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Encoding Causation and Aspect into Inflectional Domain: Syntax of Causation and Backward Control in Burmese

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Abstract
This paper investigates syntax of causation in Burmese, an understudied language spoken in Myanmar, with a special focus on one type of causative construction in Burmese. It largely resembles English object control verb force, but shows two interesting properties which differ from English force: (i) it involves an infinitival clause marker which causation and aspect are encoded in, and (ii) it displays a property of backward control. This paper documents and analyzes the causative construction in Burmese, aiming to provide new data and perspectives to develop formal syntactic theory of causation and control.
Encoding Causation and Aspect into Inflectional Domain: Syntax of Causation and Backward Control in Burmese

Keita Ishii*

1 Introduction

Syntax of causation is a long discussed topic in formal syntax theory (Pylkkänen 2008, Harley 2008, Legate 2014, among others). The current research investigates syntax of causation in Burmese, an understudied Sino-Tibetan language spoken in Myanmar, based on my original fieldwork with a Burmese native speaker. The aim of this study is to provide new data and perspectives to develop the formal syntactic theory of causation. This paper documents and analyzes the Burmese lou?-causative, which displays two interesting syntactic properties; (i) encoding of causation and aspect into the inflectional domain and (ii) backward control behavior.

According to Jenny and Hnin Tun (2017), the sE-causative in (1) and the lou?-causative in (2) are most common and productive among four types of causative constructions in Burmese. By way of example, a transitive sentence is given in (1), and two derived causative variants are shown in (2) and (3). As seen in (2) and (3), the sE-causative and the lou?-causative show causative meaning with different flavors. The sE-causative resembles the let-type causative in English because the continuation But Susu did not build the house is acceptable, as in (2). In contrast, the lou?-causative resembles the English make-type causative because the same continuation is infelicitous, as in (3).

(1) Susu-ga ej-go sau kr dr.  
Susu-NOM house-ACC build JUNC AFF.NONFUT.  
‘Susu built the house.’

(2) sE-causative

Zozo-ga Susu-go ej(-go) sau sE kr dr.  
Zozo-NOM Susu-DAT house-ACC build JUNC AFF.NONFUT.  
‘Zozo let Susu build the house. (√ But Susu did not build the house.)’

(3) lou?-causative

‘Zozo made Susu build the house. (# But Susu did not build the house.)’

In addition to the semantic difference, the lou?-causative is always accompanied by a marker ?aun (bold-faced in (3)), whose function is described differently in previous studies. For instance, Okell and Allott (2001) reported that ?aun is a marker introducing an infinitival clause, which is akin to English to. On the other hand, Jenny and Hnin Tun (2017) described ?aun as a complementizer introducing a fully finite clause. Both studies agree that the lou?-causative has a biclausal nature; however, there is a small discrepancy about what the ?aun marker is.

In this paper, I will explore the functions of ?aun in the lou?-causative and show that it is an infinitival clause marker. I will also show two additional properties of ?aun which differentiate it from a canonical infinitival clause marker: (i) ?aun indicates that an embedded event is accomplished, and (ii) ?aun-clause can introduce a causativised infinitival rational clause without any overt causative morphemes. To capture the properties of ?aun, I propose that ?aun is obtained via Fusion (Halle and Marantz 1993) of the cause head with the accomplishment Aktionsart and the non-finite T-head. Building onto this proposal, I further argue that the lou?-causative displays a property of backward

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The organization of this paper is as follows. Section 2 introduces some basic syntactic properties of Burmese and shows some data suggesting that the ?aun marker functions as an infinitival clause marker which encodes causation and its aspect. In section 3, I propose that ?aun is obtained via Fusion (Halle and Marantz 1993) of the causative head with the accomplishment Aktionsart and the non-finite T-head. In section 4, I will show that the lou?-causative displays backward control property and discuss the derivation of the lou?-causative. Section 5 concludes this paper.

2 Data Observation

2.1 Basic Syntactic Properties of Burmese

Burmese is a nominative-accusative language with morphological case markers; -kal/-ga marks subjects and -ko/-go marks objects as shown in (4). The evidence for the nominative-accusative alignment is shown in (5); both unergative and unaccusative subjects get marked with -ga. These case markers are often dropped in colloquial Burmese. The canonical word order of Burmese is SOV.

(4) Susu-ga panti-go sa kr dr
   Susu-NOM apple-ACC eat JUNC AFF.NONFUT
   Susu ate an apple.

(5) a. Unergative
   ñema-ga ño kr dr
   I.FEM.-NOM cry JUNC AFF.NONFUT
   'I cried.'

b. Unaccusative
   temo-ga ni? kr dr
   ship-NOM sink JUNC AFF.NONFUT
   'The ship sank.'

As shown in (6), the accusative case marker and the dative case marker in a typical ditransitive sentence are homophonous (-go). Thus, it is not easy to differentiate them from their appearance. This paper glosses the indirect object of ditransitive verbs as dative.

(6) Zozo-ga Susu-go sao?(-go) be kr dr
    Zozo-NOM Susu-DAT book-ACC give JUNC AFF.NONFUT
    'Zozo gave Susu a book.'

As (3) to (6) show, finite clauses in Burmese require a sentence final verb syntagma (Allot 1965) at the end of the sentence. It indicates mood and tense of the entire sentence.

2.2 Functions of ?aun

Let us turn our attention to the functions of the ?aun marker in the lou?-causative. In this section, I will show that ?aun is a single morpheme serving three functions; (i) introducing an infinitival clause, (ii) encoding accomplishment aspect, and (iii) introducing causative semantics. This claim is built on the following four observations: (a) the case frame of lou?-causative, (b) ?aun with canonical control predicates, (c) the semantic difference between a control sentence with ?aun marker and default infinitival marker po, and (d) the causativized infinitival rational clause.

2.2.1 The Case Frame of lou?-causative

The case frame of lou?-causative is identical to that of canonical ditransitive sentences. Compare the lou?-causative sentence in (7) to the ditransitive sentence in (8).
(7) Zozo-ga Susu-{go/*ga} ej(-go) sau ?aun loun kr dr.
Zozo-NOM Susu-DAT/NOM house-ACC build CAUS.to make JUNC AFF.NONFUT.
‘Zozo made Susu build the house.’

(8) Zozo-ga Susu-{go/*ga} sao?(-go) br kr dr
Zozo-NOM Susu-DAT/NOM book-ACC give JUNC AFF.NONFUT
‘Zozo gave Susu a book.’

As (7) and (8) show, the indirect object is marked with -go and cannot be marked with the nominative case marker -ga. This observation contrasts with the case frame of attitude verbs, which takes a finite clause as its complement. As shown in (9), there are two -ga marked arguments in a sentence with attitude verbs: the matrix subject and the embedded subject.

(9) 1.sg-ga [CP mjê-ga dine la me soda](go) ti? dr
1.sg-NOM you-NOM today come FUT that(-ACC) know AFF.NONFUT
‘I know that you will come to see me today.’

In (9), the embedded subject mjê cannot be -go marked. The contrast between (7) and (9) in regards to their case frame suggests loun?-causative does not act the same as a sentence with an embedded finite clause. Rather, it acts as a single clause, in terms of case assignment.

Moreover, the fully finite complement clause in (9) includes me, a sentence final verb syntagma. In contrast, a marker of this kind never appears on the left of ʔaun. Given the fact that finite clauses in Burmese requires a sentence final verb syntagma, this observation suggests that ʔaun clause is not a finite clause.

### 2.2.2 ʔaun with Typical Control Predicates

The distribution of ʔaun is not restricted to the loun?-causative. It can co-occur with canonical object control predicates such as swezan ‘persuade’ or pjo ‘tell’ as shown in (10).

(10) Zozo-ga Susu-go ka we {ʔaun/po} swezan/pjo kr dr
Zozo-NOM Susu-DAT car buy persuade/tell JUNC AFF.NONFUT
Zozo persuaded/told Susu to buy a car.

As shown in (10), ʔaun and a default infinitival marker po can be interchangeably used with control predicates. These markers add a slightly different semantic flavor to the sentence as we will see in section 2.2.3. Crucially, the co-occurrence of po and ʔaun is prohibited as shown in (11).

(11) * Zozo-ga Susu-go ka we {ʔaun po/po ?aun} swezan kr dr
Zozo-NOM Susu-DAT car buy persuade JUNC AFF.NONFUT

This observation suggests that po and ʔaun are in the same morpho-syntactic category, arguably an infinitival marker.

Here, some might wonder whether po is truly a default infinitival marker. As shown in (12) and (13), po is widely observed with a canonical raising verb alala fi ‘be likely’ or with subject control predicates like senda ‘wish’, while ʔaun is unavailable with them.

(12) Zozo-ga pjanwe-go naj {po/*ʔaun} alala fi le.
Zozo-NOM game-ACC win likely be IMPERF
‘Zozo is likely to win the game.’

(13) Keita-ga mjammar najgen-go lale {po/*ʔaun} senda fi de.
Keita-NOM Myanmar country-ACC travel wish(n) COP AFF.NONFUT
‘Keita wishes to travel Myanmar.’
Given this fact, I assume that *po is a default infinitival marker while *aun serves other roles besides introducing a non-finite clause, as we will see in section 2.2.3.

The availability of *aun with typical object control predicates observed in (10) further suggests that the lou?-causative is also an object control verb, which resembles English force, not make. This idea is supported by binding facts shown in (14) and (15). (14) demonstrates that the reflexive pronoun tugogo in the direct object position cannot be bound by the causer argument of the lou?-causative, while tugogo in the indirect object position can be. In contrast, (15) indicates that the pronoun tu in the direct object position can be bound by the causer argument, while it cannot be bound in the indirect object position.

(14) Binding A
   Zozo1-NOM Susu2-DAT himself1 call to force JUNC AFF.NONFUT
   Intended: ‘Zozo1 forced Susu to call himself1.’
   Zozo1-NOM himself1 homework-PL-ACC grade to force JUNC
dr.
   AFF.NONFUT
   ‘Zozo1 forced himself1 to grade the homework.’

(15) Binding B
   Zozo1-NOM Susu-DAT him1-ACC call to force JUNC AFF.NONFUT
   ‘Zozo1 forced Susu to call him1.’
   Zozo-NOM him-DAT homework-PL-ACC grade to force JUNC
dr.
   AFF.NONFUT
   Intended: Zozo1 forced him1 to grade the homework.

Assuming that a TP forms a boundary for binding in Burmese just like English, these observations indicate that the indirect object of the lou?-causative is out of *aun-clause, while direct object stays in it. Given the fact that this indirect object is interpreted as an initiator of the embedded event and the theme of the matrix event, the lou?-causative should be counted as another instance of obligatory object control.

2.2.3 *aun Encodes Causative Meaning and Accomplishment Interpretation of the Caused Event

As I mentioned in section 2.2.2, there is a small meaning difference between *aun and po. However, it cannot be observed with the lou?-causative since po is unavailable with it. (16) provides the contrast between *aun and po.

(16) Zozo-ga Susu-go ka wr {*aun/po} swrzan kr dr
   Zozo-NOM Susu-DAT car buy persuade JUNC AFF.NONFUT
   a. *aun: Zozo persuaded Susu to buy a car (# but Susu did not buy a car).
   b. po: Zozo persuaded Susu to buy a car (√ but Susu did not buy a car).

With *aun, my consultant interpreted (16) as implying Susu actually bought a car, as demonstrated by the infelicity of the continuation But Susu did not buy a car. On the other hand, with po, my consultant was not sure whether Susu actually bought a car. In other words, control sentences with po is neutral about the aspects of the embedded event. In contrast, control sentences with *aun contains the accomplishment aspect interpretation of the embedded event in the sense of Vendler (1967) and Dowty (1979).
In addition to the accomplishment aspect, a?au?-clause contains a causative head which introduces causative semantics. As shown (17), a?au- alone can introduce a causativized infinitival rationale clause without any overt causative morphemes, as well as the combination of the se-causative and po.

(17) Zozo-ga Susu-go [manapa asiwe jì de soda]-go ti? {a?au / se po} i-meI e-mail send JUNC AFF.NONFUT

‘Zozo sent Susu an e-mail to let/make her know that there will be a meeting tomorrow.’

The causativised infinitival rational clause with se po could be straightforwardly explained under the assumption that se is a causative morpheme like English let and po is a default infinitival marker. The crucial observation is that the Paun-clause does these two jobs alone in (17). The interchangeability of a?au and se po in (17) suggests that a?au-clause contains a causative head. This point could be further clarified with (18).

(18) tSEma-ga tu-go ej {a?au / po} pjo kr dr. 1.sg.FEM-NOM 3.sg.MASC-ACC sleep tell JUNC AFF.NONFUT

a. po: I told him to sleep.

b. a?au: I told someone to make him sleep.

(18a) shows a canonical object control reading of tell such that the theme of tell is interpreted as the agent of sleep. On the other hand, (18b) indicates that there is an existentially bound causee, who was told to make him sleep. Since the verb pjo does not introduce any causational meaning with po, the causative interpretation and the causee argument should be originating in the a?au-clause.

To summarize the observations in this section, there are three major properties of the a?au-clause: (i) a?au is an infinitival clause marker, (ii) the a?au-clause involves the accomplishment aspect of the embedded event, and (iii) the a?au-clause contains causative semantics in it. In the next section, I propose that a?au is a portmanteau of the Cause head and the non-finite T head.

### 3 The Structure of the a?au-clause and the lou?-causative

Given the fact that the a?au-clause introduces causative semantics without any overt causative morphemes and functions as an infinitival marker encoding accomplishment aspect, I propose the structure in (19) for the a?au-clause.

(19) The structure of the a?au-clause

In (19), I assume that the causative head introduces the causative semantics such that the event denoted by the selected vP is caused, following Pylkkänen (2008), Harley (2008) and Legate (2014). In addition, I consider that Burmese has two types of causative heads in the lexicon: one is accompanied by the accomplishment Aktionsart and the other is neutral regarding aspect. The one with the accomplishment Aktionsart undergoes Fusion operation (Halle and Marantz 1993) with the non-finite T, and is morphologically realized as a?au via Vocabulary Insertion shown in (20).
(20) Fusion and Vocabulary Insertion

a. \([\text{Cause}_{[\text{accomplishment}]}, [T_{[\text{Fin}]}, [\text{Cause}_{[\text{accomplishment}]}, T_{[\text{Fin}]}}] (\text{Fusion})

b. \([\text{Cause}_{[\text{accomplishment}]}, I_{[\text{Fin}]}, [\text{Cause}_{[\text{accomplishment}]}, I_{[\text{Fin}]}, [\text{Paun}]) (\text{Vocabulary Insertion})

In contrast, if the causative head is neutral about aspect, \(se\) gets inserted at PF. In this case, the non-finite \(T\) is realized as \(po\) as shown in (21).

(21) a. \([\text{Cause}] \leftrightarrow /sr/

b. \([T_{[\text{Fin}]}, \leftrightarrow /po/

The Vocabulary Insertions in (20) and (21) obey the Elsewhere Principle in (22). Since the features for \(\text{Paun}\) are more specific than those for \(se\), \(se\) will never be inserted in the case of (19). In the same vein, \(\text{Paun}\) never gets inserted when the cause head is not accompanied by the accomplishment Aktionsart.

(22) The Elsewhere Principle

Rules are ordered by the principle that the more specified rule takes precedence over the rules that are less specified. (Halle and Marantz, 1993: p. 120)

This analysis explains why Burmese has two ways of expressing causativized rational clauses in (17). If the speaker is unsure about whether the relevant event is accomplished or not, there should be the causative head without the accomplishment Aktionsart, expressed as \(sr\). On the other hand, if the speaker knows that the caused event is actually accomplished, the \(\text{Paun}\)-clause is used because the causative head with the accomplishment Aktionsart is in the structure.

Building on the structure of the \(\text{Paun}\)-clause proposed above, I argue that the \(\text{lo}\text{u}\text{?}\)-causative has the structure in (23), which is a typical object control structure.

(23) Structure of the \(\text{lo}\text{u}\text{?}\)-causative (to be revised)

In (23), the main verb \(\text{lo}\text{u}\text{?}\) selects an infinitival clause with \(\text{Paun}\), just like a canonical control construction. The theme argument of \(\text{lo}\text{u}\text{?}\) controls the embedded subject at Spec TP, giving a canonical object control interpretation like English \textit{force}.

Regarding the unavailability of \(po\) with \(\text{lo}\text{u}\text{?}\), I consider that there is a selectional restriction on \(\text{lo}\text{u}\text{?}\) such that it selects a non-finite TP with the accomplishment aspect. I suspect that this selectional restriction is due to a presupposition of the \(\text{lo}\text{u}\text{?}\) verb such that a caused/forced event should have been already done. For example, if \(\text{John forced Mary to build the house}\), then the house should have been already built by Mary. If \(\text{lo}\text{u}\text{?}\) has such a presupposition, it requires an infinitival clause whose aspect interpretation matches with it. Since \(\text{Paun}\) is more specific about the aspect of caused event than \(po\), \(\text{lo}\text{u}\text{?}\) selects the \(\text{Paun}\)-clause.
4 lou?-causative as a Backward Control

In section 3, I have proposed that Burmese has two types of causative heads with respect to its Aktionsart; one is indeterminate about the aspect of caused event, while the other is accompanied with the accomplishment Aktionsart in the sense of Vendler (1967) and Dowty (1979). The former is realized as monoclausal sr-causative. In the latter case, the cause head with the accomplishment Aktionsart fuses with the non-finite T and is realized as ?aun. The matrix verb lou? selects the ?aun-clause, resulting in the lou?-causative construction. I also argued that lou? is an instance of object control, which is similar to English force. However, there is another property of the lou?-causative which differs from English object control.

In English, it is widely accepted that control construction is forward control: a structurally higher co-indexed argument (i.e., controller) gets pronounced and a lower co-indexed argument (i.e., controllee; PRO) remains unpronounced. However, it has been argued that some languages such as Tsez or Malagasy display backward control: a structurally higher co-indexed argument remains unpronounced and a lower co-indexed argument gets pronounced (e.g., Polinsky and Potsdam 2002, Potsdam 2009). A relevant example from Malagasy is given in (24). According to Potsdam (2009), object control in Malagasy alternates between forward control (23a) and backward control (23b). In (23a), the theme argument of remind is in accusative form and is syntactically counted as a matrix object as it is pronounced to the left of the embedded verb. On the other hand, (23b) shows that the theme argument is realized in the post-verbal position and takes the nominative form.

(24) a. nampahatsiahivan’ i Soa ah[y [hohidiana Δ ny varavaran-dakozy]
remind Soa me lock the door-kitchen.

b. nampahatsiahivan’ i Soa Δ [hohidia- ko ny varavaran-dakozy]
remind Soa lock I the door-kitchen
‘Soa reminded me to lock the kitchen door.’ (Potsdam 2009: (3))

Given the fact that canonical word order in Malagasy is VSO, the theme argument of remind in (24b) is apparently realized inside the embedded clause. Potsdam (2009) argued that forward control and backward control have identical structures, but that the control relationship is reversed as in (25).

(25) a. John forced Mary1 [IP Δ1 to build the house].

↑
CONTROLLER CONTROLLEE

b. John forced Δ1 [IP Mary1 to build the house].

↑
CONTROLLER CONTROLLEE

A similar observation to (24) was obtained in the Burmese lou?-causative. Observe (26) and (27). (26a) shows that the accusative case-marked NPI ba-ma needs to be locally licensed by the negative prefix ma- on sa ‘eat’, which sits inside the ?aun-clause. As shown in (26b), negation on the matrix verb lou? cannot license it. In contrast, the dative case-marked NPI betu-(go)-ma can be licensed either by local negation (27a) or matrix negation (27b).

Zozo-NOM Susu-DAT what-NPI NEG-eat CAUS.to make JUNC AFF.NONFUT
Lit. ‘Zozo made Susu not eat anything.’

Zozo-NOM Susu-DAT what-NPI eat CAUS.to NEG-make JUNC NEG.NONFUT
Lit. ‘Zozo did not make Susu eat anything.’

Zozo-NOM who-DAT-NPI apple-ACC NEG-eat CAUS.to make JUNC AFF.NONFUT
Lit. Zozo made anyone not eat the apple. (Zozo made no one eat the apple.)
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Zozo-NOM who-DAT-NPI apple-ACC eat CAUS.to NEG-make JUNC NEG.NONFUT

Lit. Zozo did not make anyone eat the apple.

Assuming that the TP forms a boundary for NPI-licensing in Burmese, (27) looks exactly like the alternation between forward and backward control in Malagasy.

One of the major approaches to the backward control phenomenon is the Movement Theory of Control by Hornstein (1999). He proposed that controllee is an unpronounced copy of an embedded subject which undergoes A-movement into the higher clause as demonstrated in (28). The crucial assumption under this approach is that a single argument may bear multiple \( \theta \)-roles in contrast to the traditional \( \theta \)-Criterion (Chomsky 1981). To implement this assumption into minimalist syntax framework, Hornstein (1999) proposed that \( \theta \)-roles are weak features on verbs which can be checked off by taking a DP argument in its projection. Under this assumption, there is no upper bound on the number of \( \theta \)-roles that a single A-chain can bear.

(28) a. John hopes to leave.

b. \([IP \ \text{John}_1 [VP \ t1 \ \text{hopes} [IP \ t1 \ to \ [VP \ t1 \ \text{leave}]]]]\) (Hornstein 1999: (19))

(28b) is the structure for the canonical subject control sentence in (28a). The subject John is base generated at Spec of the embedded vP, checking off the agent theta role of leave. By this operation, John receives the agent theta role of leaving. It successively moves to Spec of the embedded IP to satisfy the D-feature of the IP. After that, John moves to Spec VP of hope to check off the external theta role of hope. By this feature-checking mechanism, a single argument (and its chain) can bear multiple theta-roles under Hornstein’s (1999) analysis.

Polinsky and Potsdam (2002) adopted this view and proposed an analysis of Tsez backward control. Following their analysis, I argue that the structure of the lou?-causative in (29a) (and other obligatory object control constructions with ?aun) has the structure in (29b).

Zozo-NOM Susu-DAT house-ACC build CAUS.to make JUNC AFF.NONFUT.

‘Zozo made Susu build the house.’

b. Structure of lou?-causative (final)
As shown in (29b), the causee argument Susu merges as an external argument of sau ‘build’, checking off the agent theta role feature of the verb. By this checking operation, the causee argument receives the first $\theta$-role as an initiator of the caused event. Then, it moves all the way up to Spec of matrix VP, stepping by the embedded TP Spec. At Spec of the matrix VP, the causee argument Susu checks off the theme theta role feature on lou? and the entire A-chain of Susu receives the second theta role as a causee of the event. Under this approach, there are two positions for the causee argument to be morphologically realized: Spec of the complement non-finite TP (= backward control) or Spec of the matrix VP (= forward control). In the case where the NPI causee argument is licensed by matrix negation like (27a), the causee argument is located at the Spec of the matrix VP and is realized as a canonical forward control. On the other hand, if the NPI causee argument is licensed by negation inside the ?aun-clause like (27b), it sits in the Spec of the embedded TP to be properly licensed.

5 Conclusion

In this paper, I have explored the Burmese lou?-causative showing that (i) the ?aun marker encodes the causational meaning and its aspect into inflectional domain and (ii) the lou?-causative displays the property of backward control. The syntactic behavior of the ?aun-clause is particularly interesting for the theory of causation because it suggests that causative head might have some variations with respect to its Aktionsart. I have also proposed that the causative head with the accomplishment Aktionsart undergoes Fusion with the non-finite T-head to obtain ?aun. The property of backward control in the lou?-causative was also intriguing because backward control itself is rare in general, and it will be one of the keys to develop the theory of control. Though further data collection and investigation are necessary to develop theories of causation and control, this research contributes to widen the view on the syntax of causation in an understudied language.
References


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