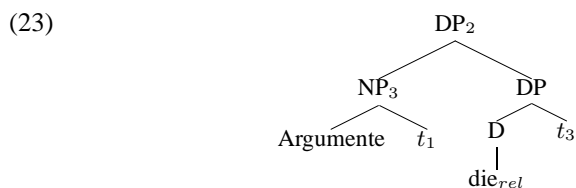
(24) $\lambda R \lambda P \lambda x \lambda y. P(y) \wedge R(y)(x) \wedge arguments'(y)$

Combined with the $\bar{C}$ meaning (21), we get:

(25) $\lambda T_2.((T_2(heard'))(against'(the'(initiative'))))(kurt')$
$(\lambda R \lambda P \lambda x \lambda y. P(y) \wedge R(y)(x) \wedge arguments'(y))$
$= ((\lambda R \lambda P \lambda x \lambda y. P(y) \wedge R(y)(x) \wedge arguments'(y)$
$(heard'))(against'(the'(initiative'))))(kurt')$
$= \lambda y.against'(the'(ini.'))(y) \wedge heard'(y)(kurt') \wedge arguments'(y)$

This then combines with an ordinary determiner meaning to give a DP denotation.

5.2. A Double-Headed Analysis

The alternative account assumes, too, that RelDP is complex and provides a place for (the trace of) a PP modifier. However, the N head of the RelDP is empty, and, accordingly, there is no need for sub-extraction either. The RelDP thus simply looks like (26), translating as (27a), which yields (27b) as the translation for the entire relative clause:

(26)

(27)   a. $\lambda R \lambda P \lambda x \lambda y. P(y) \wedge R(y)(x)$
b. $\lambda T_2.((T_2(heard'))(against'(the'(initiative'))))(kurt')$
$\lambda R \lambda P \lambda x \lambda y. P(y) \wedge R(y)(x)$
$= \lambda y.against'(the'(initiative'))(y) \wedge heard'(y)(kurt')$

Finally, and in contradistinction to the previous analysis, this relative clause combines with an external head, semantically by intersective modification:

(28)   [$_{\bar{N}}$ Argumente$_N$ [$_{RelCP}$ [$_{DP_2}$ die t_1] Kurt [$_{PP}$ gegen die Initiative]$_1$
        vernahm t_2]]

(29) $\lambda y.against'(the'(init.'))(y) \wedge heard'(y)(kurt) \wedge arguments'(y)$

Note that the translation in (29) yields the same interpretation as that in (25).

6. A Brief Comparison

Let me conclude by throwing in some arguments that might help decide between the two analyses sketched above. To start, the true head raising analysis has an advantage in predicting the possible placements of the PP. According to it, the PP is either stranded (i.e. scrambled), as in (30a), or it remains within the RelDP and gets moved with it, as in (30b). Both these analyses correspond to actual word orders:

(30)   a.   die **Argumente** die   Kurt **gegen die Initiative** anführte
              the arguments   which K.   against the initiative adduced
        b.   die **Argumente gegen die Initiative**, die   Kurt anführte
              the arguments   against the initiative   which K.   adduced

The double headed-analysis has no trouble deriving these two orders either: In (30a), the PP is scrambled, in (30b) it is base-generated (and remains) within the RelCP external head. It allows, however, for a third structure, in which the PP is generated within the RelCP, but doesn't scramble prior to relativization. The predicted word order is (31), which is unacceptable:

(31)   ∗die **Argumente**, die   **gegen die Initiative** Kurt anführte
         the arguments   which against the initiative K.   adduced

This analysis thus needs to stipulate that the PP must scramble prior to relativization.

On the other hand, the true head rising analysis predicts strictly complementary distribution between the two PP placements: There is only one N, which either takes its PP with it, or strands it. While this is for the most part adequate, stranded PPs within the RC can, under favorable pragmatic (I assume) circumstances, actually co-occur with PPs in the same grammatical function contained in the external head:

(32)   Wir benötigen dieselben **Informationen über** Fritz, die wir **über**
        we   require   the same informations   about F.   that we about
        Klaus haben.
        K.   have
        'We need the same information about Fritz we have about Klaus.'

(33)   Er präsentierte nicht ein einziges **Argument gegen** Fritz, dass wir
        he presented   not   a   single   argument against F.   that we
        nicht schon   **gegen**   Klaus gehört hätten.
        not   already against K.   heard   had
        'He didn't present a single argument against Fritz that we hadn't
        already heard against Klaus.'

The semantics if these constructions is tricky, as it requires us to come to
terms with what exactly the denotation of 'information' and 'argument' in
these constructions is. What seems clear however, is that a HRA will run into
problems here, since it is committed to an underlying structure of the form
'we already heard the argument against Fritz against Klaus', which doesn't
look promising for deriving the pertinent interpretation.

      I won't finish without at least pointing out that there are general reasons
to be skeptical about the appropriateness of this approach. Many of them
have been laid out in Borsley (1997) and elsewhere. For example, the case
morphology on the head noun (and, where applicable, adjectival modifiers
accompanying it) is clearly determined by the grammatical function of the
whole DP including the RC, not the relativized DP within it. Thus in (34),
the gap within the relative clause is in subject position(as expected, this case
shows up on the relative pronoun (a.k.a. the determiner of the relativized
DP). However, the head noun *Beamten*, 'civil servant' is marked accusative,
not nominative, since its grammatical function within the matrix clause is that
of an object:

(34)   Man bestach einen Beamten,   der   im   Rathaus
        one   bribed   a-ACC civil servant-ACC who-NOM in the town hall
        arbeitete.
        worked

The HRA owes a case theory which makes sense of this pattern, while the
external head analysis derives it straightforwardly.

      For another example, the HRA doesn't account for the basic fact that the
external determiner and the head noun form a constituent, to the exclusion of
the entire relative clause, as is evident from extraposition data.[6]

      To be sure, the argument is not that these facts cannot somehow be ac-
commodated (see e.g. Bianchi (2000)), it is that nothing in the behavior of
other constructions, movement or not, leads us to *expect* it (which, come to
think of it, is true of the entire derivation involved in the HRA).

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6.   Note that it is irrelevant for this argument whether you assume that extraposition
is movement of the RC to the right (arguable the correct analysis for German and
English), or of the determiner+noun complex to the left, as is sometimes assumed
(though the empirical arguments for this are a well-kept secret).

The double head analysis proposed as an alternative is unproblematic in that respect. It completely mirrors the derivation for other cases of remnant movement (no sub-extraction of NP), relative clauses (external head), and directly yields the correct case and constituency facts.

To summarize, RS does provide a genuine argument for complex heads within relative clauses, but it doesn't show that the head we actually see (or hear) originates from within the RC.

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