TI
A note on modal passives

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1. INTRODUCTION*

In "A Note on Case Absorption" van Riemsdijk (1982) discusses the construction in (1). He calls it the TI-construction (Te + Inf). Sentences of the type in (1) are also known as modal passives (cf. Hoekstra & Moortgat 1979).

(1)   a. Dat bier is niet te drinken
     That beer is not to drink
     'That beer is undrinkable'
   b. Henks argumenten zijn te begrijpen
     Henk's arguments are to understand
     'Henk's arguments are understandable'

Rather convincingly van Riemsdijk demonstrates that the construction in (1) is derived by the application of NP-movement. In this paper I shall first discuss the properties of this construction with respect to the internal structure of the infinitival clause, the distribution of TI, the obligatoriness of NP-movement and the modal interpretation. After a presentation of the facts, I shall give an outline of a proposal in which all the apparently extraordinary properties of TI follow from one assumption with respect to the status of the inflectional morpheme te. For a more detailed and complete discussion of the modal passive in Dutch I refer to Bennis, Neyendorff & Rats (in prep.).

2. TI AND PASSIVE

As van Riemsdijk argues, TI-constructions of the type in (1) contain a gap in object position. Moreover, he shows that this gap is created by NP-movement. He presents two arguments in favour of this. First, P-stranding is possible if a gap is the result of Wh-movement, but not in the case of NP-movement. It is clear that P-stranding is not allowed in TI. This is shown in (2a). The second observation which favours an NP-movement analysis of (1) is the fact that the external argument of the embedded infinitival verb is normally not lexically realized, but may appear in a by-phrase, as in (2b).
(2) a. *Deze blikjes zijn niet uit te drinken
   These cans are not from to drink
b. Dat bier is door Henk te drinken
   That beer is by Henk to drink
   ‘That beer must be drunk by Henk’

Additional arguments in favour of a passive analysis of TI are:
- intransitive verbs which may appear in impersonal passives show up in TI as well. This is shown in (3a).
- ergative verbs do not appear in TI, just as they do not appear in passives. This is shown in (3b).
- verbs with Small Clause complements appear in TI without the SC having a lexical subject.¹ This is shown in (3c).

(3) a. In Tilburg is niet te werken
    In Tilburg is not to work
    ‘It is impossible to work in Tilburg’
b. *In Tilburg is niet te vallen
    In Tilburg is not to fall
c. Henk is niet gemakkelijk kwaad te maken²
    Henk is not easily angry to make
    ‘It is not easy to make Henk angry’

We may conclude from this discussion that TI has all the characteristics of a normal verbal passive, with the exception of passive morphology on the verb. If we accept the idea that in passives the external argument of a verb is absorbed by the passivized verb, the question arises as to how the external argument of the verb disappears in the TI-construction. If we can find a plausible answer to this question, the NP-movement properties are in line with the Burzio-generalization.

3. THE DISTRIBUTION OF TI

The distribution of TI is basically identical to the distribution of AP and substantially different from the distribution of VP, IP or CP. Let us discuss some of these distributional properties.
- TI occurs prenominally in NP. This position is typical for AP and not open to any other verbal projection. An example is given in (4).

(4) Dit is een (door / voor Henk) te betalen rekening
    This is a (by / for Henk) to pay bill
    ‘This is a bill which can/must be paid by Henk’
- TI occurs in the complement of those raising verbs which allow AP-complements (zijn (to be), lijken (to seem), blijken (to appear)). The raising verb schijnen (to seem) does not take AP-complements, but does take infinitival complements (cf. Bennis 1986). TI is not allowed with schijnen, as is shown in (5). The verb zijn does not take infinitival complements, but does occur with AP-complements. It occurs with TI quite frequently.

(5) Dat bier  is/lijkt/blijkt/*schijnt niet te drinken
That beer is/seems/appears/seems not to drink

- TI appears in constructions in which we find an AP Small Clause with a lexical subject, such as the complement of vinden (to consider) and the complement of absolute met (with), but not in constructions in which only a verbal Small Clause is allowed, as in the complement of perception verbs.

(6) a. Henk vindt dat bier niet te drinken
   Henk considers that beer not to drink
   b. Met nog drie bierjes te drinken trok Henk zijn jas aan
   With still three beers to drink put Henk his coat on
   c. *Henk zag de varkens te slachten
   Henk saw the pigs to slaughter

- another AP-like property of TI is the fact that the infinitival verb does not have to undergo Verb Raising in complex infinitival constructions. Moreover, Verb Raising in the case of TI is very restricted. The infinitival verb in TI may be moved to the next verb, in which case acceptability decreases. Moving the infinitive to a more complex verb cluster leads to clear ungrammaticality (cf. van Riemsdijk (ibid.), note 1)

(7) a. Henk vindt dat dat bier niet te drinken is (−VR)
   Henk thinks that that beer not to drink is
   b. ?Henk vindt dat dat bier niet is te drinken (+VR)
   c. Henk zegt dat dat bier niet te drinken schijnt te zijn (−VR)
   Henk says that that beer not to drink seems to be
   d. *Henk zegt dat dat bier niet schijnt te zijn te drinken (+VR)

The marginal acceptability of (7b) does not argue against an adjectival status of TI. Adjectives do not undergo Verb Raising, with the exception of those adjectives which look like participles, such as behept (afflicted) and geschikt (fit). Those adjectives can undergo Verb Raising only minimally, as the TI-constructions in (7). This is illustrated in (8).
(8) a. dat Henk daarmee behept is that Henk there-with afflicted is
    b. ?dat Henk daarmee is behept
    c. *dat Henk daarmee schijnt te zijn behept

The parallel between (7) and (8) suggests once more that TI is a construction with adjectival behaviour.
- A final property which points to the non-verbal character of the TI-construction is the fact that no aspectual or temporal auxiliaries appear in TI, as is shown in (9).

(9) *Dat probleem is niet te hebben / te zijn begrepen
    That problem is not to have / to be understood

4. THE INTERNAL STRUCTURE OF Ti

In all relevant respects the internal structure of TI is similar to the internal structure of IP and completely different from the structure of AP. This is apparent from the nature of the categories (te, V, ..), the order of constituents, the type of adverbiaal modification and the lack of adjectival morphology. The last two issues are illustrated by a comparison between TI and a comparable -baar adjectival in (10)-(12). These facts strongly suggest that TI is verbal with respect to its internal structure.

(10) een zeer kwetsbare jongen / een zeer te kwetsen jongen
    a very vulnerable boy / a very to hurt boy

(11) een kwetsbare jongen, een kwetsbaar meisje / een te kwetsene jongen
    a vulnerable boy a vulnerable girl a to hurt boy

(12) een onkwetsbare jongen / een on-te-kwetsen jongen,
    *een te onkwetsen jongen
    an invulnerable boy an un-to-hurt boy

5. THE MODALITY OF TI

The TI-construction in (13a) receives two interpretations, as indicated in (13b,d). It is interesting to note that one interpretation of (13a) corresponds to the epistemic interpretation of (13b), as is shown in (13c), whereas the the other interpretation of (13a) corresponds to the deontic interpretation of (13d), as is illustrated in (13e).
(13) a. Deze som is op te lossen
   This sum is to solve
b. This sum can be solved
c. It is possible that this sum is solved
   (not: Someone is able to solve this sum)
d. This sum must be solved
e. Someone has to solve this sum
   (not: It must be the case that this sum is solved)

We may thus argue that TI has both an epistemic and a deontic interpretation. There are several differences corresponding to the two interpretations in (13). First of all, the distribution determines to a large extent which interpretation has to be selected. In the complement of raising verbs and in the complement of *vinden* (consider) the TI is most naturally, or, in the latter case, even obligatorily interpreted in the epistemic CAN-interpretation. In prenominal position and in the complement of absolute *met* (with) the MUST-interpretation is favoured or obligatory, respectively. I shall not discuss these observations here. Another interesting fact is that the external argument of the verb is optionally expressible in a by-phrase in the MUST-interpretation, but in a for-phrase in the CAN-interpretation. Consequently the sentences in (14a,b) are not ambiguous.

(14) a. Deze som is door Henk op te lossen
   'This sum must be solved by Henk'
b. Deze som is voor Henk op te lossen
   'This sum can be solved by Henk'
c. *In Tilburg is door gastarbeiders hard te werken
   'In Tilburg foreign workers must work hard'

As is shown in (3), TI is possible with intransitive, non-ergative verbs. However, this is only true for the CAN-interpretation and not for the MUST-interpretation. This is illustrated in (14c). The modality of TI and the properties of the two modal interpretations must follow from a property of TI. Because modal verbs take *te*-less infinitival complements it seems reasonable to take the modality of TI to be a consequence of the presence of *te*.

6. ANALYSIS

In contrast to other modal constructions, TI contains the I-constituent *te* (to). Given most recent analyses (Chomsky 1986, Pollock 1989, Bennis & Hoekstra 1989a) *te* is the head of IP. *te* is a verbal head taking a VP-complement. Now suppose that *te*, apart from being [+V], can be either [-N] or [+N]. If the [-N] option is selected, *te* is a verb-like head of IP. This is the situation in 'normal'
infinitives. In that case te must be part of a Tense-chain (Bennis & Hoekstra 1989b). If the [+N] option is selected the te-projection will be adjectival. The assumption that te is [αN] gives us a straightforward account for:
- the adjectival distribution of TI (te is [+V,+N])
- the verbal internal structure of TI (te takes a VP-complement)
- the non-occurrence of temporal auxiliaries in TI (adjectives do not belong to a Tense-chain)
- the non-occurrence of Verb Raising of te+V (adjectives do not belong to a Tense-chain)

This analysis is in several respects similar to Van Riemsdijk’s analysis of TI. Van Riemsdijk claims that TI is a [+V]-projection, which is somewhere in between a verbal and an adjectival projection.

An important question is how the non-appearance of the external argument in the complement of te can be made to follow from the assumption that te is [αN]. In regular passives the external argument of the verb becomes an implicit argument as a consequence of absorption by V. We might consider the fact that the distribution of passive participles is basically similar to the distribution of adjectives to be a consequence of this absorption. If we hypothesize that the absorption of an external thematic role turns a category into a [+N]-category, we are able to relate the [+V,+N] status of te to the absence of an external argument in the complement of te. I shall leave the technicalities concerning the way in which the external argument of the embedded V can be absorbed by te out of consideration here. The general idea is that [+V]-categories such as verbs and te can become [+V,+N] by absorption of an argument. If that is correct, the passive behaviour of TI follows. The Burzio generalization expresses that the verb is not able to assign objective case if it does not assign its external role to an argument position. The fact that ergative verbs do not occur in TI follows as well. te can only become [+N] by absorbing an external argument. In ergatives no external argument is present.

The final question is the most complicated one: how can we relate the modality of TI to the analysis given above? The complexity of the question derives from the fact that no complete and satisfactory account of ‘normal’ modality is available. Without explicit motivation I shall assume that modal verbs are base-generated in I and that the subject of a modal verb is raised from the complement VP to [SPEC,IP]. This implies that I shall assume that the external role of the deontic modal is an adjunct θ-role. We can now take modality to be a possible lexical property of verbal constituents in I, i.e. modal verbs and te. The differences between the two interpretations of TI follow from the theory. The non-occurrence of intransitive verbs in the MUST-interpretaion (deontic) (cf.(14)) follows from the θ-criterion since the adjunct θ-role of the modal
must be assigned to an NP, no such NP being available in a TI-construction such as (3a).

It is a central claim of Roberts (1987) that in verbal passives V assigns case to the absorbed external argument. We might then assume that a case-marked implicit argument can be lexically represented in a by-phrase. The other situation in which we find implicit arguments which are optionally realized in a PP are APs with for-PPs. Adjectives do not assign case. Suppose that an implicit argument is realized in a by-phrase if the implicit argument is case-marked and in a for-phrase if the implicit argument has no case. If that is correct, we expect te to be able to assign case with deontic TIs and not with epistemic TIs. We now find a situation which closely resembles the Burzio generalization. Deontic TIs assign an external (adjunct) θ-role and case to their implicit argument, whereas epistemic TIs assign neither an external θ-role nor case. If we make use of the theory on ergativity (Burzio 1986) and of Roberts’ ideas on case assignment in passives in a somewhat unorthodox way, we are able to relate all the properties of TI discussed here to the assumption that te becomes [+N] if it has absorbed the external argument of its complement.

NOTES

* I gratefully acknowledge the many contributions made to this article by Joan Neyndorff and Sabine Rats.

1. In this respect the TI-construction differs from -baar adjectives, which do not appear in this construction: *kwaadmaakbaar. It has often been claimed that the passive-like process in -baar-formation is a lexical process. The occurrence of (3c) indicates that TI-formation is not a lexical process, but in all relevant respects similar to the verbal passive.

2. For arguments against an easy-to-please derivation of (3c), I refer to van Riemsdijk (1982). One major argument against an analysis of the infinitival clause as an infinitival relative within AP is the fact that infinitivals relatives of this type are always introduced by the complementizer om (cf. Bennis & Wehmann 1987).

3. For modal verbs in Dutch one might claim that they are main verbs with an infinitival complement of the type CP, IP or VP. Alternatively, one might argue that modal verbs are base-generated in I as auxiliary verbs. I shall adopt the latter analysis here. Furthermore, it is not clear whether the subject of a modal is base-generated as the subject of the modal or as the subject of the complement of the modal. The sentence in (ia) may have two representations.

(i)   a. Henk kan naar GLOW gaan
     Henk kan to GLOW go

     b. Henk, kan [PRO₁ naar GLOW gaan]
     c. Henk₁ kan [₁₁ naar GLOW gaan]

   It might even be argued that an epistemic interpretation of (ia) corresponds to the raising structure in (ic), whereas the deontic interpretation of (ia) corresponds to the control structure in (ib). Analysing the epistemic interpretation as in (ib), we have to assume that only in constructions with modals expletive PRO is possible. The contrast in (ii) strongly suggests that at least the epistemic interpretation corresponds to a raising structure.
(ii) a. Er kan [in Tilburg worden gedanst]
   There can in Tilburg be danced
b. *Er wordt geprobeerd / Het is leuk [in Tilburg te worden gedanst]
   There is tried / It is nice [in Tilburg to be danced]

REFERENCES

Bennis, H. and T. Hoekstra (1989b), "Why Kaatje was not heard sing a song", in Jaspers, Klooster,
Bennis, H. and P. Wehrmann (1987) "Adverbial Arguments", in Beukema and Coopmans (eds.),
Bennis, H., J. Neyndorff and S. Rats (in prep.), "Modale Passieven".