# DOUBLE AND BACKWARD CONTROL IN INDONESIAN: AN LFG ANALYSIS

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Abstract

This paper discusses syntactic, semantic and pragmatic properties of an Indonesian control construction allowing forward/backward double control alternations. While having a tight VP structure, the backward control structure is not monoclausal. An argument-structure based LFG analysis is proposed, accounting for the complex properties of double control structures, including ambiguity between ordinary forward and unusual backward readings.

## 1 Introduction

Control phenomena have been of great interest in linguistics for typological and theoretical reasons (see Davies and Dubinsky 2004, 2006, 2007, inter alia).* Recent research in control phenomena focuses on backward control (Polinksy and Potsdam 2002, Potsdam 2009, Sells 2006, Haug 2011).

Indonesian also shows backward control, but only in the presence of forward control: i.e. in a double control structure. Consider (1), showing two gaps; left-headed and right-headed arrows indicate backward and forward control types respectively:[1]

(1)

| *Mobil mana* | *yang* | __ | *coba* | [ __ | *kau=jual*]. |
|---|---|---|---|---|---|
| car which | FOC | (A) | UV.try | (P) | 2SG=UV.sell |

'Which car did you try to sell?'

In the backward control type, the controller (*kau* '2SG') is realised in the downstairs verb (*jual* 'sell') and the gap is in the matrix verb. (As the lines representing the control cross one other, the term 'crossed control' is also used.)

The double control structure in (1) can have parallel forward control, in which the A argument *kau* '2SG' shows up in the matrix verb:

(2)

| *Mobil mana* | *yang* | *kau=coba* | [ __ | __ | *jual*]. |
|---|---|---|---|---|---|
| car which | FOC | 2SG=UV.try | (P) | (A) | UV.sell |

'Which car did you try to sell?'

Two properties of double control exemplified in (1)-(2) are central to the discussion throughout. Firstly, unlike its English translation, (1) in Indonesian is not an object-extraction structure. The NP *mobil mana* 'which car' is the grammatical SUBJECT (SUBJ) of the verb *coba* 'try' and also the SUBJ of the

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[1] Abbreviations used in this paper: 1,2,3 (First, Second, Third person), A (Actor), AV (Actor Voice), FOC (Focus), P (Patient), PASS (passive), Q (Question word), REL (relativiser), UV (Undergoer Voice).

UV verb *jual* ‘sell’. Secondly, as mentioned, backward control only appears in the presence of forward control associated with a highly prominent Patient NP. Backward control is highly constrained, requiring a tight structure with voice harmony involved (discussed in 4.4).

While the backward control phenomenon has recently attracted attention due to Polinksy and Potsdam (2002), the double control shown in (1–2) needs further exploration. Indonesian research on this has been specifically in relation to the verb *ingin/mau* ‘want’, triggered by a puzzling ambiguity, as in (3). This is further discussed in 3.4.

(3) *Anak itu* *mau/ingin* [ – *di-cium* *oleh* *Ibu* ]
child that want PASS-kiss by Mother
i. ‘The child wanted to be kissed by Mother.’ (ORDINARY CONTROL)
ii. ‘Mother wanted to kiss the child.’ (CROSSED CONTROL READING)

The aim of the paper is to provide more empirical basis for the analysis of double control structures in Indonesian. I show that, despite recent attention in Indonesian linguistics (Polinsky and Potsdam 2008, Nomoto 2011), certain issues are not properly addressed, such as the interplay between forwards and backwards control, the nature of their differences and the constraints licensing backward control.

By contrast, the parallel-based model of LFG provides a unified account of the properties and key empirical points of different types of control. While much LFG work exists on single forward/backward control, none discusses double control alternations of the type found in Indonesian.

There are two competing options to handle backward control. The first is the classic LFG analysis with a symmetrical equation, e.g. (↑SUBJ)=(↑XCOMP SUBJ), which actually allows control in both directions. Haug (2011) argues that this is the right analysis for Ancient Greek. The second option is to extend Zaenen and Kaplan’s (2002) idea of subsumption (i.e. (↑SUBJ)⊆(↑XCOMP SUBJ)) as proposed by Sells (2006). Since subsumption allows control in one direction only, and since double control in Indonesian allows control in both directions (i.e. backwards and forwards), it follows that the classic LFG analysis is the right one for double control in Indonesian.

The paper is organised as follows. A brief overview of the Indonesian voice system and ordinary syntactic control is given in section 2. Different types of control structures are outlined in section 3, showing alternations of single-/double control structures (3.1), their syntactic, semantic and pragmatic properties (3.2), and the puzzling ambiguity (3.3–3.4). An LFG argument-structure based analysis is given in section 4, followed by the conclusion in 5.

## 2 An overview of Indonesian morphosyntax: voice and syntactic control

### *2.1 Voice system: verbal morphology and argument flagging*

Indonesian has AV (actor voice), UV (Undergoer Voice), and PASS (passive voice), each marked by different verbal morphology: *meN-*, *∅-*, and *di-*

respectively (Arka and Manning 2008, Cole et al. 2008, Musgrave 2001, among others). Key to grammatical function identification, in addition to voice morphology, are structural positions of arguments, in particular core arguments (SUBJ and OBJ), and argument flagging. The structural positions of arguments and their flagging in simple monotransitive clauses in Indonesian can be informally represented as in (4a). As shown, core arguments are NPs while obliques are PPs.[2] (4b) shows singular pronominal forms in these core and oblique functions.

(4) a.

| NP | [CL=V=CL/NP | | NP | PP]$_{VP}$ |
|---|---|---|---|---|
| SUBJ$_{:A/P}$ | OBJ$_{:A}$ | OBJ$_{:P/R}$ | OBJ:$_{T}$ | OBL |

b.

| | | | | | |
|---|---|---|---|---|---|
| *aku* | *ku=* | *=ku* | *aku* | *=ku* | '1SG' |
| *(eng)kau* | *kau=* | *=kau* | *(eng)kau* | *=kau* | '2SG' |
| *(d)ia* | *(d)ia=* | *=nya* | *dia/*ia* | *=nya/dia/*ia* | '3SG' |

In addition, when the arguments are pronominals, the distribution of their forms (clitics or free pronouns) is constrained by, and therefore reflects, their syntactic status. This is clear from the clitics for the singular forms, especially the first and the third person clitics, as in (4b).[3] Firstly, pronominal clitics cannot be surface (A) SUBJECT;[4] clitics are non-SUBJ arguments. Secondly, the immediately preverbal position is the A position (precisely, the [Spec, VP] position). Any pronominal clitic can appear here except *=nya*, which is reserved for the postverbal position, either directly hosted by the verb (in which case it is a core argument), or by a P (in which case it is an oblique). Third, the free pronoun *(d)ia* is subject to distributional functional constraints, i.e. either *dia* or *ia* is used for the core argument in the preverbal position, but only *dia* is used postverbally (either as core or oblique).

The following examples illustrate these points, using the AV-UV alternation:

(5) a.

| *Aku* | *mencium* | *=nya/dia/*ia* |
|---|---|---|
| 1SG | AV.kiss | 3SG |

'I kissed her/him.'

b.

| *Dia/ia/*nya* | *ku=cium* |
|---|---|
| 3SG | 1SG=UV.kiss |

'Him/her, I kissed.'

*2.2 Syntactic control in Indonesian*

Control structures involve a referential identity dependency relation between a controller (an overt NP) and controllee (a gap, typically but not necessarily in the dependent clause). In (6), the pronominal form *=nya* '3SG' is

[2] The non-SUBJ agent clitic of the UV, which remains a core argument, is classified as OBJ; see Arka and Manning (2008).

[3] The plural forms *kita/kami/mereka* lack clitic counterparts and are not shown here.

[4] This is strictly so for the A subject, but there may be variation in acceptability for an intransitive (S) subject:

i) *aku/ku=datang* 'I came.' vs. ii) *aku/*ku mendatangi dia* 'I came to him.'

the controller of the identity of the controllee (indicated by a dash). This is a forward single control structure: there is a single gapped position, and the controller is structurally higher than, and linearly precedes, the controllee.

(6) *Aku* *menyuruh* *=nya* [ – *menjual* *mobil* *itu*].
1SG AV.ask 3SG AV.sell car that
CONTROLLER CONTROLLEE
'I asked him/her to sell the car.'

As shown, the pronominal form *=nya* suggests the askee is the P/object of the matrix verb, even though it is also the subject of the embedded clause.

The matrix P in (6) can alternate and become subject of the matrix verb, and the verb must be in the UV form, as in (7). The voice alternation does not affect the logical meaning and acceptability of the control relation. The control remains a forward type of single control:

(7) *Dia/ia/*nya* *ku=suruh* [ – *menjual* *mobil* *itu*].
3SG 1SG=UV.ask AV.sell car that
CONTROLLER CONTROLLEE
'I asked him/her to sell the car.'

The voice alternation of (6)-(7) suggests that the controller is semantically determined. *Suruh* 'ask' belongs to the INFLUENCE type of verbs, in which the matrix P participant is the controller (Sag and Pollard 1991). P can then be realised as an object in the AV verb or subject in the UV verb.

In both cases, the controlee must be subject. Controlling non-subject arguments is unacceptable, as in (8). Here, in contrast to (6), the attempted controllee (i.e. A) argument is not subject, because the verb is in the UV form:

(8) * *Aku* *menyuruh* *=nya* [*mobil* *itu* – *jual* ]. (cf. (7))
1SG AV.ask=3SG car that UV.sell
FOR: 'I asked him/her to sell the car.'

Gapping of non-subject A is, however, possible under a certain strict condition. This is discussed and exemplified in the following sections.

## 3 Alternations in control constructions

### *3.1 Alternations of control types*

Indonesian allows alternative control constructions, with the same logical meaning (though different information structure): single-double control alternations as in (9a-b) (both are forward control) and forward-backward alternations as in (9b-c) (both are double control). The verb *coba* 'try' represents the A-type control verbs (i.e. the matrix Actor is the semantic controller), which also include verbs such as *mau* 'want', *suka* 'like', and *perlu* 'need' (cf. Foley and Van Valin 1984, Sag and Pollard 1991).

(9) a. *Aku* *mencoba* [ __ *menjual* *mobil* *itu*].
1SG AV.try AV.sell car that
'I tried to sell the car.'

b. *Mobil itu* *(yang)* *ku=coba* [ __ __ *jual*].
car that FOC 1SG=UV.try (P) (A) UV.sell
'That car (is the one that) I tried to sell.'

c *Mobil itu* *(yang)* __ *coba* [ __ *ku=jual*].
car that FOC (A) UV.try (P) 1SG=UV.sell
'That car (is the one that) I tried to sell.'

In the single control (9a) both the matrix and embedded verbs are in AV, and the complement SUBJ is controlled by the matrix SUBJ. In the double control structures (9b-c), both matrix and complement verbs are in UV, with the embedded P SUBJ appearing as the matrix SUBJ. That is, in both cases, the forward control is associated with the embedded P. The difference between (9b) and (9c) is the position of the overt expression of the shared A argument *ku=* in the matrix structure, giving rise to forward control (9b); or in the embedded structure (9c), giving rise to backward control.

The same forward-backward alternation also applies to the P-control verbs *suruh/minta* 'ask'. The following are the double control counterparts of (7) with the verb *suruh*. Note that the same string can be analysed as having different gap positions, as shown in (10).

(10) a. *Mobil* *itu* *yang* *ku=suruh* *dia* [ __ __ *jual* ].
car that 3SG 1SG=UV.ask 3SG (P) (A) UV.sell
'I asked him/her to sell the car.'

b. *Mobil* *itu* *yang* *ku=suruh* __ [ __ *dia=jual* ].
car that 3SG 1SG=UV.ask (P) 3SG=UV.sell
'I asked him/her to sell the car.'

Backward control is also possible in passive voice, such that the oblique is only realised in the downstairs verb, as seen below with A- and P-control verbs:

(11) a. *Mobil* *mana* *yang* *di-coba* *di-curi* *(oleh)* *orang?*
car which REL PASS-try PASS-steal (by) person
'Which car was tried to be stolen by somebody?'

b. *Apa yang di-mohon di-kabulkan oleh President?*
what REL PASS-beg PASS-accept by president
'What is it that is asked to be accepted/approved by the president?'

Unlike the UV verb, where the A argument is still core and required to be present (a clear case of forward/backward control), in the passive, it is less clear that we have a gap, as passive agent is syntactically oblique/adjunct-like. When it shows up, it appears in the embedded structure. Thus, *orang* 'person' is the underlying A of *coba* 'try' in (11a), and *President* is the underlying matrix P of *mohon* 'beg/ask', also understood as the underlying A of the embedded verb *kabulkan* 'accept' in (11b).

An important property of the P-control verb in the passive, as in (11b), is that the P cannot show up overtly in between the first verb and the second verb as object (12a), or oblique PP (12b). Note that the P can show up in the matrix verb when it is in the UV; see (10) above. This is evidence that the matrix and embedded verbs form a tight unit; this is further discussed in section 4.2.1.

(12) a. * *Apa yang di-mohon <u>President</u> di-kabulkan ?*
what REL PASS-beg president PASS-accept
'What is it that is asked to be accepted/approved by the president?'

b.* *Apa yang di-mohon <u>oleh President</u> di-kabulkan ?*
what REL PASS-beg by president PASS-accept
'What is it that is asked to be accepted/approved by the president?'

In sum, Indonesian exhibits double control structures showing morphosyntactic constraints. In such structures, forward-backward control alternation is possible, with matrix UV and PASS (but not AV).

### *3.2 On the syntactic, semantic and pragmatic status of fronted P NP*

The fronted sentence-initial NP in double control structures is grammatical subject; it is also a highly prominent NP in terms of its pragmatics. For these reasons, it is labelled as SUBJ-ĐF, where ĐF is typically FOC. I present evidence that the fronted NP is SUBJ-ĐF in 3.2.1, and evidence that it is a non-thematic (or raised) argument in 3.2.2.

#### 3.2.1 Evidence for SUBJ-ĐF

As evidence that SUBJ is ĐF, a double control structure involving the sentence-initial P is common in questions asking the P; i.e. where P is in focus (marked by *=kah*), or if in declarative mood, the P is given contrastive focus (marked by *=lah*). This is why the examples throughout mostly resemble (13).

(13) *Mobil mana=kah yang dia=coba* [ __ __ *curi*]?
car which=FOC REL 3SG=UV.try UV.steal
'Which car did s/he try to steal?'

Relativisation by *yang* is exclusively restricted to subject (Chung 1976, Arka and Manning 2008, Cole et al. 2008, Aldridge 2008, among others). For example, in the double control structure in (9), repeated as (14a), the relativised/focussed argument with *yang* is P (*mobil itu* 'that car'), and it is the embedded SUBJ (because the embedded verb is in UV). An attempt to relativise it when it is an object as in (14b) is not acceptable.

(14) a. *Mobil itu* *yang* *ku=coba* [ __ __ *jual*].
car that FOC 1SG=UV.try (P) (A) UV.sell
'That car (is the one that) I tried to sell.'

b. * *Mobil itu* *yang* *ku=coba* [ __ *menjual* __ ].
car that FOC 1SG=UV.try (A) AV.sell P:OBJ
FOR: 'That car (is the one that) I tried to sell.'

Even when there is no *yang*, double control cannot involve the fronting of P from the embedded object position:

(15) a. *Mobil itu* *ku=coba* [ __ __ *jual*].
car that 1SG=UV.try (P) (A) UV.sell
'That car (is the one that) I tried to sell.'

b. * *Mobil itu* *ku=coba* [ __ *menjual* __ ].
car that 1SG=UV.try (A) AV.sell P:OBJ
FOR: 'That car (is the one that) I tried to sell.'

As such, the sentence-initial P NP *mobil itu* cannot be a topicalised (object) NP. Rather it is raised to (or more precisely, shared with) the matrix verb *coba* under certain strict conditions. Neither can its acceptability in (14a) and (15a) constitute evidence that it is a topicalised embedded subject NP. As (16) shows, in contrast to (15a), voice harmony constraints preclude the matrix A from being SUBJ in the presence of the fronted P in the double control structure:

(16) * *Mobil itu* *aku* *mencoba* [ __ __ *jual*].
car that 1SG AV.try (P) (A) UV.sell
'That car I tried to sell (it).'

That is, the AV voice morphology *meN-* of *mencoba* fixes the linking of the A *aku* to SUBJ. This does not allow, at the same time, the linking the same SUBJ NP to a different role, namely the embedded P. This causes a clash in linking, and the structure is unacceptable, as expected.

Furthermore, in a normal structure without double control, it is acceptable to have a topicalised/left-dislocated object:

(17) *Mobil itu* , *aku* *yang* *mencoba* [ __ *menjual(=nya)*].
car that 1SG REL AV.try (A) AV.sell(=3SG)
'That car, I tried to sell (it).'

The pronominal form test with *dia/ia* also provides further support that the sentence-initial argument is SUBJ. Recall that the third person pronoun *dia* or *ia* can be SUBJ, whereas for OBJ it is restricted to *dia*. That the sentence-initial NP allows *dia/ia* as in (18) suggests that the NP is SUBJ, not OBJ.

(18) *Dia/ia* *yang* *ku=coba* [ __ __ *pecat*].
3SG REL 1SG=try (P) (A) sack
'It is him that I tried to sack.'

### 3.2.2 Non-thematic 'raised' ARG2

The fronted embedded P NP is non-thematic with respect to the matrix verb: it bears the patient role only in relation to the embedded verb. This is evident in the case of the P-control (INFLUENCE type) verbs such as *suruh* 'ask'. The verb *suruh* 'ask' is semantically a three-place predicate by default: 'ask(1:asker, 2:askee, 3:action.asked)'. The third propositional argument, e.g. 'selling a car' in (19a), has its P argument (*mobil itu* 'the car') realised as the matrix subject. *Mobil itu* is not the A 'asker' argument, nor the P 'askee' argument. Note that the 'askee' is typically a human. The fronted P *mobil itu* is morphosyntactically treated as a second argument in the syntactic a-str (19b) as evident from the UV voice of the matrix verb. Hence, it is represented as $ARG_2$ outside the angle brackets.

(19) a. [*Mobil itu* ] *yang* *ku=suruh* *dia* [ __ __ *jual* ].
car that REL 1SG=UV.ask 3SG (P) (A) UV.sell
'I asked him/her to sell the car.'

b. SUBJ-D̂F
*suruh* 'UV.ask< $ARG_1$ , $ARG_3$, 'UV.sell<A, P:'car'>'> $ARG_2$'
1:asker , 2:askee, 3:action

Reflexive binding provides evidence that the fronted P is thematically associated with the embedded predicate and raised as the matrix (SUBJ) argument. In Indonesian (Arka and Manning 2008), the reflexive pronoun must be bound within its predicate nucleus. In (20), the reflexive pronoun *dirinya*, while appearing sentence-initially as the syntactic argument of the matrix verb *suruh* 'ask', takes the A (*dia* '3SG') of the embedded verb *perhatikan* 'care' as its antecedent/binder. The embedded verb *perhatikan* is the predicate nucleus of the reflexive *dirinya*. More discussion on reflexivisation as a diagnostic test for monoclausality is given in section 4.2.2.

(20) *Dirinya* *ku=suruh* [ __ *dia=perhatikan*].
self.3 1SG=ask 3SG=UV.care
'Himself, I asked him to care __.'

*3.3 Intransitive control verbs*

Strictly intransitive verbs (i.e. those with overt intransitive morphology) do not allow backwards control. Bare intransitive verbs, in contrast, do allow it, confirming the validity of the constraint that backward control requires the raising of P with the matrix verb obligatorily in UV-like form.

Consider the verb *berjanji* 'MID-promise', overtly marked with middle (intransitive) morphology. (21a) is an ordinary control structure (acceptable), whereas (21b) is an attempt to have backward control with a verb in the middle (*ber-*) form (unacceptable). If *ber-* (21c) is removed, the acceptability of backward control improves significantly (even though native speakers may vary in their judgment in this case).

(21) a. *Mereka* *berjanji* [ _ *(akan) memilih* *Jokowi sebagai predisen*].
3PL MID-promise _ (will) AV.elect Jokowi as president
'They promise to elect Jokowi as the president.'

b. * *Jokowi=lah* *yang* *mereka* *ber-janji* [ __ *(akan)* __ *pilih*].
Jokowi=LAH REL 3PL MID-promise _ (will)UV.elect
FOR: 'It is Jokowi that they promise to elect.'

c. *Jokowi=lah* *yang* *mereka* *janji* [ __ *(akan)* __ *pilih*].
Jokowi=LAH REL 3PL promise _ (will) UV.elect
'It is Jokowi that they promise to elect as the president.'

*3.4 Puzzling ambiguity and previous analyses*

Backward control in Indonesian gives rise to puzzling ambiguity, as mentioned in (3) in relation to the verb *mau/ingin* 'want'. The same ambiguity appears with other verbs of the same type, e.g. *suka* 'like', as in (22), with UV instead of PASS on the embedded verb.

(22) *Binatang* *itu* *suka* [ __ *kau=kasi makanan*] *ya*?
animal that like UV=give food yes
i. 'The animal likes to be fed by you, right?' (ORDINARY CONTROL)
ii. 'You like to feed the animal, right?' (BACKWARD CONTROL)

Polinsky & Potsdam (2008) propose a raising analysis for the crossed control reading in (3) (essentially along the lines described in this paper, albeit in the Chomskyan framework). In their analysis, however, this is attributed to the special lexical semantics of *mau* 'want'. As above (also pointed out by Nomoto (2011)), backward/crossed control phenomena are not restricted to *ingin/mau*, as

ordinary control verbs (A- and P-types), e.g. *coba* ‘try’ and *suruh/minta* ‘ask’, and bare experiencer verbs e.g. *suka* ‘like’ can have backward control.

Furthermore, a point not made explicit in earlier studies, is that the ambiguity shows up when the raised P is a sentient being (typically human, but depending on the verb, possibly animals as in (22)). This allows an actor-like conception of a participant involved in the event expressed by the matrix/first verb. Indeed, this sentient participant is necessary for the ordinary default control reading. We can test it by using different kinds of SUBJ NPs with the verb *coba* ‘try’, as shown in (23): (a) *ayah* ‘father’ (human), (b) *anjing* ‘dog’ (non-human animate) and (c) *pohon* ‘tree’:

(23) *Ayah / anjing itu/ pohon itu coba [ __ ku=obati]*
father / dog that/ tree that try 1SG=treat.medically
(a) (b) (c)

a. i. ‘Father had a try/tried to be medically treated by me.’ (ORD. CTRL.)
ii. ‘I tried to medically treat Father.’ (BACKWARD CTRL.)

b. i.#? ‘The dog tried to be medically treated by me.’ (ORD. CTRL.)
ii. ‘I tried to medically treat the dog.’ (BACKWARD CTRL.)

c. i. * ‘The tree tried to be medically treated by me.’ (ORD. CTRL.)
ii. ‘I tried to medically treat the dog.’ (BACKWARD CTRL.)

Clear ambiguity is only obtained in (23a), where both the ordinary and backward control readings are possible. (23c), with an inanimate subject, is not ambiguous, disallowing the backward control reading. (23b), with a non-human inanimate (or artificial intelligent robot) subject, could be ambiguous, but only in an unusual reading where the dog is human-like, actively cooperating with me for the medical treatment.

It is not clear how Polinsky & Potsdam’s (2008) analysis can be extended to account for the (dis)ambiguity in (23), because the first verb is *coba* ‘try’, whose lexical semantics is quite different from that of *ingin/mau*. It is also not clear in their analysis, even in the simple case, whether the ordinary (default) control structure (i.e. reading (22.i)) involves raising. In the analysis advocated in this paper, the ordinary default control reading, as in (3.i) and (23a.i) involves no raising. This is further elaborated in the next section below.

No raising is involved in Nomoto’s (2011) analysis. In his analysis, *mau* and *ingin* are treated the same: they are not auxiliary verbs, nor raising verbs. However, this is not entirely accurate: while *mau* and *ingin* are semantically synonymous, they do not behave exactly the same. There is evidence, at least for *mau*, that it can indeed be a modal auxiliary. In this function *mau* expresses the speaker’s evaluation about an event that would imminently happen, translatable as ‘be about to’ in English. The subject in this meaning is not necessarily an animate/human participant. Consider the (dis)ambiguity and associated structures below:

(24) *John* / *buah itu mau jatuh*
John / fruit that MAU fall
(a) (b)

a. i) 'John was about to fall off.' (modal aux., raising)
ii) 'John wanted/was willing to fall off.; (control, no raising)

b. i) 'The fruit was about to fall off.' (modal aux., raising)
ii)# 'The fruit wanted/was willing to fall off.; (control, no raising)

The point is that *mau* is a modal verb in its readings in (24a.i) (with human subject) and (24b.i) (with inanimate subject). It is not constrained by the animacy/humaness of the subject NP. In its modal function, it does involve raising because the SUBJ NP has its semantic (P) role determined by the verb *jatuh* 'fall', not by the first verb *mau*.

In its lexical meaning 'want, be willing (to)', the verb *mau* involves control without raising. It assigns an actor-like role to its SUBJ argument. It is therefore expected that in this control meaning *mau* is sensitive to animacy/humanness of the subject as confirmed by the contrast between reading (24a.ii) (human, acceptable) and (24b.ii) (non-human, unacceptable).

It should be highlighted here that even in its lexical meaning (i.e. non-auxiliary function) *mau* 'want' can show raising, as demonstrated in earlier examples. This is the case when the embedded P is required to be fronted/linked to the matrix SUBJ giving rise to backward control and ambiguity as in (3).

Unlike *mau*, *ingin* can never be an auxiliary verb, and always assigns an actor-like/experiencer role to its SUBJ. It is sensitive to animacy requiring sentient properties. Thus, in contrast to (24a), (25a) is fine (though contextually unusual) but (25b) does not make sense:

(25) *John / buah itu ingin jatuh*
John / fruit that want fall
(a) (b)
(a) 'John wanted to fall off.'
(b) # 'The fruit wanted to fall.'

Furthermore, it is unclear in Namoto's analysis how the different realisations of the controller are accounted for. In his analysis, the A-type verbs that allow backward control (*mau/ingin/coba*) have special properties in that the theta-role of the matrix verb is ambiguously assigned to the internal and external argument of the embedded verb. Namoto's analysis is framed within Chomskyan Phase Theory and it has theory-internal and empirical problems in relation to the expected reflexive binding; see as Sato (2010) for the details.

In Sato's (2010) analysis, the backward control reading arises because the embedded verb undergoes syntactic incorporation into the matrix control predicate, forming one complex predicate. The complex predicate allows the argument of the lower verb to receive the thematic role from the matrix/first verb. In Sato and Kitada (2012), downward successive θ-feature inheritance

allows the lower verb to inherit the matrix theta role, such that the lower argument can receive it. In both such analyses, the matrix and embedded verbs must be structurally tight–a key point in this paper, also. There is an empirical issue with the incorporation analysis, though; see 4.2.2.

In the ensuing sections, I propose a unified account within LFG, building on previous studies and addressing the issues with better empirical basis.[5] The key idea of the proposal is as follows. There are two kinds of control structures associated with the same control verbs. One is ordinary default syntactic control, and the second one 'derived', pragmatically driven control. The latter correlates with and therefore requires a tight structure akin to, though not the same as, a serial verb construction (SVC). This tight structure licenses argument sharing, enabling an argument to be realised only once in the surface syntax. The ambiguity of the type exemplified in (3) and similar structures with UV verbs as in (22) is accounted in terms of the interplay of semantics, syntax and pragmatics of control verbs. At the heart of this argument-structure analysis is the availability of two syntactic subcategorisation frames (default/ordinary vs. derived/marked), with the latter allowing backward control.

## 4 An argument-structure based analysis in LFG

The proposed analysis of double/backward control makes use of the syntacticised argument structure as described in Manning (1996), Arka (2003) and Arka and Manning (2008). In this view syntactic argument structure is an ordered list of arguments whose prominence is syntactically and thematically determined: core arguments outrank non-core arguments, and within the core list, arguments are ordered thematically. Thus, the agent when it is a core argument becomes the most prominent argument in the a-str.

This syntactic a-str is distinct from semantic structure (sem-str). Sem-str contains configurations of semantic elements/primitives by which thematic/semantic roles can be identified, and other information which is not always syntactically relevant. It can be quite complex, and I assume a semantic conceptual structure of the type described in Jackendoff (1990).[6]

Syntactic a-str and sem-str are related by mapping (see Arka (2003) and Arka and Manning (2008) for the principles). An aspect of syntactic a-str that distinguishes it from sem-str is that it can have a purely syntactic (i.e. non-thematic) argument slot/position. Its realisation can be specific and lexically determined, e.g. the dummy *it* in weather predicates in English such as *it rained*; or else, it can be shared with or 'raised from' the embedded predicate, a case that is relevant for the discussion of backward control in this paper. As we shall see in the ensuing subsection, the non-thematic ARG involved in the syntactic a-str

[5] The proposed analysis has been implemented and tested in the XLE-based Indonesian computational grammar; this is not discussed here, but see Arka (2014).

[6] Sem-str assumed in this paper is equivalent to Logical Structure in RRG (Foley and Van Valin 1984, Van Valin and LaPolla 1997).

in the backward control structure is syntactically treated as the second ARG; hence it is labelled as $ARG_2$.

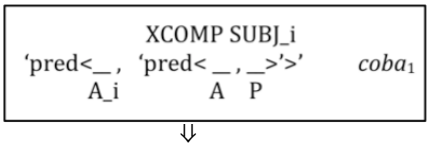
*4.1 Default and pragmatically marked a-strs*

It has been demonstrated in the preceding section that double control relations must contain a syntactic forward control with P being raised to SUBJ-D̂F. Without this pragmatic licensing, no alternative a-str with raising is permitted. The key point of analysis is that there are two a-strs, and the two can be conceptualised as being related via a 'lexical rule' as in classic LFG (Bresnan 1982). The first type of a-str is the one with the default control structure (lexically determined), listed in, or shared by, lexical items. The second type is the corresponding alternative a-str which is pragmatically marked with 'raising'. This is not listed in the lexicon, but derived from the first default a-str on certain conditions primarily the need to have the embedded P as matrix SUBJ-D̂F.

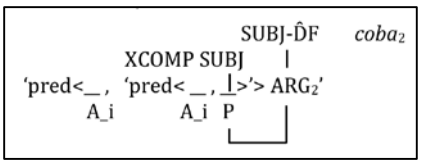
For simplicity, this is illustrated by the A-type control with the verb *coba* 'try' in (26a). Its pragmatically derived structure is given in (26b). The down arrow (⇓) indicates (output) derivation.

The crucial differences between the default and derived a-strs are as follows. Firstly, the default A-type control verb has the A as the controller, identified as the embedded SUBJ indicated by the index *i.* Different types of control verbs would have different default semantic relations, though. However, if the embedded verb is in the UV or PASS, the trier A is identified as the P of the embedded action, as in (23a). In this case, the trier is understood to have an active participant with respect to the matrix verb but is also patientive with respect to the embedded action, giving rise to a meaning where s/he is being a cooperative patient in a medical examination process by a doctor.

(26) a. Lexically licensed (default) a-str:
Type A verb: *coba*$_1$ 'try'
(A is Controller; embedded A/P can be controlled SUBJ_i)




b. Pragmatically-induced alternative a-str: derived *coba*$_2$
(Matrix athematic ARG2 is introduced, shared with lower P)




Secondly, the derived a-str in (26b) has $ARG_2$, a non-thematic matrix argument. The non-thematicity of $ARG_2$ is indicated by placing it outside the angle brackets. This is the position or argument shared with the embedded P (traditionally often called the raised argument). As discussed earlier, there is good evidence that this position is treated not as ARG1 as far as the matrix verb is concerned, e.g. evidence from the voice marking of the matrix verb; see 3.2.2.

*4.2 Between complex predicates and complement clauses*

I now provide evidence to show that the alternative a-str in (26b) (which allows double/crossed control relations) requires an internally tight VP structure.

4.2.1 Structurally tight VP

In the VP, material can intervene between matrix and embedded verbs: e.g., a conjunctive-like particle such as *agar*, *untuk*, and possibly an adverbial. However, when such material is allowed in the VP, only the default syntactic control is possible. (27) shows the use of *agar* with the control verb *ingin* 'want'; this precludes the backwards control reading (reading ii):

(27) *Anak itu ingin* [ *agar* __ *di-cium oleh Ibu* ] (cf. (3a))
child that want AGAR PASS-kiss by Mother
i. a) 'The child wanted to be kissed by Mother.' (FORWARD CTRL ONLY)
or, b) 'The child wanted that s/he would be kissed by Mother.'
ii. * 'Mother wanted to kiss the child.' (BACKWARD CONTROL)

*Agar* is typically used to encode purposive adjuncts. Its presence with the control verb makes the complement clause less tight, giving rise to an implied meaning that the matrix actor has little direct control over the realisation of the event expressed by the complement, as in the meaning given in (27.i.b). *Untuk*, not shown for space reasons, similarly 'loosens' the complement clause.

To sum up, a control verb can enter two possible control structures within the VP:

(28) VP → a. V (XP/PART) VP (VP1: loose)
↑=↓ (↑XCOMP)=↓
b. V VP (VP2: tight)
↑=↓ (↑XCOMP)=↓

The first loose VP allows a PART item (where PART is a particle/conjunctive-like marker signalling clear subordination such as *untuk/agar*), whereas the second tight VP does not. It is the latter that allows fronted raised P and double control relations with backward/forward alternation.[7] The tight structure resembles a complex predicate or a complex VP in SVC in which two verbs share one or more arguments, which then get expressed only once in the surface syntax (Foley and Olson 1985, Butt 1995, Durie 1997, among others). However, evidence suggests the tight VP structure in (28b) is not a true complex predicate (contra Sato (2010)), nor a real SVC. This is discussed in the next subsection.

[7] We can capture the constraint that only VP2 is associated with the backward control by specifying the VP2 node with a set of linking equations. For example, in addition to the general control constraint of (↑XCOMP SUBJ)=(↑SUBJ), we should also have (↑XCOMP SUBJ)=(↑σ P) where P is the Patient-like core argument. That is, the tight structure is motivated by the need to have the P argument in the semantic argument structure linked to (matrix) SUBJ (assumed to be pragmatically prominent).

4.2.2 Not a complex predicate nor a real SVC

Unlike an SVC, the second VP still maintains its independent clausal status in a complement-like bi-clausal structure; hence it is associated with XCOMP (cf. argument structure mapping in (26) and the VP structure in (28)). Evidence for this comes from the bare possessive construction, which requires a minimal predicate nucleus as its domain. Certain nouns, especially inalienable, kin, or typically possessed nouns, such as *rumah* 'house' and *pakaian* 'clothes,' can appear bare in the object position and the understood possessor is the SUBJ NP of the same predicate nucleus. For example, the possessor of *pakaian* in (29a) is Ani as shown by the index *i*. It cannot be somebody else (index *j). Likewise in a true complex predicate e.g. *tembak mati* 'shoot dead' as shown in (29b) the bare noun *istri* 'wife' must have its possessor understood as the subject of the same clause, *penjahat* 'the criminal'.

(29) a. *Ani* *membuka* *pakaian*.
3SG AV.take.off cloth
'Ani_i took off her_i/*j dress.'

b. *Penjahat* *itu* [*menembak* *mati*] *istri* *dengan* *sadis*.
criminal that AV.shoot dead wife with cold.blood
'The criminal_i shot his_i/*j wife dead in cold blood.'

The same pattern of bare possessed NP is observed in a true SVC as exemplified in (30): the shared SUBJ (*Ibu*) is the understood possessor of the bare *anak* 'child'.

(30) *Apa* *Ibu* [*membeli* *baju* *banyak*] [*kasi* *anak*]?
Q mother AV.buy shirt many give child
'Did you (mother) buy a lot of shirts for your/*somebody's child?'

In the backward control structure (31), the bare noun *tangan* 'hand' cannot take the matrix SUBJ as the antecedent possessor. This means that the second VP retains its minimal nucleus function, and we have a case of biclausal structure.

(31) *Hanya* *tangan* *kiri* *yang* *dia* *suruh* [ __ *kita* *angkat*] *tinggi-tinggi*.
only hand left REL 3SG UV.ask 1PL.Inc raise high-REDUP
'It was only our_*i/j left hands that he_i wanted us_j to raise up high."

Emphatic reflexive possessives with [bare noun + *sendiri*], as in (32), also indicate that backward control structure is neither an SVC nor a complex predicate. The possessor antecedents of the possessive reflexive NPs in the complex predicate and SVC (32a,b) are the clausal subject NPs ('soldier' and '3SG'). However, as seen from the translation, in the complement clauses with forward (32c) or backward control (32d), the antecedent can only be the co-argument within the second/embedded clauses.

(32) a. *Tentara itu* [*menembak jatuh*] *pesawat sendiri*.
soldier that AV.shoot fall plan self
'The soldier shot down his own plane.' (complex predicate)

b. *Dia* [*menjemput aku*] [*pakai mobil sendiri*].
3SG AV.pick.up 1SG use car self
'He picked me up using his/*my own car.' (SVC)

c. *Dia menyuruh aku pakai mobil sendiri*
3SG AV.ask 1SG use car self
'He asked me to use my/*his own car.' (forward control)

d. *Mobil sendiri yang dia suruh ku=pakai.*
car self REL 3SG ask 1SG=use
'It is my/*his own car that he asked me to use.' (backward control)

*4.3 Accounting for the (dis)ambiguity*

Having outlined the syntactic, semantic and pragmatic properties of double control relations, we are now ready to account for the double control structures and the associated forward/backward alternation with possible ambiguity. Let us start with why, with respect to the verb *ingin* 'want', the backward/forward alternation has an impact on (dis)ambiguity. Consider (33a) where the forward control of A *ku=* does not allow ambiguity. By contrast, the backward control in (33b) gives rise to ambiguity (i.e., reading (ii) is also acceptable).

(33) a. *Anak itu yang ku=ingin* [ __ __ *cium*]
child that REL 1SG=want UV.kiss
i) 'The child (is the one that) I want to kiss.'
ii) * 'The child wants to be kissed by me.'

b. *Anak itu yang (__) ingin* [ __ ku=*cium*]
child that REL want 1SG=UV.kiss
i) 'The child (is the one that) I want to kiss.'
ii) 'The child wants to be kissed by me.'

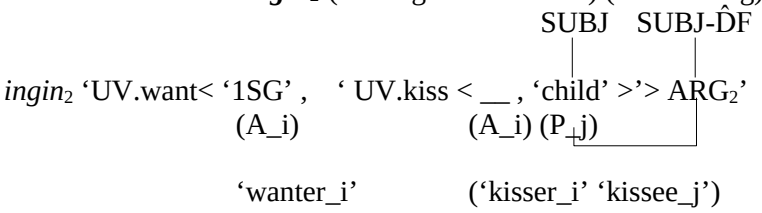
In our a-str based analysis, this follows from the possibility of the two a-strs as captured in (26) and its interaction with the voice system. The appearance of *ku=* in the first verb *ku=ingin* '1SG=want' forces the UV linking in the matrix verb, as in (34). This is the verb *ingin* with a derived a-str, showing the UV form (i.e. UV.*ingin*$_2$). The raised P *anak itu* 'the child' is therefore not the 'wanter'; the A *ku=* is, as indicated by the index *i*. Hence, reading (ii) where the raised P is identified as the wanter is not acceptable.

Reading (33b.i) has the same a-str as reading (i) of (33a). The only difference is the surface realisation of the A argument. The argument (index *i*)

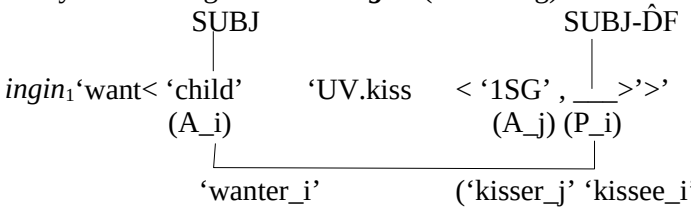
now surfaces as the A of the embedded UV.kiss (i.e. backward control). The indexation of both As is semantically determined: the A-type verb is by default controlled by the matrix A, and also by default identified as the lower A.

Reading (33b.ii), however, has a different a-structure. It is in fact the default control structure of *ingin* 'want', where there is no raising (i.e. no non-thematic ARG2); i.e., $ingin_1$. This is shown in (35).

(34) Double control: **UV.*ingin*$_2$** (reading 33a.i & 33b.i) (with raising)




(35) Ordinary default single control: ***ingin*$_1$** (no raising)




As seen, the 'wanter'/A argument of $ingin_1$ is the controller, and is identified as the subject because this is the only core argument. The bare verb $ingin_1$ is therefore not a transitive UV verb. Unlike UV.$ingin_2$ in (34), there is no ARG2 in $ingin_1$ (35). In $ingin_1$ (35), *ku=* (the kisser, the A of the embedded verb, index j) has no sharing with any matrix argument.

The morphological form of UV.$ingin_2$ and $ingin_1$ is the same, despite having quite different a-strs. We have captured the difference via a lexical-rule derivation.

In short, *ingin* 'want' in (33a) is unambiguously UV.$ingin_2$ (a three-place transitive UV verb, derived) whereas *ingin* in (33b) is ambiguous between the default $ingin_1$ and the derived UV.$ingin_2$. The ambiguity of the two structures, indicated by a dash within brackets in (33b), produces the two readings.

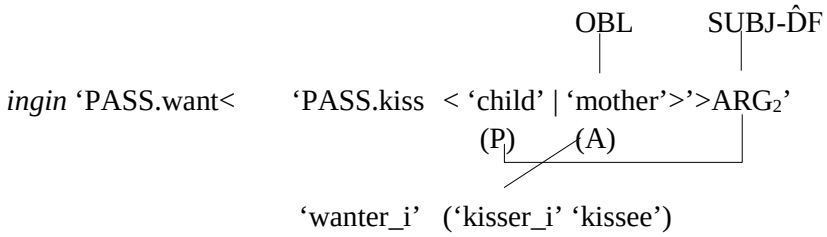
The same explanation applies when the embedded verb is passive, as seen in the ambiguity of (3). The only special property about the second backward control reading here is that the matrix bare verb *ingin* 'want' is also interpreted as passive (despite bearing no passive morphology); i.e, the otherwise ARG1 of $ingin_2$, which by the principle of linking would be mapped onto the matrix A (cf. *ingin* in the UV form in (34)), is removed from the syntactic a-str, but it remains in the semantic structure as the wanter A, and indexed with the embedded A, because there is no other choice, and also because *ingin* 'want' is an A-type control verb. In short, *ingin* in (3) is ambiguous between the default *ingin* (reading (i), and the derived passive (reading (ii)), which is the passivisation of

*ingin*$_{2.}$ The a-str of the derived passive *ingin*$_2$ that allows backward control is shown in (36).

*4.4 Voice harmony*

Bare verbs like *ingin* 'want' can be interpreted as having different subcategorisation frames, as shown above. For double/backward control to be possible, both matrix and second verbs must have the same voice type (i.e. voice harmony). Note that the first verb may show no specific voice morphology, e.g.

(36) Passive: ARG1 removed from the core argument list (cf. (34)):




The bare verb *ingin* in (3) has a passive interpretation due only to the *di*-passive marking in the embedded verb. Of course, overt passive voice morphology also shows the voice harmony constraint, e.g. with *coba* 'try' as in (37).

(37) *Apa yang di-coba di-curi oleh dia*?
what REL PASS-try PASS-steal by 3SG
'What did he try to steal?

Morphologically overt voice disharmony is not allowed, e.g. UV with PASS or PASS with UV as seem in (38):

(38) * *Mobil itu (yang) di-coba* [ __ *ku=jual*]. (cf. 14)
car that FOC PASS-try (P)1SG=UV.sell
FOR: 'The car is the one I tried to sell.'

As a corollary, voice disharmony is always associated with a default or ordinary control reading only. For example, the A-type control verb *janji* 'promise' can have *ber-* (*berjanji*), making it strictly intransitive. This verb does not allow backward control, as seen in (21). Likewise, the bare verb *coba* 'try' allows ambiguity in (39a) but its overt AV form *mencoba* in (39b) does not.

(39) a. *Siapa yang coba* [ __ *di-obati dokter itu*]?
who REL try PASS-treat doctor that
i) 'Who tried to be treated by the doctor?'
ii) 'Who did the doctor try to treat?'

b. *Siapa yang men-coba* [ __ *di-obati dokter itu*]?
who REL AV-try PASS-treat doctor that
i) 'Who tried to be treated by the doctor?'
ii) * 'Who did the doctor try to treat?'

The voice harmony constraint constitutes further evidence that the two verbs in the backward control structure are part of a tight structure. In our a-str based analysis, the constraint is expected, as it is essentially a linking constraint regulated by the voice system that allows alternative argument realisations. [8]

## 5 Conclusion

This paper has discussed the forward/backward double control constructions in Indonesian, providing more evidence of their syntactic, semantic and pragmatic properties. Syntactically the backward control construction involves raising of the embedded P to the matrix second argument, pragmatically motivated by the need to be mapped onto SUBJ-D̂F (where D̂F is typically FOC). This is possible only in a tight verbal structure akin to a complex predicate or SVC, with their hallmark of argument sharing. Close examination, however, reveals that this structure is neither of these; it is a special kind of control structure whose properties result from an interplay among subcomponents in the grammar: the voice system that regulates argument linking, morpho-semantic-lexical properties of the control verbs, animacy of the matrix argument, and information structure of argument focussing.

The analysis recognises two kinds of control structures: the default control structure projected by the control verb (i.e. without raising of embedded P), and the special control structure, with raising of P. The analysis accounts for the complex properties of double control structures, including an ambiguity where the same structure allows both ordinary forward and unusual backward readings.

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[8] In Chomskyan syntax, the blocking of fronting of an embedded P NP by overt voice AV morphology in the matrix verb relies upon a theory-internal mechanism that regulates movement, e.g. *meN-* constitutes a strong phase; see Sato and Kitada (2012).

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