

# An underspecification approach to Hausa resumption

Berthold Crysmann

CNRS, Laboratoire de linguistique formelle, Paris Diderot

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Within recent work on the treatment of resumption in HPSG, there is growing consensus that resumptive unbounded dependency constructions (=UDCs) (Alotaibi and Borsley, 2013; Borsley, 2010; Crysmann, 2012; Taghvaipour, 2005) should be modeled on a par with gap-type UDCs, using a single feature SLASH for both types of dependencies, rather than separate features, as proposed by Vaillette (2001a,b). Yet, authors disagree as to where exactly in the grammar the resumptive function of pronominals should be established: while Crysmann (2012, 2015) advances an ambiguity approach that has pronominal *synsem* objects being ambiguous between a resumptive and an ordinary pronoun use, Borsley (2010); Alotaibi and Borsley (2013), by contrast, treat all pronominals, resumptive or not, as ordinary pronouns and effect their resumptive use by means of tailoring the SLASH amalgamation principle to potentially include pronominal indices. While their decision provides a straightforward account of McCloskey's generalisation that resumptives always look like the ordinary pronouns of the language, it fails to capture the difference in semantics between ordinary pronominal and resumptive uses (cf. Asudeh, 2004).

In this talk, I shall reexamine the evidence from Hausa and propose to synthesize the approaches put forth by Alotaibi and Borsley (2013) and Crysmann (2012), and propose that the potential for pronominal and resumptive function (including their difference w.r.t. semantics and non-local features) is captured by means of underspecification, yet the decision as to canonical vs. non-canonical use is made at the level of the governing head (Borsley). I shall argue that this division of labour is sufficient to derive the difference in semantics while still providing an answer to McCloskey's generalisation.

## 1 Gaps and resumptives in Hausa

Unbounded dependency constructions in Hausa provide evidence for both gap and resumptive strategies in the grammar of extraction. Hausa employs a resumptive strategy with extraction of possessors or complements of prepositions. As shown in (1), possessor resumptives are realised as bound pronominal affixes, whereas true prepositions make use of the independent pronoun set. Use of a gap strategy is illicit in either of these constructions.

- (1) a. wà ka àuri 'ya \*(-r  
who 2.M.CMPL marry daughter(F) -of.F  
-sà) ?  
-3.S.M  
'Whose daughter did you marry?' (Jaggar, 2001)
- b. sàndà sukà dōkē shì dà \*(ita)  
stick 3P.CPL beat 3S.DO with 3S.F  
'It was a stick they beat him with.' (Jaggar, 2001)

As witnessed in (2), indirect objects display overlap between the two strategies, i.e. both gaps and resumptives may be used in principle. Again, the resumptive is a pronominal affix fused with the indirect object marker.

- (2) mutānēn dà sukà kī sayar musù / wà Ø  
men REL 3.P.CPL refuse sell to.them / to  
dà àbinci sukà fita  
with food 3.P.CPL left  
'the men they refused to sell food to left.' (Jaggar, 2001)

A similar observation can be made for human direct objects, despite a clear preference for gaps with very short extractions.

- (3) Gà yārin yārì dà ka sanī Ø<sub>j</sub> / ??san  
here.is girl REL 2.S.F.CPL know / know  
tā<sub>i</sub>  
her  
'Here's the girl that you know.'

However, with extraction out of strong islands, e.g. relative clauses, use of an overt resumptive becomes obligatory, both for indirect (4) and human direct objects (5).

- (4) Gà tābōbīn<sub>j</sub> dà Àli ya san  
here.is cigarettes REL Ali 3.S.M.CPL know  
mùtumìn<sub>i</sub> dà Ø<sub>i</sub> zāi yī musù<sub>j</sub> / \*wà Ø<sub>j</sub>  
man REL 3.S.M.FUT do to.them / to Ø  
kwālī  
box  
'Here are the cigarettes that Ali knows the man that (he) will make a box for.' (Tuller, 1986)
- (5) Gà mùtumìn<sub>j</sub> dà ka ga yārin yārì  
here.is man REL 2.S.M.CPL see girl  
dà Ø<sub>i</sub> ta san shì<sub>j</sub> / \*sanī Ø<sub>j</sub>  
REL 3.S.F.CPL know him / know  
'Here's the man that you saw the girl that knows.' (Tuller, 1986)

As argued by Tuller (1986), Hausa permits long relativisation without an overt resumptive in exactly those cases where the language independent licenses pro-drop, i.e. for subjects (6) and non-human direct objects (7).

- (6) mùtùmìn<sub>i</sub> dà ka san littāfin<sub>j</sub> dà ∅<sub>i</sub>  
 man REL 2S.M.CPL know book REL  
 ya rubùtā ∅<sub>j</sub>  
 3S.M.CPL write  
 ‘the man that you know the book (he) wrote’  
 (Tuller, 1986)
- (7) littāfin<sub>i</sub> dà ka san mùtùmìn<sub>j</sub> dà ∅<sub>i</sub>  
 book REL 2S.M.CPL know man REL  
 ya rubùtā ∅<sub>j</sub>  
 3S.M.CPL write  
 ‘the book that you know the man who wrote (it)’  
 (Tuller, 1986)

Note, however, that while long relativisation out of relatives and embedded wh-clauses is possible, long wh-extraction out of these islands is not, regardless of the use of resumptives and regardless of grammatical function.

Hausa permits mixing of gap and resumptive strategies in ATB extraction, as shown in (8):

- (8) mùtùmìn<sub>i</sub> dà na bā shì<sub>i</sub> aro-n  
 man REL 1.S.CPL give 3.S.M.DO lending-L  
 bàrgō-nā àmmā duk dà hakà ∅<sub>i</sub>  
 blanket-L.1.S.G but in spite of that ∅  
 yakè jì-n sanyī  
 3.S.M.CONT feel-L cold  
 ‘the man whom I lent my blanket but who still felt cold’  
 (Newman, 2000)

This observation suggests that resumptive and gap strategies should be compatible in principle.

As stated above, resumptive function in Hausa is independent of the mode of realisation: it is equally attested with independent pronouns, found with e.g. true prepositions, bound pronominals and even zero pronouns. There are in principle two ways to capture this generalisation: either one can assimilate the syntactic representation of zero-pronominals and pronominal affixes to that of independent pronouns by postulating a phonetically empty pronominal in syntax (*pro*), as assumed widely in Transformational Grammar, or else one can make the representation of resumptives independent of the lexical sign, and represent it instead on the argument structure of the governing head. Fortunately, the language provides the necessary evidence to choose among the two options: Hausa verbs (and nouns, for that matter) inflect according to the mode of realisation of direct object complements (Parsons, 1960; Crysmann, 2005), establishing a maximally three-fold distinction between (i) phrasal complements in situ (9a), (ii) pronominal affixes (9b), and (iii) non-realisation, which includes gaps (9c), intransitives, and object pro-drop (9d).

- (9) a. nā ga/\*gan/\*ganī àbōkī-nā  
 1S.CMPL see.C friend-POSS.1.SG

- ‘I saw my friend.’  
 b. nā gan/\*ga/\*ganī -shì  
 1S.CMPL see.B -3S.M  
 ‘I bought/read it.’  
 c. àbōkī dà na ganī  
 friend-POSS.1.SG 1S.CMPL see.A  
 ‘the friend that I saw’  
 d. nā ganī  
 1S.CMPL see.A  
 ‘I bought/read it/\*him/\*her.’

If pronominal affixation, pro-drop and extraction equally involve valence reduction, a unified account follows directly. However, any account that relies on the presence of a phonetically null pronominal to model resumption with object drop will end up making the wrong prediction w.r.t. verbal inflection. Moreover, since frame alternation is arguably a lexical process the difference between zero and non-zero NP complements will not be detectable on the verb’s valence lists (which specify *synsem* objects, to the exclusion of PHON).

## 2 Previous approaches

### 2.1 Borsley (2010); Alotaibi and Borsley (2013)

In their analyses of resumption in Welsh and Arabic, Borsley (2010) and Alotaibi and Borsley (2013) follow McCloskey (2002) and argue that the morphological identity of resumptives to their non-resumptive pronominal counterparts militates against an approach in terms of lexical ambiguity. Instead, they suggest that resumptive are just the ordinary pronouns of the language, i.e. they do not launch a non-local dependency themselves. In order to capture the ATB facts and to relate the pronoun to the non-local filler (wh/topicalisation) or the antecedent noun (relativisation), they suggest to effect the resumptive function on the governing head. To this end, they revise the principle of lexical SLASH amalgamation (Ginzburg and Sag, 2001) to optionally introduce an element into SLASH whose INDEX is structure-shared with that of a pronominal argument. While this approach correctly launches the non-local dependency without having to postulate lexical ambiguity between resumptive and ordinary pronouns, it fails to provide an account of the difference in semantics. Furthermore, their revision of SLASH amalgamation turns an originally deterministic constraint into a non-deterministic one.

As we have seen in our discussion of the Hausa facts, resumption and gap-type extraction differ crucially with respect to island effects. In order to exert tight control on the distribution of gaps vs. resumptives it is necessary to distinguish non-local dependencies with a gap at the foot from resumptive ones. Faced with a similar situation in Modern Standard Arabic, Alotaibi and Borsley (2013) exploit case to achieve this goal. However, this approach will not scale up to Hausa,

since case is essentially unattested in the syntax of this primarily head-marking language.

## 2.2 Crysmann (2012, 2015)

Just like Alotaibi and Borsley (2013), Crysmann (2012) takes the ATB facts as evidence to model both gap and resumptive dependencies via a single set-valued feature SLASH. However, in order to capture the difference w.r.t. island-sensitivity, he distinguishes the elements of this set as to whether they are full *local* values (wh- and focus fronting) or rather impoverished *local* values, minimally containing INDEX information, thereby likening resumption to an anaphoric process (see Asudeh, 2004 for a similar intuition). At the bottom of the dependency, gaps enforce reentrancy with SYNSEM.LOC, coercing the element in SLASH to *full-local*, whereas resumptives only observe a minimal requirement for INDEX-sharing, thus being compatible with both relatives and wh-fronting (cf. (1)). To generalise across bound and free pronominals, he introduced disjunctive SLASH values for pronominal *synsem* objects. The implementation of this theory in Crysmann (2015), which also captures the semantic differences, employed lexical ambiguity, a rather suboptimal solution in the light of McCloskey’s generalisation.

## 3 A synthesis

In order to overcome the motivational problems associated with an ambiguity approach, I shall try and synthesize the respective proposals by Borsley and Crysmann. In essence, I shall propose that the potential to launch a non-local dependency vs. having pronoun semantics should be captured by way of underspecification, the decision on canonical vs. non-canonical realisation, however, will be imposed on the argument structure of the governing head. As a net effect, this approach will capture the semantic difference between ordinary pronominal and resumptive uses, keep the original deterministic formulation of SLASH amalgamation, and provide an explanation of McCloskey’s generalisation.

To this end, I shall refine, in a first step, the type hierarchy of *synsem* objects along the lines of Figure 1. In essence, I propose a primary distinction between canonical and non-canonical realisation, the latter of which comprises *gap* and resumptive subtypes. Orthogonal to this distinction, I introduce pronominal *synsem* objects, which may resolve to either canonical pronouns or non-canonical resumptives.

Having an underspecified common super-type for resumptive and ordinary pronoun uses directly avoids disjunctive specification in the representation of pronominals, regardless of whether they are free, bound or zero. Syntactic and semantic differences are captured as latent constraints on the sub-types: if canonical realisation is chosen, *pronominal(-synsem)*

is specialised to *pronoun(-synsem)*, applying all constraints associated with this type (empty SLASH and non-empty semantics). If, by contrast, non-canonical realisation is chosen, *pronominal(-synsem)* is specialised to *resump*, enforcing a non-empty SLASH, yet empty semantics. Note that the constraints associated with *resump* only require minimal INDEX-sharing, following previous proposals by both Borsley and Crysmann.

Incorporating insights from Borsley, the ultimate decision on realisation type will be associated with the governing head: using a pair of lexical rules each, direct object (and subject) valencies are segregated into *canon* and *non-canon*, i.e. the subject and the first complement are specialised to one of these two *synsem* sub-types.<sup>1</sup> Subsequent lexical rules of pronominal affixation or zero pronominal realisation will have the desired effects owing to the intersection of types pertaining to canonicity with those relating to pronominal status. Similarly, syntactic combination with a free pronoun will result in either resumptive ( $non-canon \wedge pronominal = resump$ ) or ordinary pronominal use ( $canon \wedge pronominal = pronoun$ ). Thus, in contrast to Crysmann (2015), this approach will only ever need a single pronominal affixation rule for any cell of the paradigm, or else a single lexical entry for each independent pronoun.

Given that pronominal arguments under the current account provide for the possibility of being slashed or not (in contrast to Borsley), standard HPSG SLASH amalgamation and head-driven propagation of NON-LOCAL features will ensure proper launching and percolation of gap and resumptive dependencies alike. Since the way to launch a resumptive dependency has been the most controversial aspect of the different approaches discussed here, and since the present approach synthesises the competing ideas, integration of the previous analysis of Hausa advanced by Crysmann (2012) is straightforward. To capture the difference between gaps and resumptives w.r.t. strong islands in Hausa (such as relativisation out of relative and wh-islands), he suggested to distinguish elements of SLASH according to their weight (cf. Figure 3): thus, relatives and wh-clauses are transparent for “anaphoric” elements (*weak-local*), yet opaque for elements requiring full matching (*full-local*). According to that theory, (wh-)fillers and gaps both insist on *full-local* values when binding/launching an unbounded dependency, simply by virtue of sharing the full local value of the filler or the locally suppressed argument (cf. Figure 3). Resumptives and relative complementisers are different in this respect (cf. Figure 4): both are happy with only indexical information, reflecting the anaphorical nature of the construction. Island effects are then captured by having relative clause and wh-constructions being selectively transparent to *weak-local* only, which will be compatible with (underspecified) resumptive dependencies, yet incompatible

<sup>1</sup>Although Hausa verbs may take both direct and indirect objects, the latter are complements of the applicative marker *wà* (Abdoulaye, 1992).

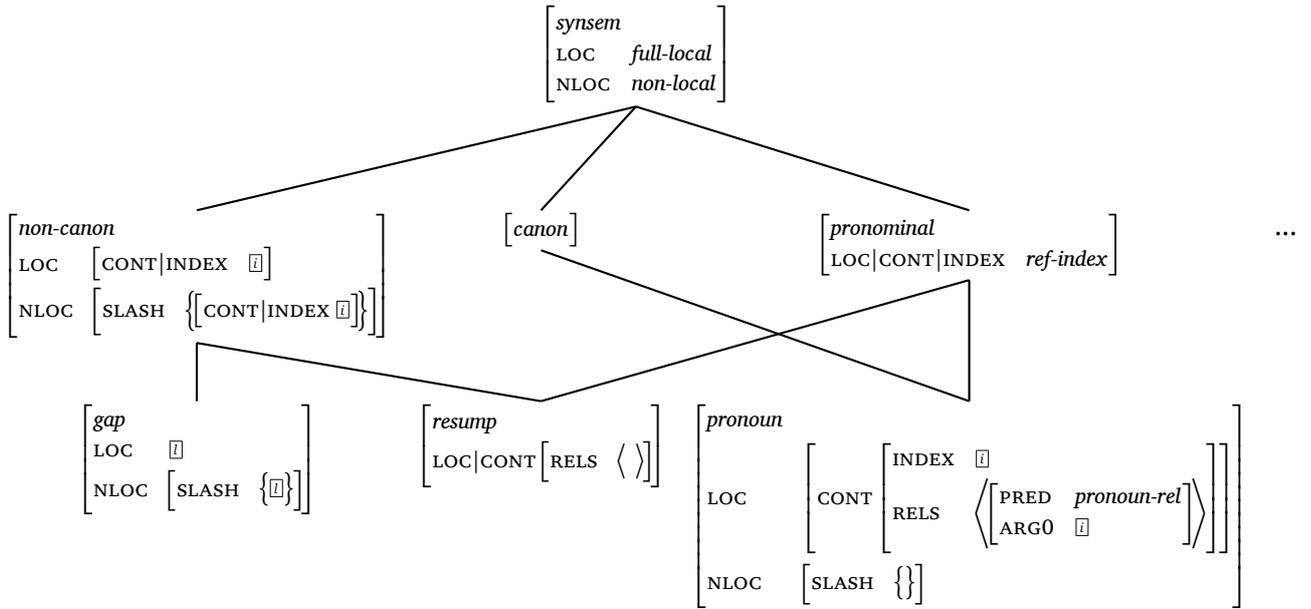


Figure 1: Hierarchy of synsem objects

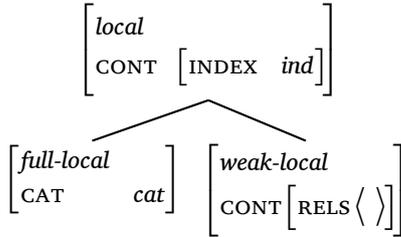


Figure 2: Hierarchy of *local*

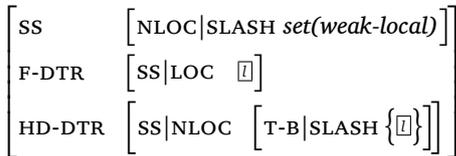


Figure 3: Filler-Head rule

with gaps. Thus, without any island effects intervening, resumptives in Hausa can foot a *wh*- or relative dependency, just as gaps can. Crossing an island, though, will coerce all SLASH elements to the *weak-local* type, thereby excluding gaps.

I have so far implicitly assumed that underspecification improves on lexical ambiguity not only in terms of economy of description, but is also instrumental in providing an answer to McCloskey's generalisation. To make this point fully explicit, let us summarise how the present approach accounts for the two facts that

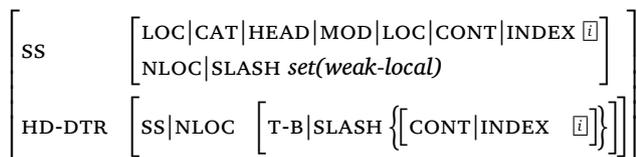


Figure 4: Relative complementiser

in languages offering resumption, it is all pronouns, and only pronouns that do assume this function. The answer offered by the present approach is three-fold: as to the first clause (all pronouns), it is sufficient to assume that languages vary as to whether they include *pronominal* or only the more specific type *pronoun* in their descriptions of pronominals. The answer to the second part of the generalisation is slightly more complex: as suggested by the present approach, disambiguation according to resumptive vs. pronominal use requires statement of a semantic relation for non-resumptive uses. Since type hierarchies are static, a single, concrete relation needs to be provided. It so happens that pronouns are the prototypical elements that can provide a constant relation, yet still fill every cell of the paradigm, making them compatible at the INDEX-level with every potential antecedent. Thus, instead of postulating different principles to account for resumption, this approach merely postulates a more abstract representation of what constitutes a pronominal.

The take on the semantics of resumptive vs. ordinary pronoun use differs from that taken by Asudeh (2004), who assumes that syntax creates a resource surplus (pronominal semantics) that is later consumed by a manager resource (contributed at the top of the dependency). While Asudeh's approach is certainly workable, the present approach offers the further advantage of providing identical semantic representations for gap-type and resumptive constructions. Given the overlap of the two strategies, uniformity of representation is a highly desirable property, since paraphrasis in generation falls out directly, rather than being dependent on non-deterministic introduction of a manager resource.

## 4 Conclusion

In this paper I have proposed a synthesis of the approaches by Borsley and Crysmann regarding the treatment of resumptive and gap dependencies in HPSG and applied it to the case of Hausa. I have argued more specifically that a proper account of resumptive vs. ordinary pronoun semantics can be provided in HPSG on the basis of underspecification in a type hierarchy of *synsem* values. In order to address McCloskey's generalisation, the present approach embraces Borsley's idea that the decision w.r.t. to resumptive function should be associated with the governing head and its argument structure. Concerning the representation of pronominals, however, the present take favours an approach in terms of underspecification, in order to facilitate both compositional semantics and the treatment of SLASH propagation. In future work, I shall establish how the current proposal will scale up to the treatment of Modern Standard Arabic.

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