

An HPSG Approach to Welsh Unbounded
Dependencies

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Abstract

Welsh is a language in which unbounded dependency constructions involve both gaps and resumptive pronouns (RPs). Gaps and RPs appear in disjoint sets of environments. Otherwise, however, they are quite similar. This suggests that they involve the same mechanism, and in HPSG that they involve the SLASH feature. It is possible to provide an analysis in which RPs are associated with the SLASH feature but are also the ordinary pronouns which they appear to be.

1. Introduction

Welsh unbounded dependency constructions (UDCs) have received fairly extensive attention within various versions of transformational grammar, and a number of analyses have been outlined (see, for example, Hendrick 1988, Rouveret 1994, 2002, Sadler 1988, and Willis 2000, 2008). However, there has been very little discussion of Welsh UDCs within non-transformational frameworks.¹ In Borsley (2008) I discussed the properties of three Welsh UDCs: *wh*-interrogatives, clefts and free relatives. However, my main focus was on the ways in which they differ, and I said little about the similarities. It is the similarities that are the main focus of the present paper.

The most important similarity between the various UDCs is that they involve both gaps and resumptive pronouns (RPs). The obvious question is: how similar or how different are gaps and RPs? I will show that they differ in their distribution but otherwise are quite similar. In particular they are alike in three important ways. This suggests that they involve the same mechanism, and in HPSG it suggests that both involve the SLASH feature. I will propose an analysis which treats RPs as a realization of the SLASH feature but also treats them as the ordinary pronouns that they appear to be.

Most work on Welsh UDCs has concentrated on literary Welsh. However, as Borsley, Tallerman and Willis (2007: 6) note, ‘literary Welsh is not and never has been the native language of any group of speakers’. In

[↑] I have benefited from the comments of two anonymous reviewers for HPSG 2010 and also from those of Danièle Godard and Bob Levine. I am also grateful to Bob Morris Jones and David Willis for help with the data. I alone am responsible for what appears here.

¹ Harlow (1983) outlined an analysis of literary Welsh relative clauses within Generalized Phrase Structure Grammar.

view of this, I will follow Willis (2000, 2008) in focusing on the colloquial language.²

2. The distribution of gaps and resumptive pronouns (RPs)

We should begin by looking at the distribution of gaps and RPs. This is not an entirely simple matter, but it seems that they appear in disjoint sets of environments.

Before we proceed, we need to say something about the behaviour of pronouns and non-pronominal NPs. Pronouns, including RPs, are associated with agreement in a number of positions. In each case it is also possible to have the agreement with no visible pronoun. However, there is evidence from mutation (Borsley 1999) and agreement (Borsley 2009) that there is a phonologically empty pronoun in this situation. Non-pronominal NPs do not trigger agreement in the way that pronouns do, and we will see that nominal gaps generally behave non-pronominal NPs. A consequence of this is that it is not too hard to distinguish between true gaps and unexpressed RPs.

As one might expect, only a gap is possible in the highest subject position. Here is a simple example with the gap indicated in the normal subject position immediately after the verb:

- (1) Pa fyfyrwyr enillodd ___ y wobr?
which students win.PAST.3SG the prize
'Which students won the prize?'

Notice that the verb here is third person singular although the gap is presumably plural. This is as it would be with a following non-pronominal subject:

- (2) Enillodd y myfyrwyr y wobr.
win.PAST.3SG the students the prize
'The students won the prize?'

A third person plural verb appears with a third person pronominal subject, which may be unexpressed:

- (3) Enillon (nhw) y wobr.
win.PAST.3PL they the prize
'The students won the prize.'

² For discussion of the relation between literary and colloquial Welsh see Borsley, Tallerman and Willis (2007: chapter 1.3).

The following shows that we cannot have either an overt RP or an unexpressed RP in the highest subject position:

- (4) *Pa fyfyrwyr enillon (nhw) y wobr?
 which students win.PAST.3PL they the prize
 ‘Which students won the prize?’

We also have a gap and not an RP in the highest object position:

- (5) a. Beth welest ti ___?
 what see.2SG you
 ‘What did you see?’
 b. *Beth welest ti fo?
 what see.2SG you he
 ‘What did you see?’

There is no possibility of an unexpressed RP in object position. Hence there is only one version of the ungrammatical example to consider.

The data are not so clear, but it seems that embedded subject and object positions also allow gaps but not RPs. Consider first the following from Willis (2000):

- (6) Pa lyfrau wyt ti ’n meddwl byddai/fyddai ___
 which books be.PRES.2SG you PROG think be.COND.3SG
 ’n addas?
 PRED suitable
 ‘Which books do you think would be suitable?’

Here, the *wh*-phrase is plural, but the verb preceding the gap is third person singular. This suggests that the gap is a true gap and not an unexpressed RP. Willis (2000: 556) suggests that an RP is possible in a relative clause if the particle *y(r)* is included and if the verb is left unmutated. He gives the following example, where *bydden* is a basic unmutated verb form:

- (7) ?y llyfrau yr wyt ti ’n meddwl
 the books PART be.PRES.2SG you PROG think
 [y bydden nhw’n addas]
 PART be.COND.3PL they PRED suitable
 ‘the books that you think would be suitable’

It is notable that this example is marked ‘?’, suggesting that it is not fully acceptable. I will assume in subsequent discussion that such examples are ungrammatical. As for embedded objects, a gap is again fine, but an RP is quite marginal:

- (8) y llyfrau yr wyt ti 'n meddwl
 the books PART be.PRES.2SG you PROG think
 [y darllenai Megan ____]
 PART read.COND.3SG Megan
 'the books you think Megan would read'
- (9) ??y llyfrau yr wyt ti 'n meddwl
 the books PART be.PRES.2SG you PROG think
 [y darllenai Megan nhw]
 PART read.COND.3SG Megan they
 'the books you think Megan would read'

I shall assume that examples like (7) and (9) are ungrammatical. If they are, a question arises as to why they seem more acceptable than RPs in unembedded subject and object positions. Some psycholinguistic research by Staum and Sag (2008) may be relevant here. In an investigation of the repetition of the complementizer *that* in English, they found that examples are more acceptable the further apart the two complementizers are. I suggest, then, that RPs are more acceptable in embedded subject and object positions than in unembedded subject and object positions because they are further from the top of the dependency and the fact that they are RPs is less obvious.

I turn next to object of a non-finite verb. Things are rather complex here. We have examples like the following:

- (10) Beth ydych chi 'n ei fwyta ____?
 what be.PRES.2PL you PROG 3SGM eat ____?
 'What are you eating?'

The gap here is associated with agreement in the form of a clitic, which triggers soft mutation on the following verb, whose basic form is *bwyta*. In this, it is like a pronoun in this position and unlike a non-pronominal NP:

- (11) Ydych chi 'n ei fwyta (o)?
 be.PRES.2PL you PROG 3SGM eat he
 'Are you eating it?'
- (12) Ydych chi 'n bwyta cig?
 be.PRES.2PL you PROG eat meat
 'Are you eating meat?'

This might suggest that the gap in an example like (10) is really an unexpressed RP, and this is the conclusion that a number of researchers have reached (see Awbery 1977, Sadler 1988 and Rouveret 2002: 124). There are, however, reasons for doubting that this is right. First, as emphasized in Willis (2000: 545), an overt RP is not possible in this position:

- (13) *Beth ydych chi 'n ei fwyta o?
 what be.PRES.2PL you PROG 3SGM eat he
 'What are you eating?'

This is not what we would expect if examples like (10) contained an unexpressed RP. Second, as noted in Borsley, Tallerman and Willis (2007: 114), colloquial Welsh allows a third person singular masculine clitic to appear when the *wh*-phrase is plural. Thus, instead of (14), (15) may occur.

- (14) Pa lyfre ydych chi 'n eu prynu ___?
 which books be.PRES.2PL you PROG 3PL buy
 'Which books are you buying?'
 (15) Pa lyfre ydych chi 'n ei brynu ___?
 which books be.PRES.2PL you PROG 3SGM buy

It is also possible to have a third person singular masculine clitic when the *wh*-phrase is feminine, giving (17) instead of (16).

- (16) Pa gath ydych chi 'n ei phrynu ___?
 which cat be.PRES.2PL you PROG 3SGF buy
 'Which cat are you buying?'
 (17) Pa gath ydych chi 'n ei brynu ___?
 which cat be.PRES.2PL you PROG 3SGM buy

It is possible also to have no clitic and just a soft mutated verb:

- (18) Pa lyfre ydych chi 'n brynu ___?
 which books be.PRES.2PL you PROG buy
 'Which books are you buying?'
 (19) Pa gath ydych chi 'n brynu ___?
 which cat be.PRES.2PL you PROG buy
 'Which cat are you buying?'

We would not expect these possibilities if the gap was an unexpressed RP. I will assume, then, that we have a true gap here. The possibility of a clitic seems to be partly the result of special constraint. However, we will see later that there is a general mechanism allowing a third person singular masculine clitic and mutation here.

As one might expect, we have gaps and not RPs in an adverbial position, e.g. (20), and as PP arguments of adjectives, e.g. (21).

- (20) a. Sut gwyddost/wyddost ti hyn ___?
 how know.PRES.2SG you DEM
 'How do you know that?'

- b. Pryd cest/gest ti dy benblwydd ___?
 when get.PAST.2SG you 2SG birthday
 ‘When did you have your birthday?’
- (21) Am beth mae Gwyn yn siwr ___?
 about what be.PRES.3SG Gwyn PRED certain
 ‘About what is Gwyn certain?’

We do not have gaps as PP arguments of nouns. Rather than (22a), we have (22b), with a complex NP filler.

- (22) a. *Am bwy wyt ti ’n darllen llyfr ___?
 about what be.PRES.3SG you PROG read book
 ‘About what are you reading a book?’
- b. Llyfr am bwy wyt ti ’n ei ddarllen ___?
 book about what be.PRES.3SG you PROG 3SGM read
 ‘A book about what are you reading?’

We turn now to positions where only an RP is possible. An RP is possible in prepositional object position, but a gap is not possible (except in very colloquial varieties). An RP is possible in this position in a *wh*-interrogative, but it is the norm when the object of a preposition is questioned for the whole PP to be fronted. However, when the object of a preposition is relativized there is no alternative to an RP, as in (23).

- (23) y dyn werthodd Ieuan y ceffyl iddo (fo)
 the man sell.PAST.3SG Ieuan the horse to.3SGM he
 ‘the man that Ieuan sold the horse to’

Like most prepositions, the preposition here shows agreement in the form of a suffix with a pronominal object including an RP, and the object may be unexpressed.³ A gap is not possible except in very colloquial varieties. Thus, the following is ungrammatical outside such varieties.

- (24) *y dyn werthodd Ieuan y ceffyl i ___
 the man sell.PAST.3SG Ieuan the horse to
 ‘the man that Ieuan sold the horse to’

This example contains the basic uninflected form of the preposition, which appears with a non-pronominal NP, as in (25).

³ Some prepositions do not show agreement, and with such prepositions a pronoun, including an RP, must be overt. Here is a relevant example:

- (i) y bêl mae o ’n chwarae efo hi
 the ball bePRES.3SG he PROG play with she
 ‘the ball that he is playing with’

(25) i 'r dyn
to the man
'to the man'

A second position where only an RP may appear is the possessor position within an NP. The following relative clause illustrates:

(26) y dyn weles i ei chwaer (o)
the man see.PAST.1SG I 3SGM sister he
'the man whose sister I saw'

As we see here, nouns show agreement in the form of a clitic with a pronominal possessor, including a possessor which is an RP, and the possessor may be unexpressed. The following example with a gap in possessor position is ungrammatical

(27) *y dyn weles i chwaer ____
the man see.PAST.1SG I sister
'the man whose sister I saw'

There is no clitic here because a clitic does not appear with a non-pronominal possessor, as (28) illustrates:

(28) chwaer y bachgen
sister the boy
'the boy's sister'

The facts are not entirely straightforward, but it seems that gaps and RPs appear in disjoint sets of environments. Gaps appears in subject position, as object of a finite or non-finite verb, as an adjunct, and as a PP argument of an adjective. RPs appear as object of a preposition and as possessors.

3. Some similarities between gaps and resumptive pronouns

If the preceding discussion is sound, gaps and RPs are in complementary distribution. In this section I will show that they are similar in some important ways.

It has been well known since Ross (1967) that unbounded dependencies are subject to the Coordinate Structure Constraint, which essentially says that an unbounded dependency may not affect one conjunct of a coordinate structure unless it affects the other(s), in which case it is commonly referred

to as an across-the-board dependency.⁴ In the case of Welsh, it rules out (29) while allowing (30).

- (29) *y dyn [welais i ___ a gwelaist tithau Megan]
 the man see.PAST.1SG I and talk.PAST.2SG you Megan
 *‘the man that I saw and you saw Megan’
- (30) y dyn [welais i ___ a gwelaist tithau ___ hefyd]
 the man see.PAST.1SG I and talk.PAST.2SG you too
 ‘the man that I saw and you saw too’

(30) has a gap in both clauses. Consider now the following:

- (31) y dyn [welais i ___ a soniais amdano fo]
 the man see.PAST.1SG I and talk.PAST.1SG about.3SGM he
 ‘the man that I saw and talked about’
- (32) y dyn [welais i ___ a oeddwn i’n nabod
 the man see.PAST.1SG I and be.IMPF.1SG I PROG know
 ei dad o]
 3SGM father he
 ‘the man who I saw and whose father I knew’

These examples have a gap in the first clause and an RP in the second. It seems, then, that gaps and RPs have the same status as far as the Coordinate Structure Constraint is concerned.

A second similarity between gaps and RPs involves certain restrictions on tense. A notable feature of Welsh is that present forms of *bod* ‘be’ and for some speakers imperfect forms as well do not appear in affirmative complement clauses. Thus, (33) and for some speakers (34) too are ungrammatical.

- (33) *Mae Aled yn credu [y mae Elen yn
 be.PRES.3SG Aled PROG believe PRT be.PRES.3SG Elen PROG
 darllen y llyfr].
 read the book
 ‘Aled believes that Elen is reading the book.’
- (34) %Mae Aled yn credu [roedd Elen yn darllen
 be.PRES.3SG Aled PROG believe be.IMPF.3SG Elen PROG read
 y llyfr].
 the book
 ‘Aled believes that Elen was reading the book.’

⁴ Kehler (2002) has shown that the Constraint only applies when the conjuncts are parallel in certain ways. However, this is not particularly important in the present context.

Instead of these forms, what looks like the non-finite form *bod* appears. Thus, the grammatical counterpart of (33) and (34) is (35).⁵

- (35) Mae Aled yn credu [bod Elen yn darllen y llyfr].
 be.PRES.3SG Aled PROG believe be Elen PROG read the book
 ‘Aled believes that Elen is/was reading the book.’

Crucially, the ban on the present and imperfect forms of *bod* is nullified by an unbounded dependency. Thus, both the following are fine:

- (36) Beth mae Aled yn credu [y mae Elen yn
 What be.PRES.3SG Aled PROG believe PRT be.PRES.3SG Elen PROG
 ei ddarllen ___]?
 3SG read
 ‘What does Aled believe that Elen is reading?’
- (37) Beth mae Aled yn credu [roedd Elen yn ei
 what be.PRES.3SG Aled PROG believe be.IMPF.3SG Elen PROG 3SG
 ddarllen ___]?
 read
 ‘What does Aled believe that Elen was reading?’

Willis (2000: 556) suggests that it is only unbounded dependencies involving a gap that have this effect. He cites the following example as evidence that unbounded dependencies involving an RP do not nullify the ban:

- (38) *Pa lyfrau wyt ti ’n meddwl oedden (nhw)
 which books be.PRES.3SG you.SG PROG think be.IMPF.3SG they
 ’n addas?
 PRED suitable
 ‘Which books do you think were suitable?’

Notice, however, that this has an RP in an embedded subject position. We suggested earlier that RPs are barred from this position. I suggest that it is this and not the ban on the imperfect of *bod* that is responsible for the ungrammaticality of this example. Consider instead the following examples:

⁵ Tallerman (1998) and Borsley, Tallerman and Willis (2007: 3.3) show that there is evidence that *bod*-initial clauses are probably finite, but this is not particularly important in the present context.

- (39) y llyfr mae pawb yn dweud mae / roedd
 the book be.PRES everyone PROG say be.PRES.3SG be.IMPF.3SG
 Mair yn sôn amdano fe
 Mair PROG talk about.3SGM he
 ‘the book that everyone says Mair is/was taking about’
- (40) y dyn mae pawb yn dweud mae /
 the man be.PRES.3SG everyone PROG say be.PRES.3SG
 roedd ei dad o ’n glyfar
 be.IMPF.3SG 3SG father he PRED clever
 ‘the man whose father everyone says is/was clever’

These examples have RPs in positions in which they are unproblematic, prepositional object position and possessor position, respectively. In both cases the RP is inside a complement clause where the verb is the present tense of *bod*. Hence, they show clearly that unbounded dependencies with an RP nullify the ban on the present and imperfect of *bod* just as much as unbounded dependencies with a gap do.

A further similarity, highlighted by Willis (2008), involves non-finite verbs that appear between the top and the bottom of an unbounded dependency. We saw in section 2 that a non-finite verb is preceded by a clitic if its object is questioned. We also noted that it is possible to have a third person singular masculine clitic when the *wh*-phrase is plural or just a soft mutated verb. We have the same possibilities with a higher non-finite verb, as the following from Willis (2008) illustrates:

- (41) Beth wyt ti ’n (ei) feddwl bod hyn yn (ei)
 what be.PRES.2SG you PROG 3SGM think be this PROG 3SGM
 olygu ___?
 mean
 ‘What do you think this means?’

Here the object of a non-finite verb in a subordinate clause is being questioned and the verb is mutated and optionally preceded by a third person singular masculine clitic. The non-finite verb in the main clause is also mutated and optionally preceded by a clitic. Consider now the following example also from Willis (2008):

- (42) y llyfr roedd pawb yn (ei) feddwl oedd Mair
 the book be.IMP.3SG everyone PROG 3SGM think be.IMPF.3SG Mair
 yn sôn amdano fe
 PROG talk about.3SGM he
 ‘the book that everyone thought that Mair was talking about’

Here the object of a preposition in a subordinate clause is being relativized and we have an overt RP. Again we have a non-finite verb in the higher

clause and again it is soft mutated and optionally preceded by a clitic. In other words, we have exactly the same effects on a higher non-finite verb as in (41).

It seems, then, that there are three important similarities between gaps and RPs. They behave in the same way with respect to the Coordinate Structure Constraint, they both nullify the ban on the present and imperfect forms of *bod* in an affirmative complement clause, and they both allow soft mutation and an optional clitic on a higher non-finite verb. Any analysis must accommodate these similarities.

4. Islands: a further difference between gaps and resumptive pronouns?

So far we have seen that gaps and RPs appear in disjoint sets of environments but are similar in a number of important ways. It has often been suggested that RPs allow violations of island constraints. For example, Borsley, Tallerman, and Willis (2007: 146) claim that '[t]he resumptive strategy may also be used freely to void many island effects'. Clearly this is something that we need to look into.

In fact it is not clear that there is any real contrast between RPs and gaps here. Borsley, Tallerman, and Willis (2007: 147) consider the following example from Tallerman (1983: 201):

- (43) Dyma 'r dyn y credodd Dafydd [y si [y
 here-is the man PRT believe.PAST.3SG Dafydd the rumour PRT
 gwelodd Mair (o)].
 see. PAST.3SG Mair he
 'Here's the man who David believed the rumour that Mair saw.'

Here we have the relativization of the object of a finite verb inside a complex NP consisting of a noun and clausal complement. Notice that the pronoun is marked as optional. Tallerman comments that whether it is present or absent 'appears to make little or no difference to the acceptability of such sentences to native speakers'. This suggests that a gap is possible within some complex NPs since there is no possibility of an unexpressed RP here. I suggested earlier that RPs are ungrammatical as object of a finite verb. I also suggested, however, that an RP in object position may be fairly acceptable if it is some distance from the top of the dependency. I suggest that this is what we have in (43) when it contains an RP. As we might expect, similar examples with an RP in a standard RP position are also acceptable. Here is an example:

- (44) Dyma 'r dyn y credodd Dafydd [y si [y
 here-is the man PRT believe.PAST.3SG Dafydd the rumour PRT
 cest ti 'r llythyr 'na ganddo (fo)].
 get.PAST.2SG you the letter DEM with.3SGM him
 'Here's the man who David believed the rumour that you got that letter
 from.'

It looks, then, as if both gaps and RPs are fairly acceptable within a complex NP consisting of a noun and clausal complement.

Borsley, Tallerman, and Willis (2007: 148) also consider the following example, adapted from Tallerman (1983: 198):

- (45) *Dyma 'r ffenest darais i ['r bachgen [dorrodd ____
 that-is the window hit.PAST.1SG I the boy break.PAST.3SG
 hi ddoe]].
 she yesterday
 *'That's the window that I hit the boy who broke it yesterday.'

This unquestionably contains an RP, the third person singular feminine pronoun *hi*, reflecting the fact that the antecedent *ffenest* is a feminine noun. Like (44), (45) involves a complex NP. However, whereas (44) contain a complement clause (45) contains a relative clause. This presumably accounts for their different status. As one might expect, an example like (45) but with a gap instead of the RP is also bad. Thus, it seems that neither a gap nor an RP is acceptable inside a relative clause.

It seems, then, that both gaps and RPs are possible inside the clausal complement of a noun but that both are impossible inside a relative clause. Thus, it is not obvious that there are any differences between gaps and RPs with respect to islands. It is worth adding that if we did find some differences between RPs and gaps in this area, it would not necessarily follow that the grammar needs to treat them differently. It has been argued e.g. by Kluender (1998), Levine and Hukari (2006), and Hofmeister and Sag (2010) that island phenomena are a processing matter. If this is right, any differences would not necessitate differences in syntactic analysis.

There is no doubt more to be said here, but there seems to be no evidence from island phenomena for a fundamental difference between gaps and RPs. It seems, then, that they are broadly similar, the main difference being in their local environment.

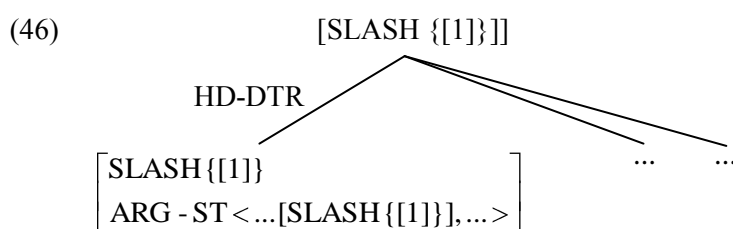
5. Towards an analysis

I will now consider how the Welsh data should be analyzed. A satisfactory analysis must be able to capture the similarities between gaps and RPs

documented in section 3. These suggest that both gaps and RPs should be the realization of the SLASH feature.

In his work on Hebrew and Irish, Vaillette (2000, 2002) argues that RPs in these languages should be analysed as the realization of a separate NONLOCAL feature, which he calls RESUMP. If we adopted this approach here, the phenomena discussed in section 3 would be surprising. It would not be obvious why examples like (31) and (32) with a gap in one conjunct and an RP in the other are acceptable. It would also not be obvious why both dependencies with a gap and dependencies with an RP nullify the ban on present tense forms of *bod*, as in (36) and (37) and (39) and (40). Finally, it would not be obvious why both types of dependency allow mutation and a third person singular masculine clitic to appear on a non-finite verb, as in (41) and (42). In contrast, if we assume that both gaps and RPs are the realization of SLASH. The facts are unsurprising. This will mean that both a conjunct with a gap and a conjunct with a RP are [SLASH {NP}]. Hence, the coordinate structures in (31) and (32) will be just like that in (30). If we assume the head-driven approach to unbounded dependencies developed in Sag (1997), Ginzburg and Sag (2000) and Bouma, Malouf and Sag (2001), *bod* will be [SLASH {NP}] with both types of dependency, and we can assume that the ban on present tense forms of *bod* is nullified in this situation. Finally, non-finite verbs in the path of both types of dependency will be SLASH {NP}, and we can assume that mutation and a third person singular masculine clitic may appear in this situation.

As indicated above, I am assuming the head-driven approach to unbounded dependencies of Sag (1997), Ginzburg and Sag (2000) and Bouma, Malouf and Sag (2001). Within this approach the SLASH values of arguments in the head's ARG-ST list are reflected in the SLASH value of the head itself and the mother normally has the same SLASH value as the head. Thus, unbounded dependencies involve structures of the following form:



The relation between the SLASH values of the head and its mother is governed by the SLASH Inheritance Principle (Bouma, Malouf and Sag 2001) or the Generalized Head Feature Principle (Ginzburg and Sag 2000). The relation between the SLASH values of the head and its arguments is governed by the SLASH Amalgamation Principle. We will need something more complex than the latter for Welsh.

As this approach is developed by Ginzburg and Sag (2000) and Bouma, Malouf and Sag (2001), there may or may not be a slashed non-head daughter in a structure like (46). There is where some non-head contains a gap, but there is no slashed non-head if (46) is the bottom of the unbounded dependency. This is because they assume that gaps are represented in ARG-ST lists but not in COMPS lists and therefore not in syntactic structures. In Welsh, however, there is evidence from mutation (Borsley 1999) and agreement (Borsley 2009) that gaps should be analyzed as empty categories. Hence, I assume that both constituents containing a gap (or RP) and gaps will be sisters of a slashed head. However, I will assume, following Bouma, Malouf and Sag (2001), that they are a realization of special *gap-synsem* objects. I assume that these are required to be phonologically empty and that nominal gaps are required to be non-pronominal. The following constraints will do this:

- (47) a. $[gap] \Rightarrow [PHON \diamond]$
- b. $\left[\begin{array}{l} gap \\ HEAD \textit{ noun} \end{array} \right] \Rightarrow [CONTENT \textit{ npro}]$

If nominal gaps are non-pronominal they will be associated with a non-pronominal SLASH value. This suggests that a gap will never be associated with a pronominal filler. A cleft sentence such as the following looks problematic here:

- (48) Nhw welodd ___ ddraig.
 they see.PAST.3SG dragon
 ‘It was they that saw a dragon.’

However, Borsley (2008) argues that the focused constituent in a cleft sentence is not a filler, partly on the basis of examples like (48). I think, then that the fact that nominal gaps are associated with a non-pronominal SLASH value is unproblematic.

Before we consider exactly what sort of analysis would be appropriate, there is one further empirical point to note. This is that it seems that Welsh does not have parasitic gaps. One might suppose that there is a parasitic gap after the verb *ddarllen* in the following example:

- (49) Dyna ’r adroddiad dw i wedi ei daflu ___ i ffwrdd
 there-is the report be.PRES.1SG I PERF 3SGM throw away
 [heb ei ddarllen ___].
 without 3SGM read
 ‘There is the report that I throw away without reading.’

It is clear, however, that this is not a true gap but an unexpressed RP. It is possible to have an overt RP, as the following shows:

- (50) Dyna 'r adroddiad dw i wedi ei daflu ___ i ffwrdd
 there-is the report be.PRES.1SG I PERF 3SGM throw away
 [heb ei ddarllen o].
 without 3SGM read he
 'There's the report which I threw away without reading.'

Now consider the following:

- (51) *Dyna 'r adroddiad dw i wedi ei daflu ___ i ffwrdd
 there-is the report be.PRES.1SG I PERF 3SGM throw away
 [heb ddarllen ___].
 without read

Here, *ddarllen* has no clitic. An unexpressed RP is only possible when agreement of some kind is present. Thus, the object here can only be a gap, and not an RP. However, this example is ungrammatical. This suggests rather strongly that Welsh does not have parasitic gaps.

The absence of parasitic gaps has an important implication. I assume, following Ginzburg and Sag (200: 168, fn. 2), that adjuncts are optional members of the ARG-ST lists of the associated head. Given this assumption, the absence of parasitic gaps means that only a single member of any ARG-ST list may contain a gap/RP. If island constraints are a processing matter, as Kluender (1998), Levine and Hukari (2006), and Hofmeister and Sag (2010) suggest, constituents containing a gap/RP will otherwise be unconstrained.

We can now consider what an analysis of the Welsh data needs to do. Given the distributional facts summarized in section 2, it seems that there are essentially two situations when a head has a non-empty SLASH value, as follows:

- (52) a. If the head is a verb or an adjective, then one argument is a gap or a constituent containing a gap or RP.
 b. If the head is a noun or a preposition, then one argument is an RP or a constituent containing a gap or RP.

How the facts should be captured will depend on how RPs are analysed.

One possibility is to treat RPs as much like gaps. The latter have the feature structure in (53).

(53)

$$\left[\begin{array}{l} \textit{gap} \\ \text{LOCAL}[1] \\ \text{SLASH}\{[1]\} \end{array} \right]$$

Thus, one might suggest the following feature structure for RPs:

(54)

$$\left[\begin{array}{l} \textit{respro} \\ \text{LOCAL}[1]\text{NP: } \textit{ppro} \\ \text{SLASH}\{[1]\} \end{array} \right]$$

Notice, however, that this associates an RP with a pronominal SLASH value. This predicts that an RP can only be associated with a pronominal filler. It is clear that this is incorrect. There is evidence from data like the following that *wh*-words are non-pronominal.

- (55) a. *i bwy* b. **iddo bwy*
 to who to.3SGM who
 ‘to whom’

These show that *pwyl* ‘who’ does not trigger agreement on a preceding preposition in the way that a pronoun does. It follows that an example like the following has a non-pronominal filler:⁶

- (56) *Pwyl [gest ti ’r llythyr ’na ganddyn (nhw)]?*
 who get.PAST.2SG you the letter DEM with.3PL they
 ‘Which boys did you get that letter from?’

This suggests that we need something more complex, e.g. the following:

(57)

$$\left[\begin{array}{l} \textit{respro} \\ \text{LOCAL NP: } \textit{ppro}[1] \\ \text{SLASH}\{\text{NP:}[1]\} \end{array} \right]$$

⁶ There are also examples with more complex fillers such as *pa fechgyn* ‘which boys’, which are obviously non-pronominal.

Whereas in (54) the nominal feature structure which is the value of LOCAL is identical to that in SLASH, here they are just coindexed and the nominal feature structure in SLASH is not required to be pronominal.

To implement this approach we would need a constraint ensuring that a slashed verb or adjective has a single slashed argument which is not pronominal, hence not an RP, and a constraint ensuring that a slashed preposition or noun has a single slashed argument which is not a gap, but either an RP or a constituent containing a gap or an RP. We would also need a constraint ensuring that a head with a slashed argument is itself slashed in normal circumstances. The latter would be overridden by the Welsh counterpart of an English ‘tough’ sentence such as (58), where an adjective takes an infinitival complement with a non-empty SLASH feature.

(58) Mae Carys yn hawdd [i Ifor ei gweld ____].
be.PRE.3SG Carys PRED easy to Ifor 3SGF see
‘Carys is easy for Ifor to see.’

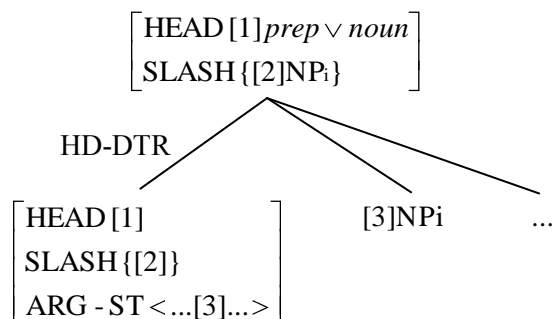
The three constraints would replace the SLASH Amalgamation Principle.

This looks like a fairly promising approach to the Welsh data. However, it has a problem in the fact that RPs in Welsh look just like ordinary pronouns. Welsh is not unusual here. According to McCloskey’s (2002: 192) this is universally the case. As Asudeh (2004) points out, this casts doubt on any analysis which treats RPs as special pronouns distinct in some way from ordinary pronouns. Obviously, an approach which gives RPs a non-empty SLASH value treats them as special pronouns and hence is rather dubious.

An analysis of RPs which gives them a different feature makeup from ordinary pronouns might be compared with the standard analysis of passive participles which gives them a different feature makeup from past participles. In the latter case one expects there to be items which can only be passive participles and this is what we find. Thus, for example, *reputed* can be a passive participle, as in *Kim is reputed to be clever*, but not a past participle as in **They have often reputed Kim to be clever*. In the same way one would expect there to be items which can only be RPs, but there are no such items in Welsh or, it seems, elsewhere.

This suggests that a satisfactory analysis of RPs should treat them as the ordinary pronouns that they appear to be. Hence, it suggests that we need structures in which a slashed preposition or noun has not a slashed argument but a pronominal argument coindexed with its slashed value, as in (59).

(59)



Obviously, structures of this kind will only be possible where the SLASH value is nominal.

Within this approach, slashed verbs and adjectives will be subject to the following constraint:

(60)

$$\left[\begin{array}{l} \text{HEAD} \textit{verb} \vee \textit{adj} \\ \text{SLASH} \{[1]\} \end{array} \right] \Rightarrow [\text{ARG-ST } L_2 \oplus \langle [\text{SLASH} \{[1]\}] \rangle \oplus L_3]$$

$$L_i = \textit{list}([\text{SLASH} \{\}])$$

Notice that there is no need here to stipulate that the slashed argument is not pronominal since RPs are not slashed. Slashed prepositions and nouns will be subject to the constraint in (61).

(61)

$$\left[\begin{array}{l} \text{HEAD} \textit{noun} \vee \textit{prep} \\ \text{SLASH} \{[1][\text{INDEX } 2]\} \end{array} \right] \Rightarrow [\text{ARG-ST } L_3 \oplus \langle \text{NP}:\textit{ppro}[2] \vee \left[\begin{array}{l} \textit{canon} \\ \text{SLASH} \{[1]\} \end{array} \right] \rangle \oplus L_4]$$

$$L_i = \textit{list}([\text{SLASH} \{\}])$$

We have a disjunction here. This seems to be unavoidable if RPs are not slashed. Finally, to ensure that a head with a slashed argument is itself slashed in normal circumstances, we can propose the following constraint:

$$(62) [\text{ARG-ST } L_1 \oplus \langle [\text{SLASH} ([1]) \rangle \oplus L_2] \Rightarrow / [\text{SLASH} \{[1]\}]$$

This is a default constraint, as indicated by ‘/’, to accommodate examples like (58). Notice that we don’t want to stipulate that a head with a

pronominal argument has a coindexed slash value since the pronoun could be an ordinary pronoun. These constraints will replace the SLASH Amalgamation Principle.

The constraint on prepositions and nouns is probably more complex than it would be if RPs were slashed elements. However, the constraint on verbs and adjectives is simpler. Thus, an analysis in which RPs are slashed and one in which they are ordinary pronouns are of roughly equal complexity. However, the latter has the advantage that it has no difficulty in explaining why RPs look like ordinary pronouns. They look like ordinary pronouns because that is what they are. It seems to me that this is an important argument in favour of this analysis.

6. Conclusions

In this paper I have investigated the behaviour of gaps and RPs in Welsh UDCs. I have shown that they differ in their distribution but that otherwise they are quite similar. This suggests that both should be analyzed as realizations of the SLASH feature. One way to do this would be by treating RPs as slashed elements. This, however, has the disadvantage that it cannot explain why they look like ordinary pronouns. The alternative is to treat RPs as the ordinary pronouns that they appear to be. On this approach RPs look like ordinary pronouns for the simple reason that that is what they are. This is an important advantage of the analysis.

REFERENCES

- Asudeh, A. (2004), *Resumption as Resource Management*, Ph.D. dissertation, Stanford University.
- Awbery, G. (1977), A transformational view of Welsh relative clauses, *Bulletin of the Board of Celtic Studies* 27, 155–206.
- Borsley, R. D. (1999), Mutation and constituent structure in Welsh, *Lingua* 109, 263-300.
- Borsley, R. D. (2008), On some Welsh unbounded dependency constructions, *Essex Research Reports in Linguistics* 57.4, 1-21
- Borsley, R. D. (2009), On the superficiality of Welsh agreement, *Natural Language and Linguistic Theory* 27, 225-265.
- Borsley, R. D., M. Tallerman and D. Willis (2007), *The Syntax of Welsh*, Cambridge: Cambridge University Press.
- Bouma, G., R. Malouf, and I. A. Sag (2001), Satisfying constraints on extraction and adjunction, *Natural Language and Linguistic Theory* 19, 1-65.

- Ginzburg, J. and I. A. Sag (2000), *Interrogative Investigations: The Form, Meaning and Use of English Interrogatives*, Stanford: CSLI Publications (chapters 1, 2 5, and 6).
- Harlow, S. (1983). Celtic relatives, *York Papers in Linguistics* 10, 77–121.
- Hendrick, R. (1988), *Anaphora in Celtic and Universal Grammar*, Dordrecht: Kluwer.
- Hofmeister, P. and I. A. Sag (2010), Cognitive constraints and island effects, *Language* 86, 366-415.
- Kehler, A. (2002), *Coherence, Reference and the Theory of Grammar*, Stanford: CSLI Publications.
- Kluender, R. (1998), On the distinction between strong and weak islands: A processing perspective, in P. W. Culicover and L. McNally (eds.), *Syntax and Semantics* 29. New York: Academic Press.
- Levine, R. D. and T. E. Hukari (2006), *The Unity of Unbounded Dependency Constructions*. Stanford, CA: Center for the Study of Language and Information.
- McCloskey, S. (2002), Resumption, successive cyclicity and the locality of operations, in S. D. Epstein and T. D. Seeley (eds.), *Derivation and Explanation in the Minimalist program*, 184-226, Oxford: Blackwell.
- Ross, J. R. (1967), *Constraints on Variables in Syntax*, PhD dissertation, MIT.
- Rouveret, A. (1994). *Syntaxe du gallois: principes généraux et typologie*. Paris: CNRS Éditions.
- Rouveret, A. (2002), How are resumptive pronouns linked to the periphery?, in P. Pica and J. Rooryck (eds.), *Linguistic Variation Yearbook: Volume 2 (2002)*. Amsterdam: Benjamins. 123–84.
- Sadler, L. (1988), *Welsh Syntax: A Government-Binding Approach*. London: Croom Helm.
- Staum, L., and I. A. Sag (2008), The advantage of the ungrammatical, *Proceedings of the 30th Annual Meeting of the Cognitive Science Society*, Washington, D.C.
- Tallerman, M. O. (1983), Island constraints in Welsh, *York Papers in Linguistics* 10, 197–204.
- Tallerman, M. O. (1998), The uniform case-licensing of subjects in Welsh, *The Linguistic Review* 15, 69-133.
- Vaillette, N. (2000), Hebrew relative clauses in HPSG, *Proceedings of the 7th International Conference on Head-Driven Phrase Structure Grammar*, CSLI Publications. pp. 305-324.
- Vaillette, N. (2002), Irish gaps and resumptive pronouns in HPSG, *Proceedings of the 8th International Conference on Head-Driven Phrase Structure Grammar*, CSLI Publications. pp. 284-299.
- Willis, D. W. E. (2000), On the distribution of resumptive pronouns and *wh*-trace in Welsh, *Journal of Linguistics* 36, 531-573.
- Willis, D. W. E. (2008), The limits of resumption in Welsh *wh*-dependencies, unpublished paper, University of Cambridge.