

Resumption and Island-hood in Hausa^{*}

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Abstract. In this paper, I shall discuss the status of Hausa resumptive pronouns. I shall argue that the asymmetry between island-sensitive wh-extraction and island-insensitive relativisation is best captured at the filler site, rather than at the gap site. The analysis proposed here builds crucially on recent HPSG work on island-insensitive rightward movement, arguing in favour of anaphoric processes within a theory of extraction.

1 Introduction

Unbounded dependency constructions in Hausa¹ make use of two different strategies: besides standard extraction as a nonlocal relation between the filler and a phonologically empty gap, the language also recognises a resumptive pronoun strategy, where a pronominal is found at the extraction site.

Resumptive elements can be free pronominals, bound pronominal affixes, or even null pronominals.² The choice of resumptive pronoun (free, bound, null) depends on morphological and syntactic properties of the head governing the extraction site: independent pronouns are used as objects of prepositions, bound pronominals are used for complements of nouns as well as human (animate) complements of verbs and verbal nouns, whereas null pronominals are used for subjects and inanimate objects of verbs and verbal nouns.

I shall first discuss the properties of overt resumptive pronouns, followed by a discussion of the admittedly more subtle null anaphora.

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¹ Hausa is an Afroasiatic language spoken mainly in Northern Nigeria and bordering areas of Niger. Both tone (high, low, falling) and length (long vs. short) are lexically and grammatically distinctive. Following common practise, I shall mark low tone with a grave accent and falling tone with a circumflex. Vowels unmarked for tone are high. Length distinctions are signalled by macron.

I shall make use of the following inventory of morphological tags in the glosses: L = “genitive linker”, S = singular, P = plural, M = masculine, F = feminine, DO = direct object, IO = indirect object, IOM = indirect object marker, G = genitive, REL = relativiser, COMP = complementiser, FOC = focus marker, CPL = completive aspect, CONT = continuative aspect, HAB = habitual, FUT = future.

² Hausa is a null subject and null object language (Tuller, 1986): while both human and non-human subjects can be dropped with equal ease, object drop observes a restriction to non-human referents. Interpretation of null arguments is always specific, i.e. not generic (Jaggar, 2001).

1.1 Overt resumptive pronouns

Complements of prepositions Among the constructions that make regular use of resumption, extraction from PP features prominently: in Hausa, three classes of prepositions can be distinguished, depending on their behaviour in unbounded dependency constructions. While all prepositions can be pied-piped along with their complements in focus fronting, wh-fronting and relativisation (Newman, 2000; Jaggar, 2001), for basic locative prepositions, such as *à* or *dàgà*, this seems to be the only option.

- (1) a. [à Kanò]_i akà hàifē nì ∅_i
 at Kano 4.CPL give.birth 1.S.DO ∅
 ‘It was in Kano I was born’ (Jaggar, 2001)
- b. *Kanò_i akà hàifē nì à shī_i / ∅_i
 Kano 4.CPL give.birth 1.S.DO at 3.S.M / ∅

Non-locative basic prepositions, such as *dà* or *gàrē* do not permit extraction of their complement by way of a filler-gap dependency. Extraction is possible with these prepositions, if a resumptive pronominal is used instead of a gap.

- (2) a. dà sàndā sukà dōkē shì
 with stick 3.P.CPL beat 3.S.DO
 ‘It was a stick they beat him with.’ (Jaggar, 2001)
- b. sàndā_i sukà dōkē shì dà ita_i / *∅_i
 stick 3.P.CPL beat 3.S.DO with 3.S.F / ∅
 ‘It was a stick they beat him with.’ (Jaggar, 2001)

The third class of prepositions, the extensive set of so-called “genitive prepositions” (Newman, 2000) or “prepositional nouns” (Wolff, 1993), feature in filler-gap dependencies, along-side pied-piping and resumptive pronoun strategies.³

- (3) a. ciki-n àdakà mukàn sâ kudī-n-mù
 inside-L box 1.P.HAB put money-L-1.P.G
 ‘It’s inside a box we usually put our money.’ (Jaggar, 2001)
- b. àdakà mukàn sâ kudī-n-mù ciki-n-tà_i / ciki ∅_i
 box_i 1.P.HAB put money-L-1P inside-L-3.S.F.G / inside ∅
 ‘It’s inside a box we usually put our money.’ (Jaggar, 2001)

The form of the resumptive pronoun is always identical to the one normally used with a particular preposition, a generalisation which holds for resumptive pronominals across the board. Genitive prepositions take bound pronominals from the possessive set (also used with nouns), *gà/gàrē* takes bound pronominals from the accusative set (otherwise used with verbs) and all other prepositions take free pronouns from the independent set. Note, however, that basic prepositions

³ The presence of the genitive linker is an instance of a general property of the language, namely marking in situ direct objects of nouns, verbs, and adjectives. See, e.g., Newman (2000) and Jaggar (2001) for an extensive overview, as well as Crysmann (2005a, res) for a unified formal analysis.

that fail to feature in a resumptive pronoun strategy may still combine with pronominal objects, as long as this does not involve a long-distance dependency (e.g., *dàgà ita* ‘from her’; Newman, 2000).

Before we proceed, I would like to briefly take stock of what we have established thus far: first, whether or not gaps or resumptive pronouns are licit, is mainly a lexical matter, depending on the governing preposition. Second, for prepositions that permit stranding, use of a resumptive pronoun is an equally viable option.

Complements of nouns The second major context in which resumptive pronouns surface in Hausa involves complements of nouns, including possessors.

- (4) a. [ʔya-r wà]_i ka àurā Ø_i ?
 daughter-L who 2.M.CPL marry
 ‘Whose daughter did you marry?’ (Jaggar, 2001)
- b. wà_i ka àuri ʔya-r-sà_i / *ʔyā Ø_i?
 who 2.M.CPL marry daughter.F-L.F-3.S.M.G / daughter.F Ø
 ‘Whose daughter did you marry?’ (Jaggar, 2001)
- (5) Audù_i nē na ðinkà rìga-r-sà_i / *rìgā Ø_i.
 Audu FOC 1.S.CPL sew gown.F-L.F-3.S.M.G / gown.F Ø
 ‘It’s Audu whose gown I’ve sewn’

In wh-constructions, the governing nominal head can either be pied-piped along with the wh-pronoun, or a resumptive pronoun can be used at the extraction site. Extraction by filler-gap dependency, however, is impossible for complements of nouns.

The same holds for focus fronting: again, use of a resumptive pronoun is obligatory.⁴

Human complements of verbs Objects of verbs, dynamic nouns, and verbal nouns can extract by way of a filler-gap dependency.⁵

- (6) a. yāròn dà sukà ðòkā Ø yanà asibitì
 boy REL 3.P.CPL beat up 3.S.M.CONT hospital
 ‘The boy they beat up is in hospital’ (Jaggar, 2001, p. 534)
- b. gā yārin yār dà nakè sô Ø
 there is girl REL 1.S.CONT want.VN
 ‘There’s the girl I love.’ (Jaggar, 2001, p. 534)
- c. ìnā littāfīn_i dà kakè màganà Ø_i
 where book REL 2.S.M.CONT talking
 ‘Where is the book you’re talking about?’ (Jaggar, 2001, p. 534)

⁴ It is not clear to me at present, whether pied-piping would be an option here. Although it is perfectly acceptable to focus-front the entire complex NP, it remains to be clarified, whether this leads to an extension of the focus domain or not.

⁵ Human direct objects cannot be pro-dropped in Hausa. Thus, whenever we encounter a zero realisation at the gap-site, we can be sure that we are not dealing with an instance of null anaphora.

Jaggar (2001, p. 534) observes that “deletion is [...] the strongly preferred strategy for relativisation on direct objects.” Although Jaggar does not provide any positive or negative examples for resumptive pronoun use, the wording suggests that this option is not ruled out per se, but rather highly infrequent in simple extraction contexts.

However, once we consider long extraction, we do find cases where resumption is indeed the only option: Tuller (1986) reports the following data, involving extraction across non-bridge verbs where the gap strategy leads to ungrammaticality, but resumption is fine.

- (7) gâ yârân dà Àli ya radã minì wai ya gan-sù /
 there are children REL Ali 3.S.CPL whisper 1.S.IO COMP 3.S.CPL see-3.P.DO /
 *ganì Ø gida-n giyã
 see Ø house-L beer
 ‘Here are the children that Ali whispered to me that he saw in the bar.’ (Tuller, 1986, p. 169; tone added)

One possible explanation for the marginal status of overt resumptives in direct object function would be to assume that the use of resumption is but a “last resort” device (Shlonsky, 1992) whose main purpose is to circumvent island violations. Yet, overt human direct object resumptive pronouns can also be found in constructions which are slightly more complex than the simple short extraction examples given above, but which nevertheless do not involve any extraction islands, as in the following examples of extraction from a sentential complement of a bridge verb:

- (8) mùtumìn_i dà dǎlibai sukà san cêwā mālāma-r-sù tanã
 man REL students 3.P.CPL know COMP teacher-L.F-3.P.GEN 3.S.F.CONT
 sô-n-sà_i / sô Ø_i
 like.VN-L-3.S.M.GEN / like.VN
 ‘the man that the students know that their teacher likes’ (Newman, 2000, p. 539)

Similar observations can be made with across-the-board extraction from coordinate structures:

- (9) [àbōkī-n-ā]_i dà na ziyartã Ø_i àmmā bàn sāmē shì_i à
 friend-L-1.S.GEN REL 1.S.CPL visit but 1.S.NEG.CPL find 3.S.M.DO at home
 gidā ba
 NEG
 ‘my friend that I visited but did not find at home’ (Newman, 2000, p. 539)
- (10) mùtumìn_i dà na bā shì_i aro-n bàrgō-nā àmmā
 man REL 1.S.CPL give 3.S.M.DO lending-L blanket-L.1.S.G but
 duk dà hakà Ø_i yakè jîn sanyī
 in spite of that Ø 3.S.M.CONT feel-L cold
 ‘the man whom I lent my blanket but who still felt cold’ (Newman, 2000, p. 540)

The apparent marginality of resumption in highly local contexts observed by Hausa is highly reminiscent to similar restrictions on subject resumptives in

the highest clause in Hebrew (Borer, 1984) and Irish McCloskey (1990). Note, moreover, that, in all the three examples cited above, a zero gap is equally possible. Thus, a “last resort” account is anything but likely.

Turning to indirect objects, extraction using a filler-gap dependency is again the preferred option. However, in contrast to direct objects, resumptive pronouns are cited to be much more common (Jaggar, 2001; Newman, 2000).

- (11) mutànrèn_i dà sukà fi sayar musù_i / wà Ø_i dà àbinci sukà fita
 men REL 3.P.CPL refuse sell 3.P.IO / IOM Ø with food 3.P.CPL left
 ‘the men they refused to sell food to left.’ (Jaggar, 2001, p. 534)

To sum up our observations regarding objects of verbs, we find that gaps are possible in general, and that at least with indirect objects, resumption is equally possible. For direct objects, resumption appears marginal in cases of short extraction. It should be clear, however, that resumption is more than just a rescue device, given their presence in structures without any relevant extraction island.

1.2 Null anaphora in extraction

Hausa is a null subject language (Tuller, 1986; Jaggar, 2001): tense/aspect/mood (TAM) markers are inflected for person, number, and gender, often exhibiting fusion between agreement and TAM marking: in some paradigms, TAM categories are only expressed suprasegmentally in terms of tone and/or length distinctions. Discourse-salient subjects are typically suppressed. Pronominal subjects are either dislocated topics, or else *ex situ* focused constituents.

With respect to subject extraction, Tuller (1986) observes that Hausa, just like Italian, is not subject to the *that-t* effect. Given the pro-drop property this is an entirely expected pattern. In contrast to Italian, however, this does not correlate with free inversion of the subject.

- (12) wà kikè tsàmmānì (wai/cēwā) Ø yā tàfi Kanò
 who 2.S.F.CONT thinking COMP 3.S.M.CPL go Kano
 ‘Who do you think went to Kano?’ (Tuller, 1986, p. 152-3; tone added)
- (13) wà Ābù ta tàmbayà kō Ø yā tàfi Kanò
 who Abu 3.S.F.CPL ask COMP 3.S.M.CPL go Kano
 ‘Who did Abu ask went to Kano?’ (Tuller, 1986, p. 153; tone added)

In addition to subject-drop, Hausa also features object-drop, although there is a restriction to non-human referents, as illustrated by the examples below, where the sentences in b. are answers to the questions raised in a.

- (14) a. Kā ga littāfin-n Mūsa?
 2.S.M.CPL see book-L Musa
 ‘Did you see Musa’s book?’
- b. Ī, nā gan shì. / Ī, nā ganī
 Yes 1.S.CPL see 3.S.M Yes 1.S.CPL see
 ‘Yes, I saw it.’ (Tuller, 1986, p. 61; tone added)

- (15) a. Kā ga fanè-n Mūsa?
 2.S.M.CPL see brother-L Musa
 ‘Did you see Musa’s brother?’
 b. Ī, nā gan shì. / *Ī, nā ganī
 Yes 1.S.CPL see 3.S.M Yes 1.S.CPL see
 ‘Yes, I saw him.’ (Tuller, 1986, p. 62; tone added)

The central observation, however, made by Tuller (1986) regarding pro-dropped subjects and objects pertains to the fact that long relativisation out of relative clauses is possible in Hausa just in those cases where the respective complement may be pro-dropped. I.e., relativisation of subjects and non-human objects is insensitive to the island nature of relative clauses, whereas relativisation of human objects is not: Since null pronominals are blocked in this case, an overt resumptive must be used instead.

- (16) ?gà mâtâr_i dà ka bā ni littāfin_j dà mālāmai sukà san
 here.is woman REL 2.S.M.CPL give me book REL teachers 3.P.CPL know
 mùtumìn_k dà Ø_i ta rubùtā wà Ø_k Ø_j
 man REL 3.S.F.CPL write for
 ‘Here’s the woman that you gave me the book the teachers know the man she
 wrote it for.’ (Tuller, 1986, p. 84; tone added)
- (17) ?gà littāfin_j dà ka gwadà minì mâtâr_i dà mālāmai sukà
 here.is book REL 2.S.M.CPL show 1.S.IO woman REL teachers 3.P.CPL
 san mùtumìn_k dà Ø_i ta rubùtā wà Ø_k Ø_j
 know man REL 3.S.F.CPL write IOM
 ‘Here’s the book that you showed me the woman the teachers know the man
 she wrote it for.’ (Tuller, 1986, p. 84; tone added)
- (18) gà mùtumìn_j dà ka ga yārin_{yà}r_i dà Ø_i ta
 here.is man REL 2.S.M.CPL see girl REL 3.S.F.CPL
 san shì_j / *sanī Ø_j
 know 3.S.M.DO / know Ø
 ‘Here’s the man that you saw the girl that knows him.’ (Tuller, 1986, p. 85; tone
 added)

Similarly, indirect objects, which do not permit pro-drop either, equally disallow long distance relativisation without an overt resumptive pronoun.

- (19) gà tābōbīn_j dà Àli ya san mùtumìn_i dà Ø_i zāi yī
 here.is cigarettes REL Ali 3.S.M.CPL know man REL 3.S.M.FUT do
 musù_j / *wà Ø_j kwālī
 3.P.IO / IOM Ø box
 ‘Here are the cigarettes that Ali knows the man that will make a box for.’ (Tuller,
 1986, p. 84; tone added)

Long distance relativisation of subjects and non-human objects extends to wh-islands, again without the need for an *overt* resumptive pronoun:

- (20) a. littāfin_j dà ka san wā_i Ø_i ya rubùtā Ø_j
 book REL 2.S.M.CPL know who 3.S.M.CPL write
 ‘the book that you know who wrote (it)’ (Tuller, 1986, p. 80; tone added)

- b. m̀t̀um̀in_i d̀a ka san m̀e_j ̸_i ya rub̀t̀a ̸_j
 man REL 2.S.M.CPL know what 3.S.M.CPL write
 ‘the man that you know what (he) wrote’ (Tuller, 1986, p. 80; tone added)

Tuller (1986) argues that the absence of island effects in long distance relativisation of subjects and non-human objects can be directly related to the fact that these complements can be pro-dropped. Thus, she claims that null pronominals in Hausa serve an additional function of null resumptive pronouns in relativisation.

A most important finding of Tuller’s is that while long relativisation out of these islands is possible, wh-extraction is not:

- (21) a. * ẁaǹe litt̀af̀i_j ka san ẁa_i ̸_i ya rub̀t̀a ̸_j
 which book 2.S.M.CPL know who 3.S.M.CPL write
 ‘which book do you know who wrote’ (Tuller, 1986, p. 80; tone added)
- b. * ẁaǹe m̀t̀um̀i ka san m̀e_j ̸_i ya rub̀t̀a ̸_j
 which man 2.S.M.CPL know what 3.S.M.CPL write
 ‘which man do you know what wrote’ (Tuller, 1986, p. 80; tone added)
- (22) * ẁaǹe m̀t̀um̀i ka b̀a ǹi litt̀af̀in_j d̀a ̸_i ya rub̀t̀a ̸_j
 which man 2.S.M.CPL give 1.S.DO book REL 3.S.M.CPL write
 ‘Which man did you give me the book that wrote’ (Tuller, 1986, p. 81; tone added)

Interestingly enough, focus fronting patterns with wh-extraction in this respect:

- (23) a. * wani m̀t̀um̀i ka b̀a ǹi litt̀af̀in_j d̀a ̸_i ya rub̀t̀a ̸_j
 a man 2.S.M.CPL give me book REL 3.S.M.CPL write
 ‘A man, you gave me the book that wrote’ (Tuller, 1986, p. 81; tone added)
- b. * wani m̀t̀um̀i ka san m̀e_j ̸_i ya rub̀t̀a ̸_j
 a man 2.S.M.CPL know what 3.S.M.CPL write
 ‘A man, you know what wrote’ (Tuller, 1986, p. 81; tone added)

The inability of wh-phrases and focused constituents to undergo long extraction out of relative clauses does not appear to be a distinguishing property of null anaphora. Long distance wh-extraction is equally impossible with overt resumptive pronouns.

- (24) a. ẁa_j ka yi m̀agaǹa d̀a sh̀i_j
 who 2.S.M.CPL do talking with 3.S.M
 ‘Who did you talk with?’ (Tuller, 1986, p. 158; tone added)
- b. * ẁa_j ka san m̀at̀ar̀i d̀a ̸_i ta yi m̀agaǹa d̀a sh̀i_j
 who 2.S.M.CPL know woman REL 3.S.F.CPL do talking with 3.S.M
 ‘Who do you know the woman that talked to him’ (Tuller, 1986, p. 159; tone added)
- (25) a. ẁa_j ka kar̀ant̀a litt̀afi-n-s̀a_j
 who 2.S.M.CPL read book-L-3.S.M.G
 ‘Whose book did you read?’ (Tuller, 1986, p. 158; tone added)

- b. *wà_j ka ga yârân_i dà ∅_i sukà kònè littāfi-n-sà_j
 who 2.S.M.CPL see children REL 3.P.CPL burn book-L-3.S.M.G
 ‘Who did you see the children that burnt his book’ (Tuller, 1986, p. 159;
 tone added)

To summarise the empirical findings, resumptive pronouns in Hausa — be they null or overt — may license long relativisation out of relative clauses and wh-islands. Neither covert nor overt resumption, however, is capable of licensing long wh- or focus movement out of extraction islands, despite the fact that overt resumption of focused or wh-phrases is generally possible.

2 Previous analyses

2.1 Resumption: extraction or anaphora?

The possibility for resumption to escape island constraint violations is an observation that has been made repeatedly in the literature. In order to model this apparent difference between filler-gap constructions and resumption, it has been repeatedly suggested to regard the latter as an anaphoric process distinct from movement (e.g. Borer, 1984; Sells, 1984). Within the framework of HPSG (Pollard and Sag, 1994), Vaillette (2001a,b) argues in favour of an analysis of Hebrew and Irish resumptives in terms of unbounded dependencies (UDCs), using a non-local feature RESUMP akin to the standard SLASH feature. A distinguishing property of the non-local RESUMP feature is, however, that it is a set of semantic indices, rather than full-fledged LOCAL values, thereby capturing the basic intuition inherent to the anaphoric binding approach. In contrast to Vaillette, Taghvaipour (2004, 2005) suggests to do away with the RESUMP feature and encode both types of UDCs as SLASH dependencies, distinguished in terms of diacritic nonlocal features indicating the type of gap (not percolated) and the type of unbounded dependency construction (percolated). The decision not to percolate information about how the foot of the dependency is realised (resumptive or gap) is motivated by the observation that ATB-extraction from coordinate structures may equate SLASH values corresponding to a gap in one conjunct, and a resumptive in the other. However, since island effects in Hausa are sensitive to the type of gap, whereas ATB-extraction in Hausa (cf. (9)) is not, it is clear that there is no trivial modification of Taghvaipour’s approach to Persian that can account for both constructions at the same time.

In her GB analysis, Tuller (1986) suggests that Hausa actually has two different strategies for resumption. The first such strategy, according to Tuller, is witnessed by relative clause constructions: since subadjacency restrictions are obviously not obeyed with long-distance relativisation, Tuller (1986) concludes that movement cannot be involved. Instead she claims that relative clauses in Hausa may be base-generated. The second resumptive strategy operative in Hausa is treated by Tuller (1986) as an S-structure phenomenon: since wh-extraction and focus fronting obviously obey subadjacency, she concludes that these constructions

must involve movement. In *wh*-constructions, Tuller (1986) motivates insertion of resumptive pronouns by virtue of the ECP. Following an earlier proposal by Koopman (1982) she argues that the resumptive pronouns that surface when the complement of a noun or a preposition is extracted should best be analysed as “spelling out traces as pronouns”. In those cases where null pronouns are independently possible, apparent surface violations of the ECP obtain, like, e.g., exemptions to the *that-t* effect. As an alternative to trace spell-out, Tuller (1986) considers \bar{A} -binding between an operator and a resumptive, but, as suggested by footnote 31 (p. 158/217), it seems to be the less preferred analytic option.

There are several arguments that can be raised against Tuller’s analysis of Hausa resumption. First, the postulation of two different resumptive processes that show a high degree in overlap regarding the resumptive elements involved is quite ad hoc: any theory of Hausa resumption that can be cast in terms of a single process must therefore seem preferable. Second, the exact conditions under which a resumptive pronoun is related to the antecedent noun remain opaque. It appears counter-intuitive at least that the more unbounded process (relativisation) should involve base-generation, whereas the one bounded at least by subjacency (*wh*-extraction) is regarded as a movement process. Third, if resumptive pronouns are conceived as spell-out of traces (R-expressions), it remains unexplained why the form of pronoun chosen is always the same as that of plain, non-resumptive pronouns used in the same surface-syntactic context. Fourth, in cases where no ECP violation could arise, Tuller (1986)’s analysis always assigns two distinct analyses, one involving a standard trace, the other a trace spelled out as an empty pronominal. Since the two analyses have the same semantic interpretation, we are actually facing a spurious ambiguity here.

Instead of postulating three different processes (traces, pronominal spell-out of trace, and base-generation) I shall suggest a treatment in terms of a single process, namely non-local feature percolation. Different locality restrictions on relativisation and *wh*-/focus fronting will be attributed to the permeability of head-filler structures towards quasi-anaphoric resumptives.

2.2 Anaphoric processes in rightward movement

Apparent violations of subjacency, in particular extraction out of complex NPs and adjunct islands have also been reported for relative clause extraposition, a rightward oriented process. This unexpected behaviour with respect to Bounding Theory has notoriously been problematic for movement (Baltin, 2001) and base-generation approaches alike (Culicover and Rochemont, 1990), albeit for slightly different reasons. An alternative theory of relative clause extraposition that does not suffer from these problems regards relative clause extraposition as a clause-bound anaphoric processes. Such accounts have been proposed in various forms for English (Wittenburg, 1987; Kiss, 2003) and German (Kiss, 2005). What is common to these approaches is that nouns indiscriminately percolate their semantic indices within the local clause, to be picked up (modified) by the extraposed relative clause. At sentence boundaries, percolated indices that

have not yet been retrieved are simply discarded which captures the clause-boundedness of the phenomenon together with the fact that modification by a relative clause is truly optional. Furthermore, it has been shown that an anaphoric approach is also computationally much more attractive than its movement-based alternatives (Crysmann, 2005b).

Most recently, I have proposed (Crysmann, *pear*) to unify the anaphoric approach advanced by Kiss (2005) with movement-based approaches to complement clause extraposition (e.g. Keller, 1995). Given that both of these two rightward-oriented processes are subject to Ross (1967)'s Right Roof Constraint, I have suggested to model them using a single non-local feature. Differences with respect to island constraints, in particular adjunct islands, are related to a difference in the status of percolated material: light semantic indices in the case of relative clause extraposition vs. full local values in the case of complement extraposition. Bounding nodes, such as the adjunct daughter in a head-adjunct structure are constrained to be permeable for “light” indices but impermeable for “heavier” full LOCAL values.

Since one of the recurring intuitions in the literature on resumption is to exploit the inherently anaphoric nature of resumptive pronouns in order to provide an explanation for the reduced sensitivity towards islands, it makes perfect sense to explore whether such a move cannot also be fruitfully applied to the case of anaphoric processes within relative clauses.

In the remainder of this paper I shall therefore develop a theory of resumption that extends the aforementioned work on extraposition towards a treatment of resumption. I shall propose that difference with respect to island-hood can be related to the nature of percolated material, i.e., a distinction between “heavier” true gaps and “lighter” resumptive elements.

3 Analysis

Before we embark on our formal analysis, which is cast within the framework of HPSG (Pollard and Sag, 1987, 1994), let me briefly summarise the desiderata of an analysis of Hausa resumption: first, resumptive use should be modelled as a systematic property of all pronominal elements independent of their mode of realisation as null pronouns, bound affixes, or independent words. Second, spurious ambiguity between filler-gap analyses and null anaphora should be avoided. Since locality restrictions on filler-gap dependencies appear to be more strict than those operative for anaphoric processes, the problem of spurious ambiguity can only be avoided on principled grounds, if the scope of null anaphora is extended at the expense of filler-gap constructions. Third, if constraints on island-hood are best captured in terms of properties of the filler and intervening boundary nodes, such constraints should not be replicated at the extraction site in terms of local ambiguity.

In order to address our first desideratum, we need to settle on a lexical representation that does not crucially distinguish between resumptive and non-resumptive uses of any particular pronominal realisation. Vaillette (2001a) has

suggested that in Hebrew, every pronoun can be subjected to a lexical rule deriving a resumptive variant for it. Since in Hausa resumptive elements are not always lexical items (they can be independent pronouns, pronominal affixes, or null anaphors), a solution along these lines would be suboptimal. Instead, I shall build on a proposal by Miller and Sag (1997) who suggest that *synsem* values can be classified according to their mode of realisation: *canonical-s(yn)s(em)*, which corresponds to in-situ lexical complements and *gap-s(yn)s(em)*, which corresponds to non-locally realised material. Orthogonal to this distinction, I shall postulate a distinction into nonpronominal and pronominal (*pron(oun)-s(yn)s(em)*) which cuts across the previous distinction between gaps and canonical *synsem* objects in a multiple-inheritance hierarchy. Following the standard HPSG theory of extraction (Sag, 1997; Ginzburg and Sag, 2001), I shall assume that *gap-ss* have their *LOCAL* value reentrant with the singleton member of their *SLASH* set.

$$(26) \quad \textit{gap-ss} \rightarrow \left[\begin{array}{l} \textit{LOC} \quad \boxed{\textit{I}} \\ \textit{NLOC} \quad \left\{ \boxed{\textit{I}} \right\} \end{array} \right]$$

In a resumptive pronoun language such as Hausa, any pronominal can, in principle, foot a non-local dependency. Building on the analogy with rightward anaphoric processes as exemplified by relative clause extraposition, I shall suggest that Hausa pronominals may percolate their *INDEX* value, to be picked up by an antecedent higher in the clause.

$$(27) \quad \textit{pron(oun)-ss} \rightarrow \left[\begin{array}{l} \textit{LOC} \quad \left[\textit{CONT} \left[\textit{HOOK} \left[\textit{INDEX} \quad \boxed{\textit{I}} \right] \right] \right] \\ \textit{NLOC} \quad \left[\textit{INH} \mid \textit{SLASH} \left\{ \right\} \vee \left\{ \left[\textit{CONT} \left[\textit{HOOK} \left[\textit{INDEX} \quad \boxed{\textit{I}} \right] \right] \right] \right\} \right] \end{array} \right]$$

Building on my earlier work on rightward movement, I will also incorporate a distinction of *LOCAL* values according to weight: more specifically, I shall distinguish two subtypes of *local*, namely *full-local*, which has both *CAT* and *CONT* as appropriate attributes, and an impoverished *index-local* which crucially fails to incorporate syntactic information (*CAT*) and where the semantic contribution is limited to index features (empty *RELS* list).⁶ While *synsem* objects will always select *full-local* as the type of the *LOCAL* attribute they introduce, *SLASH* elements (just like the *EXTRA* elements of Crysman's pear) are underspecified as to the type of *local* objects they can contain.

⁶ I shall assume Minimal Recursion Semantics (Copestake et al., 2005) as meaning representation language.

$$(28) \quad \begin{array}{c} \left[\begin{array}{cc} \textit{local} & \\ \text{CONT} & \textit{mrs} \end{array} \right] \\ \swarrow \quad \searrow \\ \left[\begin{array}{cc} \textit{full-local} & \\ \text{CAT} & \textit{cat} \end{array} \right] \quad \left[\begin{array}{cc} \textit{index-local} & \\ \text{CONT} & \left[\text{RELS } \langle \rangle \right] \end{array} \right] \end{array} \quad \textit{synsem} \rightarrow \left[\text{LOC } \textit{full-local} \right]$$

The range of possible argument realisations will then be delimited by the following constraint on *words*, specifying that, in addition to canonical synsem objects and gaps, the ARG-ST list can only contain synsem objects contributing light *index-local* SLASH values.

$$(29) \quad \textit{word} \rightarrow \left[\text{ARG-ST } \left(\begin{array}{c} \textit{list}(\textit{canon-ss}) \circ \textit{list}(\textit{gap-ss}) \circ \\ \textit{list} \left(\left[\text{NLOC} | \text{INH} | \text{SL } \{ \textit{index-local} \} \right] \right) \end{array} \right) \right]$$

For lexical pronouns, the reentrancy between the pronoun's INDEX with that of its SLASH element will be introduced by the lexical entry of the pronoun directly (requiring the pronoun's SYNSEM value to be of type *pron-ss*), whereas for pronominal affixes and null pronominals it will be introduced by virtue of a valence-reducing lexical rule, along the lines given below. Of course, this general rule type will be further differentiated to introduce appropriate exponents for bound pronominals, depending on the category of the host (noun or verb) and the index features of the pronominal complement. For null object pronominals, application will be restricted to the sort of non-human referents.

$$(30) \quad \left[\begin{array}{c} \text{ARG-ST } \langle \dots, \boxed{0}, \dots \rangle \\ \text{SYNSEM } \left[\text{LOC} | \text{CAT} | \text{COMPS } \boxed{1} \oplus \langle \boxed{0} \textit{pron-ss} \rangle \oplus \boxed{2} \right] \end{array} \right] \\ \mapsto \left[\text{SYNSEM } \left[\text{LOC} | \text{CAT} | \text{COMPS } \boxed{1} \oplus \boxed{2} \right] \right]$$

Following the head-driven theory of extraction advanced by Sag (1997) and Ginzburg and Sag (2001), the (anaphoric) slashes introduced by lexical pronouns or (null) pronominal lexical rules will be amalgamated from the ARG-ST list onto the SLASH set of the head. Further percolation will be effected by the Generalised Head Feature Principle.

Alongside introduction of the indices of pronominals, I shall also postulate at least one lexical slash insertion rule dedicated to human direct object complements.⁷ Since human direct objects cannot enter into the same kinds of anaphoric

⁷ In addition to this lexical SLASH introduction rule, I shall also postulate a syntactic rule for adjunct extraction (Levine, 2003), in order to cover, inter alia, PP pied-piping.

relations as overt pronouns and null subjects and non-human objects do, this difference will be signalled by a sortal feature. Note that such a sortal distinction is independently required to ensure proper selection of wh-pronouns in Hausa, i.e. *wà* ‘who’ vs. *mè* ‘what’.

$$(31) \left[\begin{array}{l} \text{ARG-ST } \langle \dots, \boxed{0}, \dots \rangle \\ \text{SS } \left[\begin{array}{l} \text{L | CAT } \left[\begin{array}{l} \text{HEAD } \textit{noun} \vee \textit{verb} \\ \text{COMPS } \boxed{1} \oplus \langle \boxed{0} \left[\begin{array}{l} \textit{gap-ss} \\ \text{LOC | CONT | HOOK | IND | SORT } \textit{hum} \end{array} \right] \rangle \oplus \boxed{2} \end{array} \right] \end{array} \right] \end{array} \right] \\ \mapsto \left[\text{SS } \left[\text{L | CAT | COMPS } \boxed{1} \oplus \boxed{2} \right] \right] \end{array} \right]$$

Having discussed how slash dependencies are introduced and percolated, I shall now turn to the representation of filler-head structures, i.e., those structures where filler-gap dependencies, be they resumptive or not, will be bound off. In the most general case, a filler must at least bind an index contributed by a gap, a situation that holds both for (anaphoric) resumption and extraction proper.

$$(32) \textit{filler-head-struct} \rightarrow \left[\begin{array}{l} \text{SS } \left[\text{NLOC | INH | SLASH } \textit{set(index-local)} \right] \\ \text{DTRS } \left[\begin{array}{l} \text{FILLER-DTR } \left[\text{L | CONT | HOOK | INDEX } \boxed{z} \right] \\ \text{HD-DTR } \left[\begin{array}{l} \text{SS } \left[\begin{array}{l} \text{L | CAT } \left[\begin{array}{l} \text{HD } \left[\text{PRD } + \right] \\ \text{SUBJ } \langle \rangle \\ \text{COMPS } \langle \rangle \end{array} \right] \\ \text{NLOC | TO-BIND | SLASH } \left\{ \left[\text{CONT | HOOK | INDEX } \boxed{z} \right] \right\} \end{array} \right] \end{array} \right] \end{array} \right] \end{array} \right]$$

Recall from our discussion of the data that we observed a fundamental asymmetry between true gaps (zero human direct objects) and overt or covert resumption: while UDCs involving non-resumptive gaps cannot escape any extraction islands, those involving resumption can. Given our distinction of local values into *full-local* and impoverished *index-local*, the selective permeability of filler-head structures towards light indices can be modelled straightforwardly as a constraint on the mother’s SLASH value.

The first subtype of filler-head structures to be considered are relative-head structures:

$$(33) \textit{rel-head-struct} \rightarrow \left[\begin{array}{l} \textit{filler-head-struct} \\ \text{DTRS } \left[\begin{array}{l} \text{FILLER-DTR } \left[\text{L | CONT | HOOK | INDEX } \boxed{z} \textit{index} \right] \\ \text{NLOC | INH | REL } \left\{ \boxed{z} \right\} \end{array} \right] \end{array} \right]$$

As depicted above, relative filler-head structures inherit most of their constraints from *head-filler-struct*, mainly adding a restriction for the filler to contribute a non-eventual index. Since relative filler-head structures do not equate the filler’s local value with the head-daughter’s TO-BIND|SLASH, there is no coercion to *full-local*, and, therefore, relative fillers can easily bind either *full-local* or *index-local* SLASH elements, i.e., long-distance percolated indices originating inside an extraction island. In sum, this underspecification will enable the relative pronoun to bind true gaps (e.g. human direct objects), as well as resumptive elements.

Wh-extraction and focus fronting, by contrast, cannot apply long distance out of wh-islands or relative clauses. If our above characterisation of the permeability of filler-head structures is correct, we can represent the island-sensitivity of these latter processes by requiring these fillers to have their LOCAL value reentrant with the head daughter’s TO-BIND|SLASH. Taking the case of wh-fillers as an example⁸, we can model this selectivity using the standard constraint on filler-head structures familiar from English (Pollard and Sag, 1994):

$$(34) \quad wh\text{-head-struct} \rightarrow \left[\begin{array}{l} \text{filler-head-struct} \\ \text{DTRS} \left[\begin{array}{l} \text{FILLER-DTR} \left[\begin{array}{l} \text{L} \quad \boxed{\quad} \\ \text{NLOC} | \text{INH} | \text{QUE} \left\{ \boxed{\quad} \right\} \end{array} \right] \\ \text{HD-DTR} \left[\text{SS} | \text{NLOC} | \text{TO-BIND} | \text{SLASH} \left\{ \boxed{\quad} \right\} \right] \end{array} \right] \end{array} \right]$$

Since gaps introduced by pronominal synslems are underspecified for their LOCAL value, they can also function as gaps for wh-fillers. Needless to say that proper gaps, being of type *full-local* by means of reentrancy with a sign’s LOCAL value, can also be bound by a wh-phrase. Once percolation of non-local features crosses a filler-head structure, all elements in SLASH are forced to be interpreted as light *index-local* elements, thereby deriving the island-sensitivity of wh-expressions.

The underspecification approach advocated here, where SLASH values lexically contributed by pronominals subsume the SLASH value characteristic of gaps, readily accounts for ATB extraction: as witnessed by (9), Hausa, just like Hebrew (Sells, 1984; Vaillette, 2001a) or Persian (Taghvaipour, 2005), allows a gap in one conjunct with a resumptive in the other. In contrast to Vaillette (2001a), the present approach can capture this directly using the standard Coordination Principle of Pollard and Sag (1994) without any disjunctive specifications.

⁸ A more general version covering both wh-expressions and focused fillers can probably be formulated quite easily by means of reference to information structure, given that wh-expression are inherently focused, but relative phrases are most likely not.

4 Conclusion

In this paper we have argued in favour of an approach to resumption in Hausa where pronominal elements are typically underspecified with respect to their status as pronominals, light “anaphoric” elements and full-fledged resumptive gaps, by means of optionally introducing a SLASH dependency which minimally contains the pronoun’s index, but which can be further restricted to involve full sharing of local values. Given the underspecification at the gap site, differences with respect to island-hood are defined instead as properties of fillers: while wh-fillers and focus fronted constituents coerce the gaps they bind to be full local values, relative pronouns do not do so. The observed asymmetry between island-sensitive wh-extraction and island insensitive relativisation was easily captured then by a single constraint on head-filler-structures to be permeable for light indices, yet opaque for full local values.

The analysis advanced here builds crucially on the notion of percolation of “anaphoric” indices. This approach not only paves the way for an analysis which is entirely free of any spurious ambiguity between gap and resumptive analyses of null pronominals, but it also connects the anaphoric nature of resumptive processes to similar phenomena in the area of rightward movement, namely relative clause extraposition, which happens to be equally insensitive to island constraints.

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