

I Introduction

PREDICATE WHICH APPositIVES (PWAs) are a class of nonrestrictive, parenthetical relative clauses (see Potts 2002b). As the name implies, a PWA take a predicate-denoting XP as its antecedent. The following are some examples (PWAs italicized, antecedent underlined):

- (1) It drew from her, however, the exertion of speaking, *which nothing else had so effectually done before*...
— Jane Austen, *Pride and Prejudice*, 1813
- (2) Some 50,000 American soldiers and airmen will remain tucked away [...] ready to assist with logistics, intelligence, helicopters and even firepower if the Iraqis need such help—*which they will*.
— Xan Smiley, “Still nothing like normal”, *The Economist The World in 2011*, 2010
- (3) ...as long as [P_{HAVE} DP] is a well-formed piece of English, *which it is*.
— Heidi Harley, “Wanting, Having, and Getting,” 2004 (LI 35)

At first sight, PWAs look like they contain VERB PHRASE ELLIPSIS (VPE).

- There is material missing in the verbal structure of the clause, a predicate-denoting XP of some sort.
- The missing material typically comes after VPE-licensing heads (Lobeck 1995).
- Therefore, we could reason that the material was deleted on the surface under identity.

However they also look like relative clauses (Potts 2002b).

- They contain an overt relative pronoun, suggesting movement.
- The site of the missing material could be the origin of the pronoun.

Diagnostics provide evidence for both a movement account and a deletion account.

The main question: how do we reconcile A'-movement with apparent deletion?

- The proposed solution: Pronouns can be derived from VPs post-syntactically (Houser et al. 2007), causing them to spell out as *which*.
- The pronominalized VP is the relative operator in these PWAs.

2 PWAs are really relative clauses

PWAs contain gaps that look suspiciously like VPE, but they appear with a *which* at the beginning. Are the gaps derived by movement or deletion?

2.1 Gaps in PWAs cannot occur in islands.

VPE is unbounded; therefore, is is not island-sensitive (Ross 1967). A PWA is bad if the gap occurs inside an island inside of the PWA. If the gap were derived via VPE, we would expect to be able to license the ellipsis in the island despite this.

- (4) Relative Clause Island:
PWA: * Sam eats quickly, which Sally met a man who also does *t*.
VPE: Sam eats quickly, and Sally met a man who also does ____.
- (5) Subject Island:
PWA: * Sam eats quickly, which that Sally does *t* surprised Tom.
VPE: Sam eats quickly, but that Sally does ____ surprised Tom.

Since A'-movement is well known to be island-sensitive and VPE is not, this shows that PWAs contain movement.

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2.2 Gaps in PWAs are not optional. VPE is.

VPE is an optional process. Deletion of VPs never has to occur; thus, the following examples are both grammatical and equivalent:

- (6) VPE:
- Mary met Sally, and Harvey might also ____.
 - Mary met Sally, and Harvey might also meet Sally.

In PWAs, however, the missing VP can never be pronounced. It must actually be missing and can never be pronounced:

- (7) PWAs:
- Mary met Sally, which Harvey might also *t*.
 - * Mary met Sally, which Harvey might also meet Sally.

Since the VP must not be pronounced here, this is evidence against VPE. If the gap is the trace of movement, however, we expect that it cannot be pronounced.

2.3 Optional *do* in PWAs is unavailable in VPE

PWAs permit an optional *do* to appear at the site of the missing VP, but this is not available with VPE.²

- (8) PWA: Harvey gesticulates wildly, which you shouldn't (do) *t*.
 VPE: Harvey gesticulates wildly, but you shouldn't (*do) ____.

Noticeably, this *do* is distinct from *do*-support, which is blocked by the modal *should*. The unavailability of this *do* in VPE shows that the gaps in PWAs are not VPE gaps.

2.4 Summary

The evidence here supports two points:

- PWA-gaps are derived by A'-movement. They are island sensitive, and the obligatory gap points toward movement.
- PWA-gaps are not VPE-gaps. They can be distinguished with optional *do* and by obligatory non-pronunciation of the VP.

²The optional *do* can only occur roughly when the antecedent is active and eventive. It is thus distinguished from the *do* that can be stranded by VPE in British dialects, since that *do* may appear with statives (see Baltin 2010:39).

This points toward *which* being a relative operator moved from the position of the gap.

3 PWAs contain surface anaphora

There is still a question of what the VPE diagnostics tell us about this construction. We have seen evidence that A'-movement is involved in PWAs. It seems, then, that the relative pronoun *which* in PWAs is simply anaphoric on a predicate denoting antecedent, and moves from somewhere in the verbal structure to the specifier of CP_{rel}.

We should also check to see how the diagnostics for VPE come back, to rule out VPE entirely. VPE is a type of surface anaphora. What separates surface anaphora from deep (or pronominal) anaphora is that VPE simply causes syntactic material to be unpronounced at PF (Merchant 2001). That is, even though a VP that has undergone ellipsis is left unpronounced, it and all of its structure are still there in the syntax. The diagnostics for surface anaphora test for this structure. Pronominal anaphora, however, are supposed to be syntactically atomic, without any internal structure. These are merged into the structure directly from the numeration and do not involve covering up structure like surface anaphora does. The surprise for PWAs is that, despite the overt relative pronoun moving from the position where we normally see VP, the diagnostics come back in favor of a surface-anaphoric account.

3.1 A-extraction from missing VPs is possible

Schuyler (2001) demonstrates that it is possible to extract arguments out of ellipsis sites, but not out of pronominal anaphora like the *it* in *do it*. However, A-movement out of the missing VP is possible in PWAs.

- (9) *Unaccusatives*:
 The submarine sank quickly, which the ship will not *t*.
- (10) *Tough Movement*:
 The piano was tough to move, which the harpsichord was not *t*.

3.2 Missing antecedents can be introduced

Indefinites in a deleted VP can introduce antecedents for pronouns, since the indefinite is actually in the syntactic structure but simply unpronounced (Grinder & Postal 1971). Indefinites in the scope of negation, however, cannot introduce referents (Heim 1982). Thus, the fact that the pronoun in (11) can pick up a referent shows that the pronoun must have an antecedent outside the scope of negation, presumably in the missing VP.³ This is not a possibility for deep anaphora.

- (11) Sally has never painted a whole house, which Mary has *t*. It was rather small, though.

3.3 No pragmatic licensing is possible

Surface anaphora does not permit non-linguistic antecedents found purely in the surrounding context (Hankamer & Sag 1976). PWAs require a linguistic antecedent:

- (12) *Situation: Harvey is fighting a pig. Speaker A walks in:*
A: # Which Harvey shouldn't do!

Of course, this example could be ruled out on the independent grounds that the syntactic requirements on relative clauses are not met here—they need some sort of syntactic material to adjoin to. This example is presented only in the name of thoroughness. If it were grammatical, that would constitute evidence in favor of the deep anaphoric analysis, so it is worth checking.

3.4 Summary

The diagnostics here show that the verbal anaphor in PWAs has internal syntactic structure and, therefore, provide evidence for surface anaphora. This is surprising since we saw above that *which* appears to be moving from the position of the missing VP, and we might well expect a pronoun to be an atomic unit without internal structure. Moreover, we saw evidence that whatever causes the VP to go missing is not VPE. There needs to be a way to reconcile the fact that there is a pronoun that appears to be taking the place of a VP and the fact that the VP still seems to actually be there in the syntactic derivation, and we need to do this without relying on VPE *per se*.

³cf. #*Sally has never painted a whole house. It was rather small, though.*

⁴Potts (2002a,b) argues that *as* clauses contain A'-movement cross-linguistically. Whether it is the case that VP is always the moved element remains to be seen.

4 VP anaphors in other languages

There are other phenomena like PWAs that we can look to as a guide in forming an analysis. The cases here are *as*-clauses in Irish (McCloskey to appear), and pronominal verbal anaphora in Danish (Houser et al. 2007).

4.1 Irish *as* Clauses

Gaps in Irish *as* clauses look like those left by VPE in the language.

- (13) Chuaidh se 'un an aonaigh mar a dubhairt sé a rachadh ____.
went he to the fair as C said he C go.COND
'He went to the fair as he had said he would.'

The critical observation here is that the complementizer that appears in these constructions (glossed as C above) is the one associated with *wh*-movement. Thus, there is overt evidence for A'-movement in these constructions where it otherwise looks as though VPE has occurred. (McCloskey to appear) suggests the moved element is a silent VP, and this moved VP lands in Spec, CP.⁴

4.2 Danish *det* anaphora

In Danish, *det* is a verbal anaphor, homophonous with the neuter form of *it* (Houser et al. 2007).

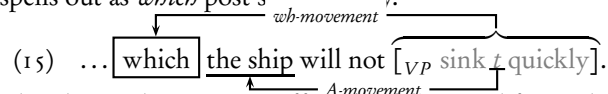
- (14) Han siger han kan hække, men selvfølgelig kan han ikke det.
He says he can crochet, but of course can he not DET
'He says he can crochet, but of course he can't.'

Det stands in the place of a missing VP. It permits extraction of arguments out of the missing material and permits the introduction missing antecedents. It cannot be licensed by pragmatic control. This shows that it is a surface anaphor. Moreover, it appears in a position where one expects to find a VP.

Houser et al. argue that *det* is pronominalized via VERB PHRASE PRONOMINALIZATION (VPP). VPP is very similar to VPE except that VP spells out as a pronoun rather than receiving null pronunciation. This permits the VP and its sub-constituents to be syntactically active, thus allowing them to be moved or to establish discourse referents.

5 Analysis

I adopt Houser et. al's VPP to explain the set of facts detailed above. We can account for all of the facts if the *which* in PWAs is a pronominalized VP. First, the VP moves to Spec, CP as it does in Irish *as*-clauses. The VP subsequently spells out as *which* post-syntactically.



The observed movement effects are accounted for under this analysis. Obligatory movement of VP to Spec, CP_{rel} accounts for the obligatory gaps in PWAs as in (7). The requisite movement of the VP also explains why the missing VP cannot be in an island as in (4) & (5).

Pronominalization explains VPE-like properties. Since the pronominalization process derives the pronoun post-syntactically, A-movement out of VP can happen as it normally does. Before it is moved to Spec, CP, the VP is present in the structure at the time argument movement happens, thereby capturing (9) & (10). Similarly, indefinites in the pronominalized VP can still establish referents, as in (11), since they are still there in the structure to do so. Pronominalization of the VP simply covers up this internal structure, just like VPE.

6 Conclusion

We have seen that diagnostics show evidence for both an A'-movement and a deletion account of PWAs. Islands and obligatoriness suggest movement, while extraction and missing antecedents suggest deletion. These facts can be reconciled with pronominalization. Provided a post-syntactic process of pronominalization, as argued for by Houser et al. (2007), we can capture the VPE-like surface-anaphoric properties of the verbal anaphor in PWAs. If this analysis is on the right track, what we have is a rare instance of overt surface anaphora.⁵ What this ultimately requires is the post-syntactic derivation of pronouns before PF. Exactly how this would work remains to be worked out, but it stands to reason that whatever process removes phonological material in VPE could also, in a late-insertion model of grammar, provide the VP with alternate material that spells out (Harley 2005). The data here supports such an approach.

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⁵Hankamer & Sag (1976) argued that the *so* of *do so* was another instance of overt surface anaphora, but this has been challenged in recent years. See, for instance, Houser 2010.