



Discussion

Grammar of binding in the languages of the world: Unity versus diversity



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ABSTRACT

Cole, Hermon, and Yanti (2015) present a number of far-reaching conclusions about language universals on the basis of their study of the anaphoric systems of the Austronesian languages of Indonesia. The present contribution critically assesses these conclusions. It reports a further set of data, and shows that contra to what these authors argue, the systems they discuss can be straightforwardly accounted for by a simple set of universal principles plus properties of the vocabulary of the languages involved. I conclude this article with some remarks on acquisition.

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1. Introduction

Over the last few decades the number of languages that have been studied in detail has greatly increased. And, concomitantly, the diversity of the patterns for binding phenomena discovered (Bennis, Pica, & Rooryck, 1997; Cole, Hermon, & Sung, 1990; Dalrymple, 1993; Faltz, 1977; Frajzyngier & Curl, 2000; Koster & Reuland, 1991; Lust, Wali, Gair, & Subbarao, 2000; Pica, 1987; and recently, for instance, Déchaine & Wiltschko, *in press*). The work on Peranakan Javanese and Jambi Malay reported in Cole, Hermon, and Yanti (2015), henceforth CHY, adds a significant contribution.

One of the challenges linguistic theory faces is how to understand this diversity and to determine what it tells us about the nature of language and the cognitive system underlying it. This goal I fully share with CHY, just like the fascination for hitherto less well-studied languages and the conviction that the careful study of these languages is crucial for meeting this challenge.

CHY study variation in the domain of binding, that is, the way in which the counterparts of expressions like *him*, or *himself* depend on other expressions for their interpretation. Their conclusions are far-reaching. As they say: “If our claims are correct, it cannot be Universal Grammar plus properties of the vocabulary of the language alone that constitute the totality of our grammatical competence.” They continue saying that “the solution to that prob-

lem [=the poverty of the stimulus AU] must reside at least in part in special properties of the grammar construction tools available to the language learner . . .”

This conclusion is important, since it immediately bears on what Baker (2008) refers to as the Borer–Chomsky conjecture, a conjecture that plays a prominent role in the current study of linguistic variation: *All parameters of variation are attributable to differences in the features of particular items (e.g., the functional heads) in the lexicon*. If CHY are right, this conjecture must be false in the domain of binding, that is, the way in which expressions like *him*, or *himself* depend on other expressions for their interpretation. This would constitute a more direct way of evaluating this conjecture than Baker proposes.

The facts CHY discuss are intriguing, just like the issues these raise, but their overall interpretation of the facts is not warranted. In this response I identify a number of claims that cannot be maintained or should be qualified, and present an alternative interpretation of the facts, using a theory that is designed to account for the diversity, but is based on a common core that languages share, and is compatible with the Borer–Chomsky conjecture.

2. The facts and their implications

As CHY argue, the classical binding theory (Chomsky, 1981; Chomsky, 1986), henceforth CBT, posits a strict division between anaphors (‘reflexives’) and pronominals. This is reflected in two conditions. *Condition A* says that anaphors, elements like English *himself*, must be bound in their local domain (roughly the domain of the nearest subject). *Condition B* expresses that pronominals,

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elements like English *him*, should not be bound in this local domain (and may – but need not – be bound in a larger domain). CHY argue that the classical binding theory cannot be maintained on the basis of two observations. One concerns the existence of a third type of element in a number of Austronesian languages spoken in Indonesia, which they refer to as a ‘binding theory exempt anaphor’, in short ‘BTE anaphor’. The other concerns the variation between two dialects of the language Jambi. I will start with the former issue, and later come back to Jambi.¹

The notion of a BTE anaphor is illustrated in (1) (CHY’s (14)), on the basis of Peranakan Javanese, with the dependencies indicated by indices:

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- (1) Ali_i ngomong nek aku pikir [Tono_i ketok awake dheen_i/_j/_k nggon kaca].
Ali N.say COMP 1SG think Tono see body.3 3SG in mirror
‘Ali said that I thought that Tono saw himself/him in the mirror.’
-

Unlike English *himself*, but like *him*, *awake dheen* can have an antecedent beyond the local subject, or receive a value from the discourse (index *k*). Yet, unlike English *him*, but like *himself* it can also have its local subject as an antecedent. Elements with similar properties to *awake dheen* occur in virtually all languages of this group.² On the basis of the behavior of *awake dheen* in VP-ellipsis CHY show that the pattern observed cannot be accounted for by *awake dheen* just being ambiguous. Hence it has to be indeterminate as to its status as a reflexive or a pronominal. Therefore, they argue, the CBT cannot be correct.

Note, however, that this is not a new result about the CBT. It has already been established many years ago that the CBT is an approximation – too bad to be true, but too good to be false, as summarized in Reuland (2011a: 6), see also Chomsky (2013).³ The presence of SELF-anaphors in English with a non-local antecedent or without a linguistic antecedent at all (exempt/logophoric in the sense of Pollard & Sag, 1992; Reinhart & Reuland, 1991, 1993), the pervasive cross-linguistic contrast between complex anaphors such as Dutch *zichzelf*, or Norwegian *seg selv*, and simplex anaphors like Dutch *zich*, or Norwegian *seg* (Everaert, 1986; Reinhart & Reuland, 1991, 1993), the existence of unbound (‘logophoric’) anaphors like *sig* in Icelandic (Reuland & Sigurjónsdóttir, 1997; Thráinsson, 1991), and locally bound pronominals in Frisian (Everaert, 1986, 1991) and other languages, already showed that a binding theory based on the features [α pronominal/ β anaphor] is untenable. Many more puzzling facts have been discovered over the years and led to an approach analyzing binding into more primitive notions (see the literature cited for analyses and explanations). Also the existence of BTE anaphors is in fact not a new observation. Jayaseelan (1997) already showed that Malayalam *taan tanne* can be locally bound, but need not be. *Taan tanne* was analyzed and accounted for in Reuland (2001). Moreover, based on the facts presented in Cole, Hermon, Tjung, Sim, and Kim (2008), *awake dheen* itself has been discussed in Reuland (2011a), and given a similar analysis as *taan tanne* (see Section 4.2).⁴

This contribution addresses the challenge posed by this variation. Summarizing the approach of Reuland (2011a), I will show

how it can account for recurring patterns in cross-linguistic variation on the basis of three simple universals.

3. Toward an explanatory theory of binding conditions

CHY discuss conditions on binding, but they leave open how binding dependencies are grammatically represented. This issue is crucial, however, for an understanding of the status of these dependencies with respect to UG. What we know about the representation of these dependencies in fact provides the key to a different interpretation of the facts than CHY arrive at.⁵

As is uncontroversial since Chomsky (1995), the main ingredient of the CBT, syntactic indices, cannot be part of UG. Consequently, as current work on binding agrees on, the canonical binding conditions as such cannot be part of UG either; they should be derived rather than stipulated (Hornstein, 2000 and subsequent work; Rooryck & Vanden Wyngaerd, 2011; Safir, 2004, and works by the present author including Reuland, 1995, 2001, 2011a).⁶ Reuland (2011a) presents a detailed proposal of how locality conditions on binding can be derived from more primitive notions. (For a succinct exposition, see Volkova & Reuland, 2014, henceforth V&R.) The following paragraphs present a condensed overview. As will be shown, the existence of ‘BTE anaphors’ is not an anomaly, but in fact follows from this approach.

Crucially, in this view, the way in which anaphoric dependencies are represented in natural language is determined by the interplay of the semantic relation of binding with lexical, syntactic, and discourse related properties of the sentence, together with a general principle of processing economy *Minimize unresolved dependencies*. Dependencies can in principle be resolved by syntactic, semantic or discourse processes, governed by an *economy* hierarchy *morpho-syntax* < *semantic* < *discourse* (where ‘<’ means ‘is less costly than’, see Koornneef, Avrutin, Wijnen, & Reuland, 2011; Reuland, 2011a: chap. 4).

As will be discussed in the next sections, the locality restrictions on binding are captured by the system in (2) (replacing the canonical conditions A and B):

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- (2) a. *Locality restrictions on binding*
i. *Reflexivity condition*: Reflexivity must be licensed;
ii. *Chain condition*: Only the highest element in a syntactic dependency (a ‘chain’) can be fully specified for syntactic features;
iii. *A Rejection is final* principle: If the derivation of a particular interpretation of a certain expression in a given component of the language system violates a fundamental principle of grammar, this derivation is canceled. Hence access to subsequent components in the hierarchy to derive precisely the same interpretation for the given expression is prohibited.
- b. *Feature determinacy thesis* (FDT)
Syntactic binding of pronominal elements (including anaphors) in a particular environment is determined by their morphosyntactic features and the way these enter into the syntactic operations available in that environment.
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¹ I occasionally use ‘pronoun’ as an overarching term for ‘pronominals’ and ‘anaphors’.

² A good example in another language family is Turkish *kendisi*. Kornfilt (2000) gives an insightful discussion how one could account for this ‘BT exempt anaphor’.

³ A reviewer wonders why, if my assessment is right, the CBT is still being used in textbooks. This is due to the fact that it is indeed a surprisingly good approximation, prima facie simple and hence useful as a descriptive tool.

⁴ CHY mention Reuland (2011a), but they attribute to him a different analysis than the one he actually presents.

⁵ For instance, it has to be a design feature of human language that one expression can receive its interpretation from another expression rather than from a discourse individual – as we see in *no soldier without a gun thinks he can attack*, where *he* must depend for its interpretation on **the expression** *no soldier* (since obviously, *no soldier* does not set up a discourse individual that *he* could refer to, see Heim, 1982 for discussion).

⁶ A specific discussion of the status of syntactic indices is given in Reuland (2011b).

As we will see, the *Reflexivity condition* follows from general principles of (linguistic) computations. The *Chain condition* follows from principles of syntactic computations. *Rejection is final* reflects derivational economy, again a general principle (Chomsky, 1995). These properties are all we need, together with the feature determinacy thesis in (2b) – essentially a methodological guideline –, and the lexical features of the anaphoric elements themselves. Since the restrictions all reduce to general principles, in the end nothing in the theory of binding is specific to binding, except for the definition of binding itself.

The FDT effectively states that the morpho-syntactic make-up of an anaphoric element should be taken seriously.⁷ For instance, that the binding properties of *awake dheen dewe* differ from those of *awake dheen* should be reducible to the differences in their morpho-syntactic make-up and their internal structure, rather than being stipulated as properties of these elements as unanalyzed wholes.⁸

I will now discuss the relevant conditions in turn.

4. The reflexivity condition

To see why reflexivity must be licensed, consider the relation between verbs and their arguments, as in *Jack defends Jill*. Verbs assign to their arguments semantic roles (or *theta*-roles), reflecting the concepts they express (with labels such as Agent, Experiencer, Patient or Theme, etc.). Informally, a verb like *defend* has two open positions that can be represented by variables as in *defend* (x, y). Each of these variables is associated with a different semantic role; via these variables *defend* assigns the Agent role to its subject *Jack* and the Patient role to its object *Jill*. In its reflexive use – *Jack defended himself* – both roles should be assigned to the same semantic argument, here Jack, so that Jack – being related to both variables – ends up as being defender as well as defendee. Reflexivity is, then, defined as in (3):

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- (3) A predicate is reflexive iff one semantic argument bears two of the predicate's semantic roles.
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It is striking that all languages investigated in sufficient detail so far have been shown do 'something special' to express reflexivity.⁹ In English, for instance, *Jack defended him* cannot be used to mean *Jack defended himself* (although *him* can very well be Jack in *Jack put the book next to him*). In Khanty (a Uralic language), the equivalent of *Jack defended him* can be used to mean that Jack defended himself, but only if the verb carries object agreement, in addition to subject agreement. Languages display a tremendous variety in how they express reflexivity. It varies from using complex expressions like 'himself', 'his body', 'his head', or doubled pronominals as arguments, or inserting a preposition, to using special clitics, affixes, infixes, etc. as markings on the verb (see, for instance, Faltz, 1977; Geniušiene,

1987; Schladt, 2000; Testelets and Toldova, 1998). Some languages use a different verb form to express reflexivity, or an intransitive instead of a transitive verb with no further marking.¹⁰ My proposal is that this is due to a by-effect of reflexivity. If a predicate is used reflexively, its two argument variables must be related to the same argument as their binder. This can be informally expressed as in (4):

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- (4) Binder_x (Predicate (x, x))^a
-

^a In the main text, I try to stay as informal as possible. Logically, the binder must be a so-called λ -operator. The notion of binding I assume is that of Reinhart (2006), who defines the notion of Argument binding in terms of the logical operation of binding, as in (i) where the λ expresses that there is an open position to be filled:

- (i) (a) a *Argument-binds* b, iff a is the sister of a λ -predicate whose operator binds b.
(b) a (λx (P ($x \dots x$))).

Formally, therefore, a reflexive predicate is to be expressed as in (ii), where DP stands for Determiner Phrase, the standard type of nominal arguments, from 'Jack' to 'the president of the US':

- (ii) DP (=Jack or some other nominal) (λx . (Predicate (x, x))).

Consequently, the variables are *identified*, resulting in two occurrences of the *same variable* in a local domain. There is independent reason to believe that the linguistic computational system has trouble handling fully identical occurrences of expressions in a local domain – and hence avoids these (due to the Inability to Distinguish Indistinguishables, IDI, Reuland, 2011a).¹¹

That such distinguishability is linguistically relevant has been observed for phonological representations (Leben, 1973's Obligatory Contour Principle), and more recently for syntactic representations (Abels, 2003; Richards, 2002). The claim is, then, that an IDI effect also obtains in semantic representations like (4) (identical variables lead to an indeterminacy in semantic role assignment).¹²

In short, in order to be able to express reflexivity, languages must compensate for the effects of IDI, that is, 'do something special' to license it. The observation that something special is needed is in fact not new; it reflects the 'disjointness presumption' proposed by Farmer and Harnish (1987): *The arguments of a predicate are intended to be disjoint, unless marked otherwise*. New is that the present proposal derives it from an independent factor.

As we already saw, languages go to great lengths to avoid the configuration in (4). Cross-linguistically, this 'something special' is reflected in two main strategies: an operation on semantic roles (4.1) and a protection strategy (4.2).

4.1. An operation on semantic roles: bundling

Among the universally available operations in the grammar are operations on argument structure. One of these is *Bundling* of semantic roles (Dimitriadis, 2012; Marelj, 2004; Reinhart, 2016; Reinhart & Siloni, 2005). This is an operation that combines – bundles – two semantic roles into a single, complex one, at the same

⁷ In response to one anonymous reviewer, these features are just standard pronominal features such as person, number, gender, and lexical features of a nominal such as *self* if present. They are as audible as the contrast between the simplex anaphor *zich* (only marked for 3rd person) in Dutch and the pronominal *hem* (marked as 3rd person, singular masculine).

⁸ Similarly, if *dheen* is a pronominal (as CHY claim) and the nominal expression *awake*, literally meaning 'body', is semantically bleached, one would expect its interpretation to follow from its components. It is surprising, then, that the combination of the two 'is a general anaphoric form', unspecified for referential properties.

⁹ In Utrecht we carried out a research project on Universals and the Typology of Reflexives, funded by the Netherlands Organization for Scientific Research NWO (grant nr. 360-70-330) in which we focused on languages that were prima facie problematic for this hypothesis. They all turned out to be consistent with this hypothesis, if analyzed carefully enough (Schadler, 2014; Volkova, 2014).

¹⁰ In response to an anonymous reviewer, the 'something' need not necessarily be morphological. It can, for instance, be an operation on argument structure that can only be detected indirectly.

¹¹ As conceived here, IDI is not specific to language. Also non-linguistic symbolic computational systems have to be able to distinguish between different occurrences of the same expression.

¹² In response to one reviewer, I assume that by its very nature IDI reflects a hard constraint on computations. However, its effects are not always immediately observable. As we know since Evans (1980) and Reinhart (1983) there are apparent violations in cases like *I know what John and Mary have in common. Mary admires him and John admires him too*. But crucially, here *him* is not bound by *John*, but only co-refers. Hence the IDI configuration does not arise. Note, that, for instance, in cases like *Boys will be boys* brought up by another reviewer, the semantic status of these two occurrences of *boys* is quite different, hence an IDI effect will not arise either.

time reducing the valence of the predicate. This allows the formation of predicates that meet the definition of reflexivity in (3) while avoiding an IDI effect. Instead of having two identical variables violating IDI, the resulting predicate has only one argument variable, which is assigned this composite role.¹³ The effect of this operation can be seen in English *John washes*, meaning ‘John washes himself’. Likewise, Javanese *Budi adus* ‘Budi washes’, or Bahasa Indonesia *Budi mandi* (id.) (both from Kartono, 2013), are syntactically intransitive even though the predicate has two semantic roles to assign. In other languages this operation is often accompanied by some morphological marking, for instance, as in Russian *Ivan moetsja* ‘Ivan washes’, or Khanty *Łuv l’oxat-ij-ət* ‘He washes’ (V&R). Crucially, what is uniform is the nature of this operation. What varies is the type of morphology (or the lack of morphology) accompanying it. (Of course, the form and the contribution to interpretation of individual morphemes must and can be learned.)

Note, that lexical reflexivity was not covered by the CBT. Elaborating ideas in Reinhart and Reuland (1991, 1993), Reinhart (2002), Marelj (2004) and Reinhart and Siloni (2005) were the first to develop a principled approach to bundling as a component of binding theory (see also Reinhart, 2016). Franssen (2010) constitutes a significant further contribution, since it provides an important perspective on the cross-linguistic prevalence of bundling.¹⁴ In many languages the availability of bundling is lexically restricted. In English, it is restricted to verbs of bodily care (‘grooming verbs’ like *wash*), in languages like Dutch we find a far broader class of agent–patient verbs showing it. In Romance and West and South Slavic languages it applies without restriction, enabled by reflexive clitics.

There is considerable variation in the type of morphology needed to license bundling. Bahasa Indonesia has a bare verb form in some cases – much like in English; in other cases we find a verb form + *diri* (as in *Budi melihat diri* ‘Budi sees himself’). Similar strategies occur in many other Indonesian languages. Both strategies are fairly restricted. Reinhart and Siloni hypothesize that the source of the variation resides in a by-effect of bundling. Bundling targets verbs that in their transitive use assign accusative case. In some cases the bundling operation also eliminates case, in other cases, depending on verb class, reduction leaves a case residue that subsequently has to be checked by an ‘expletive’ nominal element. This can be an affix like *sja* in Russian, a simplex anaphor like Dutch *zich*, an element like *diri* in Bahasa Indonesia, or even a pronominal as in Frisian.¹⁵ I come back to this issue after a discussion of the other licensing strategy: *Protection*.

4.2. The syntactic strategy: protection

Protection entails that the two arguments of a reflexive relation are structurally distinguished. It quite generally involves the use of a *complex anaphor*: a morpheme that adds complexity to an argument containing a variable. To see how this works, consider the role of SELF in English *John* [_{VP} *admires him*(self)*].

Recall that such a verb has two open positions, one to be filled by the subject *John* – call this position *x* – and the other to be filled

by the object. Here, the object consists of a pronoun *him* + *self*. The pronoun is interpreted as a variable (like other pronouns). It is this variable that will have to be identified with the subject variable after binding. This gives a representation where *admire* has two arguments, namely *x* and [*x self*]. Both of the occurrences of *x* end up being valued as John (see below for further effects of *self*). But the two arguments as such remain formally distinct after binding, as illustrated in (5a) below. Consequently, IDI does not come into play. Thus, *self* acts as a protector.

The role *self*-type elements play in English, Dutch, Scandinavian, etc., is performed in other languages by bodypart nouns, other intensifiers, doubling of pronominal elements, etc.¹⁶ See, for instance the bodypart expressions in Basque (5b) or Yoruba (5c) with the representation in (5d), which is equivalent to (5a):

(5)	a.	Binder _x (Predicate (x , [x self]))
	b.	<i>aitak [bere burua] hil du</i> (Basque) father his head kill has ‘The father killed himself’,
	c.	<i>Jòhánù rí araa rẹ</i> (Yoruba) John _i see body.POSS 3SG.POSS; ‘John _i saw himself.’ (Atoyebi, in press)
	d.	Binder _x (Predicate (x , [x Bodypart Noun]))

A similar role is played by the bodypart expressions *awak* in Javanese (6a), and *diri* in Bahasa Indonesia (6b):

(6)	a.	<i>Dee nggagumi awak-e dee (dewe)</i> 3SG admire body-3SG.GEN self ‘She/he admires herself/himself’
	b.	<i>Dia memuji diri-nya (sendiri)</i> 3SG praise body-3SG.GEN self ‘She/he praised herself/himself.’

In fact, cross-linguistically many ways to maintain a distinction are being used.¹⁷

Self and similar elements are not semantically inert. The availability of so-called proxy-readings (see Jackendoff, 1992) serves as a test to distinguish between the two strategies discussed. Consider the case of Ringo entering Madame Tussauds and finding his wax statue to be dirty. If so, one can say *Ringo started washing himself* to express that he started washing his statue. However, *Ringo started washing* can only mean that Ringo started washing Ringo. This follows if *self* makes a contribution to the interpretation allowing this reading.¹⁸ In the case resulting from bundling no separate object argument is present, hence there is no element that can receive Ringo’s statue as a value (see Reuland & Winter, 2009, for details).

Complex anaphors, used for protection, allow these proxy-readings; elements that are present to license bundling don’t. So, bare forms like *Budi mandi* or *Budi adus* don’t allow the proxy-interpretation; neither do verb forms with *diri* (e.g., *Lady Gaga melihat diri di museum* ‘Lady Gaga saw herself in the museum’).¹⁹

¹³ In terms of the notation of note a, the result is as in (i): (i) DP ($\lambda x .$ (Predicate)_[Agent-Theme] (*x*)).

¹⁴ CHY’s negative appraisal of Franssen’s contribution is surprising and unwarranted. Franssen is very careful in his conclusions. The facts are accurately represented (CHY didn’t note any flaws). Apparently, CHY object to a particular feature of the informal analysis in which *diri* is a pronoun *self*, and favor an analysis in which *diri* is an adverb. An analysis in which *diri* is ambiguous between being an adverb and a nominal as in *diri-nya* is not very illuminating, however. Note that for methodological reasons one should postulate an ambiguity of this type only as a last resort. Overall, we found it quite interesting to see so much convergence in Franssen’s data. This indicates that the endeavor it discusses is on the right track.

¹⁵ See Reuland (2011a) and V&R for discussion of the specific properties of this type of pronominal.

¹⁶ More formally, the general structure of such sentences at the relevant level is DP ($\lambda x .$ (*P* (*x*, [*Morph x*]))). Here *Morph* (i.e. *self*, a bodypart noun, an intensifier) is interpreted as some function *f* that applies to *x*. This yields the structure DP (λx (*P*(*x*, *f* (*x*))), where $\|f(x)\|$ can stand proxy for $\|x\|$. (See Reuland & Winter, 2009, for a formal semantic account).

¹⁷ Note again, that where we have coreference, there is no IDI effect.

¹⁸ Technically, it introduces a proxy-function *f*, which when applied to *Ringo* can yield Ringo’s statue ($f(Ringo)=Ringo’s\ statue$).

¹⁹ Note, that on the basis of such facts one cannot distinguish between an analysis of *diri* as a reflexive operator as suggested by CHY or as a pronominal expletive that occurs as a side effect of a reflexivization operation along the lines of Reinhart and Siloni (2005).

The forms with *awake dee* (*dewe*) or *dirinya* (*sendiri*), however do allow a proxy-interpretation (Kartono, 2013).

Thus, *awake dheen* and the long complex *awake dheen dewe* both provide the protection needed to license reflexivity. In section 10, CHY claim that the Franssen/Everaert reflexivity based approach would predict that *awake dheen*'s distribution should be lexically restricted. They provide a number of observations showing that in fact it is not so restricted. It is unclear what their claim about the Franssen/Everaert approach is based on, but *awake dheen* is actually discussed in Reuland (2011a), and argued to simply provide protection. No lexical restrictions are predicted. So, CHY's observations actually support the present approach.

The main difference between expressions like *awake dheen* and *awake dheen dewe* (and their cognates in other Indonesian languages) is that the former only license reflexivity – i.e., are compatible with a reflexive interpretation since they add the necessary complexity protecting from an IDI violation – whereas the latter also enforce it. The difference between licensing and enforcing can be illustrated on the basis of the comparison of *awake dheen* and *awake dheen dewe* with English *himself* in (7):

(7) Ali_i said that I thought that Tono_j saw himself_{-i/j/*k} in the mirror

(7) Illustrates a standard Condition A configuration. Descriptively, *Ali* is too far away to be a proper antecedent for *himself*. In the present analysis this follows without the use of indices given the assumption that *self* is interpreted as a reflexivizing element operating on the verb when it is an argument of the latter (see Keenan, 1988, for such an analysis of *himself*), where locality follows from constraints on head-movement (Travis, 1984). This is illustrated in (8). *Self* forces the verb to be reflexive, ruling out *Ali* as an antecedent, just like condition A of the CBT does.

(8) Ali said that I thought that [Tono (self)-saw him-self in the mirror]^b

^b See Reuland (2011a) for a discussion of *himself* and its cognates in other environments, and an account of exemption effects.

The pattern in (9) follows in the same manner if *dewe* is a reflexivizer, just like *self*. If so, it enforces reflexivity, and the complex *awake dheen dewe* also obeys condition A, leaving only *Tono* as a possible antecedent.

(9) Ali_i ngomong nek aku pikir [Tono_j ketok awake dheen dewe _{-i/j/*k}]

Ali N.say COMP 1SG think Tono see body.3 3SG
'Ali said that I thought that Tono saw himself.'

In the absence of *dewe*, *awake dheen* doesn't enforce reflexivity, but it is complex enough to license it, yielding the structure in (5d) above. Hence, it can be valued by *Tono*, but other antecedents are possible as well. In this respect the 'BTE anaphor' *awake dheen* and its cognates are similar to Malayalam *taan tanne* (Jayaseelan, 1997; Reuland, 2001), or certain reflexives in Uralic languages like for instance, Mari, Komi-Zyrian, or Udmurt, as analyzed in Volkova (2014), whereas *awake dheen dewe* is similar to the full reflexives in Uralic, or Dutch and Scandinavian complex anaphors of the form SE-SELF, and English *himself* in argument position.

There is a further difference between *awake dheen* and *awake dheen dewe* not discussed in CHY. Although both forms allow a strict as well as a sloppy reading in VP ellipsis (see CHY), unlike *awake dheen dewe*, *awake dheen* does not allow quantificational antecedents (quantifiers such as *everyone* or *no one* do not refer to individuals in the discourse like Jack or Jill). This fact is illustrated for Javanese in (10) (from Kartono, 2013):

- (10) a. *Jokowi_i sengit karo awak-e dee_{i/j}.*
Jokowi hate to body-3SG.GEN 3SG
=Jokowi hates himself/him/her.
b. *Tiap guru_i seneng karo awak-edee_{-i/j}.*
Every teacher like to body-3SG.GEN 3SG
≠Every teacher likes himself.=Every teacher likes him/her.

The same holds true for Bahasa Indonesia, Palembangnese and Jambi. As Kartono notes, for some reason the BTE anaphors in the Indonesian languages investigated require an antecedent with a *specific* interpretation. The question is, then, to put this in learnability terms, what would have to be learned, a language specific rule, or the instantiation of a general principle? In fact, nothing beyond a lexical property and general principles is needed.

As we can see, in the case of *dirinya* or *awake dee*, the element *diri*, or *awake* (a bodypart expression) is to the left of the possessive marker of the nominal expression (DP). Under standard assumptions (Bhattacharya, 1998; Longobardi, 2001), the leftmost part of the DP (its 'left periphery') contains a position where referentiality/specificity are encoded. The assumption that this is where *diri* or *awake* are realized directly derives this property of their interpretation.

I conclude that, contra the claim in CHY, the behavior of their 'binding theory exempt anaphor', can be straightforwardly accounted for by the universal principles I mentioned, interacting with lexical properties, along the lines outlined here.

I will now turn to the conclusions CHY draw from the facts of Jambi, showing that the core of the Jambi puzzle can be explained by the *chain condition* and the *rejection is final* principle in (2aiii).

5. Two varieties of Jambi: reflexivity, chains and economy

CHY's strategy to investigate two closely related variants of the same language is indeed highly recommended. They present many interesting observations. Due to space limitations I have to limit discussion to the main issue.

CHY's puzzle is summarized as follows. Jambi has two variants, the variant spoken in Jambi City (Jambi City Malay, JCM) and what CHY refer to as Traditional Jambi Malay (TJM).²⁰ In a nutshell, unlike JCM, TJM has locally bound pronominals. As CHY put it: "Our purpose is to show that the Jambi facts present an even more serious challenge to UG-based approaches to binding than do the Peranakan Javanese facts. I will argue that TJM is an instance of a language that lacks Binding Theory compliant anaphora altogether."²¹ They further argue that what in JCM is represented as a set of categorical distinctions reflects no more than pragmatic tendencies in TJM. Thus the contrast represents a snapshot of a 'grammaticalization process'. What starts out as mere tendencies is in the end entrenched as a fully binding theory compliant pattern. This, they argue, shows that the BT cannot be part of UG, which in turn casts doubt on the concept of UG itself.

The argument may seem compelling but is based on incorrect assumptions. First as we already saw, classical BT has been considerably revised. So, that classical BT cannot be part of UG should come as no surprise. The question is whether there are universal-based approaches that do better.

Let's first assess the nature of the challenge. As we saw, CHY argue that TJM unlike JCM allows locally bound pronominals. This is indeed a challenge for the classical binding theory. Note, however, that it is not for more current UG-based proposals. For approaches like [Safir \(2004\)](#), [Boeckx, Hornstein, and Nunes \(2007\)](#), and [Rooryck and Vanden Wyngaerd \(2011\)](#) the crucial notion is that of competition. Briefly, if a language has no dedicated anaphor (in a particular position) a pronominal will do. So, TJM as described by CHY is in fact quite compatible with these UG based approaches. This shows that CHY's general claim about UG based binding theories is incorrect. However, for reasons explained in V&R, competition based approaches face problems. Hence I will pursue the issue in more detail, and discuss how [Reuland \(2011a\)](#) fares with the Jambi facts (note, furthermore, that CHY specifically take issue with the reflexivity approach).

The existence of languages with locally bound pronominals was one of the reasons for [Reinhart and Reuland \(1993\)](#), and subsequent work to develop an alternative to the CBT.

As was established in [Reinhart and Reuland \(1993\)](#), the canonical condition B must be teased apart into two different factors. One involves reflexivity, the other is a purely syntactic factor, 'the chain condition'. This factor is necessary to explain why for instance in English constructions such as *John felt [him slip away]*, *him* cannot be bound by *John*. Here *him* and *John* are not semantic co-arguments, hence this fact cannot be due to conditions on semantic predicates.²²

This syntactic factor involves the encoding of dependencies by syntactic operations (technically, forming 'chains'). The basis of this process is essentially the mechanism that is needed independently for wide-spread phenomena like subject–verb agreement, adjective–noun agreement, etc. (see [Kratzer, 2009](#) for a similar approach). Leaving aside the technical details (see [Reuland, 2011a](#), and V&R), the intuition runs as follows: Simplex anaphors (e.g., Dutch *zich*, Norwegian *seg*) are deficient. They have empty 'cells' for number and gender in their lexical representation. Binding of these elements is encoded in the syntax by a sequence of purely mechanical local agreement operations valuing empty cells by supplying values from an antecedent.²³ Simple 3rd person

pronominals cannot be bound by forming such dependencies.²⁴ They are fully specified and have no cells to be valued. Overwriting their filled cells would violate the principle of recoverability of deletions ([Chomsky, 1964, 1995](#)), hence, a derivation creating a syntactic dependency relation in this manner would involve an impossible operation, and is *canceled* (this is what the chain condition expresses). As stated by the *rejection is final* principle *a derivation that is canceled cannot be bypassed* ([Chomsky, 1995](#); [Reinhart, 2006](#); [Reuland, 2001](#); [Reuland, 2011a](#)).²⁵ Thus, *a pronominal cannot be semantically bound in the domain where a derivation by chain formation would have been canceled*. Summarizing, *Condition B of the CBT – and its exceptions – follows from ID1 and the condition on chains just sketched*.

So, if we find a language with pronominals that are locally bound, there are two options to explore: i. The pronominal is not visible to the agreement operation, hence a derivation in which it is attached to the envisaged antecedent is not attempted within syntax, hence not blocked in the semantics; ii. despite appearances the pronoun is deficient, hence creating an agreement dependency relation with the antecedent doesn't violate the chain condition. As shown in V&R the first option is realized in Khanty and Frisian (and Old English, see [van Gelderen, 2000](#)).

Quite plausibly, TJM realizes the second option, as we will see. As [Kartono](#) observes, 3rd person pronominals in TJM lack a number contrast that is present in JCM. (The same pattern is found in Palembangnese.) Thus, in TJM, unlike JCM the 3rd person pronominal is in fact defective (indicated by NR). This is illustrated in (11)–(14) from [Kartono \(2013\)](#).

-
- (11) *Dio* kagum samo Budi. **TJM**
3 NR admire with Budi.
-

(11) has two interpretations: a. '**She/he** admired Budi.' b. '**They** admired Budi.'

In contrast, in JCM *dio* cannot be used as a plural. The pronominal *dio* in this dialect is always interpreted as a singular as shown in (12) where the b-interpretation is impossible.

-
- (12) *Dio* nengok Eko di sekolah. **JCM**
3SG see Eko in school.
a. '**She/he** saw Eko at school.' b. ≠ '**They** saw Eko at school.'
-

If so, the contrast between (13) and (14) below immediately follows.

-
- (13) **Eko*_i muji *dio*_i. **JCM**
Eko praise 3SG'Eko praised himself.'
- (14) *Budi*_i mukul *dio*_{ijj}. **TJM**
Budi hit 3NR 'Budi hit himself/him.'
-

Since in JCM the pronominal is not defective it cannot end up being locally bound, but since in TJM it is defective, binding violates no principle of grammar. In this respect TJM shows a pattern that is similar to one found in a 15th century Saxon dialect of Dutch, which – like TJM – allowed locally bound pronominals. This dialect

²⁰ These variants correspond to what [Kartono \(2013\)](#) refers to as City Jambi (CJ) and Upstream Jambi (UJ). I will follow CHY's terminology.

²¹ In this respect it is prima facie no different from the standard variety of Khanty (see V&R).

²² Note that approaches to the BT as in [Levinson \(2000\)](#) cannot be extended to cover these environments, as Levinson acknowledges.

²³ The implementation is based on [Pesetsky and Torrego \(2007\)](#).

²⁴ See [Reuland \(2011a\)](#) and V&R for discussion of why 1st and 2nd person pronouns behave differently.

²⁵ Intuitively, one may think of this as a garden path from which there is no recovery. For more discussion of this economy principle, see [Koornneef et al. \(2011\)](#), [Koornneef and Reuland \(2016\)](#), [Reuland \(2011a\)](#) and the experimental literature cited there.

showed the absence of a number contrast in the 3rd person pronominal until locally bound pronominals were replaced by the simplex anaphor *zich*, which was borrowed from German (Postma, 2004).

Thus, the binding difference between JCM and TJM reduces to a simple lexical difference between pronominals of a type also observed elsewhere: *local binding in TJM does not violate the chain condition due to the pronoun's deficiency, whereas in JCM it does.*

This leads us to the issue of reflexivity: how does TJM fare with regard to IDI? I admit that in this respect a proper analysis of TJM still requires work. However, in view of CHY's claim to have shown that it "cannot be Universal Grammar plus properties of the vocabulary of the language", it suffices to show that there is a plausible analysis where it can.

The simplest account of this aspect of the contrast is in terms of Reinhart and Siloni (2005)'s lexicon-syntax parameter. That is, TJM freely allows bundling of thematic roles in the syntax, like Romance and West/South Slavic (Section 4.1), with the pronominal present to license this operation – extending the pattern of Frisian or Old English –, whereas in JCM bundling is lexically restricted. If so, whatever underlies the contrast between JCM and TJM is not anything fundamental as 'different binding principles', but just the setting of an independently established parameter.

For the issue under discussion this should suffice, since it shows that the contrast between JCM and TJM does not justify CHY's far-reaching conclusions about language universals.

It would be interesting, though, if this parameter setting could be linked to morpho-syntactic properties. Note, then, that Bahasa Indonesia (just like, for instance, Javanese) has a rich system of verbal affixes marking transitivity and/or eventiveness (Nuriah, 2004). As discussed in Section 4.1, in their bare form grooming verbs allow bundling, and don't allow an object, see (15a). Quite strikingly, in their affixed form they don't allow bundling. They require an object and for a reflexive interpretation a complex reflexive or BTE anaphor is obligatory, as in (15b) (Kartono, 2013):

- | | | |
|------|----|--|
| (15) | a. | Bob mandi (*diri-nya/dirinya sendiri.)
Bob wash (body-3SG.GEN/body-3SG.GEN self) |
| | b. | Bob me-mandi-kan *(diri-nya/dirinya sendiri.)
Bob me-wash-kan body-3SG.GEN/body-3SG.GEN self
'Bob washed himself.' |

This indicates a relation between the presence of a morpho-syntactic 'shell' and bundling. It may not be accidental, then, that in TJM virtually any verb can occur in its bare form with an object (as do all verbs in CHY's examples, e.g., the verb *cinto* 'love') (Kartono, 2013). Hence it should be able to project some functional structure to license an object without morphological marking. A suggestive possibility is, then, that in TJM these verbs are optionally really bare and hence compatible with bundling (with just a case residue to be taken care of by the pronoun), whereas in JCM – though morphologically similar to TJM – under the influence of the standard language verbs would always be interpreted as affixed verbs, and thus reject bundling, requiring a complex anaphor. If so, only a local (low-level) parameter needs to be involved to encode the contrast. Clearly, to fully evaluate this suggestion more work is needed, but I feel it would be worth exploring.

This leads us to the last issue, the role of intensifiers and pragmatics.

6. Syntax or pragmatics?

There is no doubt that pragmatic conditions are a potentially important factor in establishing anaphoric dependencies. However,

the way they are manifested is subject to grammatical constraints. In short: *pragmatic effects can be masked by syntactic factors.* The pattern in (16) and (17) represents a simple French/Dutch contrast (Reuland, 2011a; Zribi-Hertz, 1989).

- | | | |
|------|----|---|
| (16) | a. | Jean parle de lui-même/lui
Jean speaks about himself |
| | b. | Jean bavarde avec lui-même/*lui
Jean mocks himself |
| (17) | a. | Jan spreekt over zichzelf/*zich (=16a) |
| | b. | Jan spot met zichzelf/*zich (=16b) |

In (16a) both the bare pronominal and the intensified form are possible, in (16b) the intensified form is required. This contrast is easily understood on the basis of the pragmatics of the verbs involved (is it quite special to mock oneself). In Dutch (17), however, there is no contrast. In both cases the complex reflexive is required. We may reject the idea that Dutch and French speakers have a different pragmatics for *mock* or *speak about*. The simplest account is just based on grammar. In Dutch, verbs and prepositions restructure, in French they don't (Kayne, 1981). After restructuring the subject and the object of the preposition are co-arguments, creating an IDI environment requiring the complex *zichzelf*. In French no IDI environment is formed, hence the choice between *lui* and *lui-même* is not determined by the grammar, but a matter of pragmatic preferences.

This also provides a plausible model for what we see in TMJ. There is no chain condition ruling out the pronominal, and no IDI effect to be taken care of. If so, the emphasis marker *-lah* or the intensifier *dewe?* are free to be used in line with pragmatic preferences, comparably to French *même*.

Let's look a bit more closely at *dewe?*. According to CHY, in JCM *pronominal + dewe?*, always acts as a reflexivizer, whereas in TJM we find cases where it doesn't. This does not support CHY's claim that we need different rules for these variants, though. As argued in König and Gast (2006) being an intensifier and being a reflexivizer are semantically closely related. If so, this contrast between TJM and JCM reduces to a simple lexical difference, quite interesting, but nothing theoretically astounding. In the former it would be an intensifier, in the latter a reflexivizer. A stipulated lexical difference, yes – something has to be said. But entirely compatible with the Borer–Chomsky conjecture.

7. Grammaticalization and syntactic change

There is no doubt that grammaticalization processes play a key role in syntactic change. However, the picture sketched in CHY's Section 8 seems problematic. Languages have been changing since the emergence of modern man. It is impossible to see how any change from a functionally defined system to one that is grammatically determined, would not have occurred tens of thousands of years ago if increasing *functionality* plays the role CHY assume.²⁶ Rather what one sees through the ages is a continuous rebalancing, from being inflectional via loss of inflection to isolating and back, or from morpho-lexical encoding to analytical encoding and back, all in

²⁶ One of the puzzles purely functional explanations raise is why they appear to be limited to grammatically definable local domains. So, why would there be a need to avoid ambiguity in the case of *Jack washed him*, but not in the case of *Jack hoped Jill would wash him*. Why wouldn't the Frisians, like the Dutch, have immediately adopted the loan anaphor *sich* when it came their way (which it demonstrably did, but it didn't stay). Given the close connection between the communities of speakers of TJM and JCM, why don't the former immediately adopt the latter's system if it is functionally so much better suited?

a constant attempt to reconcile the effects of tear and wear with the requirements imposed by the underlying system.

Our investigations so far show that it is important to look below the surface. The initially surprising property of Frisian that it allows locally bound 3rd person pronominals has been shown to reduce to a simple property of its case system (and not to some major binding parameter, if only since it also has pronominals that cannot be locally bound, see Reuland, 2011a). The initially surprising property of Khanty that it has locally bound pronominals, turned out to be easily explained once the role of object agreement had been taken into account (see V&R). The surprising role of pronominals in Fijian in licensing a reflexive interpretation (see Levinson, 2000) ceased to be so remarkable once the role of the *-a* versus the *-i* affix was understood (Schadler, 2014). The equally surprising reflexive pronouns in Haitian Creole have been argued to have more structure than meets the eye (Lefebvre, 1998). In their final section CHY mention the existence of sign languages where simple pronominals are used as reflexives. Again, this need not be puzzling. Given that IDI effects arise due to the lack of sufficient structure to distinguish between occurrences of identicals, a possible factor in sign languages may be the use of a spatial coordinate system, which makes the necessary structure available. This opens an interesting area for further research.

In my experience, patterns that were initially puzzling for an approach to binding based on universal principles, ceased to be puzzling once analyzed in sufficient depth. I fully agree with CHY that ‘BT-exempt anaphors’ (referred to as *half-reflexives/semi-reflexives* in Kartono, 2013 and Volkova, 2014), and the facts of Jambi are fascinating. What strikes me most, however, is that they – just like other initially puzzling cases – are so easily understood on the basis of three simple universal principles guided by the feature determinacy thesis: i. Reflexivity must be licensed; ii. simplex anaphors and pronominals are subject to a condition on chain formation; iii. the encoding of anaphoric dependencies is subject to an economy principle, which in certain – specifiable – environments gives rise to categorical effects, in others to preferences. The binding conditions, then, appear to be in agreement with the Borer–Chomsky conjecture.

8. Toward a conclusion

The important question that intrigues both CHY and me, is how to understand the anaphoric systems of the languages of the world, and what is the division of labor between universal principles guiding their acquisition, and learnable properties of individual lexical items.

But, as I already noted, the conception of grammar (and of ‘UG’) has undergone significant changes over the last few decades. In this, linguistics is no different from other sciences. Since the inception of the minimalist program (Chomsky, 1995), the relatively ‘rich’ conception of grammar and UG envisaged in Chomsky (1981) and related work, has been replaced by a program exploring a much leaner conception, with just a few general combinatory principles interacting with grammatically encoded properties of the vocabulary of a language. While acknowledging this shift at places, a lot of the discussion in CHY still seems inspired by the theoretical frameworks of the eighties. Furthermore, although they make far-reaching general claims, the details of their views on acquisition remain rather implicit.

The need for more explicitness clearly shows if one examines CHY’s claim in the following paragraph: “Language learners must be capable of acquiring complex syntactic systems on the basis of imperfect data. Thus, UG does not provide a general solution to the problem of poverty of the stimulus, and the solution to that problem must reside at least in part in special properties of the

grammar construction tools available to the language learner rather than simply in a fixed set of grammatical rules hard wired into the brains of speakers.”²⁷

That language learners must be capable of acquiring complex syntactic systems on the basis of imperfect data is indeed true. How they manage to do so is precisely what has to be explained. Saying that the solution to the problem of the poverty of the stimulus must reside at least in part in special properties of the grammar construction tools available to the language learner, says little in the absence of a precise analysis of which special properties solve this problem and how. Contrasting this with a “fixed set of grammatical rules hard wired into the brains of speakers” is not illuminating unless it is specified which rules are referred to.

CHY claim that elements such as *awake dheen* pose a learnability problem. This is not correct, though. A specific proposal of how to account for the variability in binding domains was already presented in Manzini and Wexler (1987). For this proposal the presence of ‘BT-exempt anaphors’ presents no learnability problem: The language learner initially postulates the smallest domain for a dependency compatible with the input – assuming that the interpretation of a sentence can be determined from the context in which it is used. For *awake dheen dewe* there will never be a reason to revise this initial hypothesis, for *awake dheen*, on the other hand, there will be ample information in the input to abandon the initial hypothesis and in fact go for the largest domain, including discourse values.

CHY’s discussion leaves open crucial questions such as: What are the language particular rules that would have to be learned? How would this help solve the poverty of the stimulus problem, and how would their learning problem be solved? Given the major claims by CHY it would have been good if such issues had been more extensively addressed. In fact, one might argue that the issue as they state it is more about the content of UG than about the existence of UG. What else is UG but a set of ‘grammar construction tools’ – with whatever properties these have – that is available to the language learner?

By way of conclusion, but also as the start of a hopefully fruitful discussion, I would like to submit that we do need a conception of UG, leaner, indeed, compared to the views of the sixties and seventies – but definitely embodying non-trivial language universals. Clearly, certain components of the language system that *prima facie* look highly specific to language probably reflect more general principles of human cognition. IDI is a case in point, which though non-linguistic in nature has a profound influence on the way we express reflexive relations. Reinhart (1983) tentatively suggested that the c-command requirement could be explained by processing considerations. On the other hand, there are properties of language that are quite hard to conceive as just “a bit more of the same” we find elsewhere. For instance, the notion of binding itself seems highly specific to language. From an evolutionary perspective, reference, and hence co-reference are easily conceived as part of non-language like symbolic systems. Binding, that is, value assignment through the value of another expression is non-trivially different,

²⁷ As this quote indicates, CHY agree that the challenge for our understanding of language acquisition that is posed by the poverty of the stimulus is to be taken seriously. Although the poverty of the stimulus argument is often met with skepticism in the cognitive sciences, its force has in fact been recently acknowledged by Chater and Christiansen (2010). As they argue, language acquisition is based on a specifically human capacity of C-induction (different from the N-induction we use for understanding the natural world). Methodologically, this capacity for C-induction has just the same status as the genetically determined ‘initial state’ in UG-based theories of language acquisition. Investigation of a genetically determined initial state and the effects of subsequent exposure are uncontroversial in, for instance, the study of our immune system (Janeway, Travers, Walport, & Shlomchik, 2001). Clearly, from a scientific perspective, in linguistics the investigation of the relative contributions to language development of a genetically determined initial state and subsequent exposure, should be as uncontroversial.

and, as argued in Reuland (2010), a discontinuity in an evolutionary development.

In any case, what is domain-general in language and what is domain specific can only be determined by careful comparative research, taking seriously the intricate puzzles the linguistic encoding of interpretive dependencies poses, but also the limits of the human cognitive system. From this perspective, the road toward a fruitful discussion lies open.

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