

Yaqui causation: its form-function interface

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1. Introduction

A causative situation involves two events: the causing event, which commonly corresponds to the way the event is initiated, and the caused event, which corresponds to either the resultant state or the performed action. In the prototypical situation, the actor (causer) is a volitional agent-type participant, while the undergoer (causee) is a non-volitional patient-type participant, such that the actor imposes a change in the undergoer by verbal or non-verbal means (Foley and Van Valin 1984). Verbs denoting states of affairs in which the actor acts on the undergoer by non-verbal—direct, physical—means are called causative verbs, e.g., *make*, *force*, *cause*. Verbs denoting states of affairs in which the actor uses verbal—indirect—means are called jussive verbs, e.g., *tell*, *order*, *persuade*.

This article gives an account of formal devices and semantic differences in causative constructions observed in Yaqui, a Uto-Aztecan language spoken in Sonora, Mexico, and Arizona.¹ The aims are (i) to describe the different morpho-syntactic mechanisms which encode the causative meaning, and (ii) to establish the clause union types in terms of the form-function iconicity principle. Yaqui possesses a wide spectrum of strategies for expressing causation. Besides several labile roots, e.g. *pitta* ‘flatten’, *joboa* ‘fill’, *ta’aru* ‘lose’, nearly all verbs distinguish causatives from state and inchoative verbs via suppletion, valence endings, and causative suffixes. Most instances of verbal causation are expressed by morphological and syntactic structures. The present analysis is formulated within the framework provided by Role and Reference Grammar (Van Valin 1993, 2005; Van Valin and LaPolla 1997).

Yaqui adheres to the primary principle governing the form-function interface when expressing causation: non-verbal causatives are structurally expressed by nuclear or core cosubordination; verbal causative by core coordination or clausal subordination. These abstract linkages show a semantic correlation: the tightest syntactic combination encodes the closest semantic integration among the events, i.e., physically direct, simultaneous causation, whereas the less tight syntactic linkage encodes the looser semantic integration, i.e., indirect, sequential, non-implicative causation.

2. Basic morpho-syntactic properties of Yaqui

The Yaqui language exhibits (i) a nominative-accusative case marking on nouns and pronouns, (ii) a preference for SOV word order, (iii) a distinction between nominative, accusative, genitive and object-of-postposition forms in the pronominal system, and (iv) overt expression of all lexical and pronominal arguments, except for third person. In (1a), *Peo* functions as a subject of an intransitive verb and it is unmarked for case, whereas in (1b) *Peota* serves as the direct object and hence is marked by the accusative suffix *-ta*. The full pronominal system is illustrated in Table 1.

- (1) a. *Peo-Ø* *bwite-k*.²
 Pedro-NOM run-PF
 ‘Pedro ran.’
- b. *Aurelia-Ø* *Peo-ta* *bicha-k*.
 Aurelia-NOM Pedro-ACC see-PF
 ‘Aurelia saw Pedro.’

[TABLE 1]

3. Non-verbal causation

In a non-verbal causative situation, the actor imposes a change of state on the undergoer, generally through direct contact. In the following sections, I shall describe such events displaying morphology-based causativization. The discussion begins with inchoative derivation.

3.1 Inchoative verbs

Nouns and state-like stems denoting non-inherent physical and attributive properties may be derived into inchoative verbs by adding the suffixes *-tu* or *-te*. While the former is limited to nouns and adjectives indicating a non-induced, spontaneous change of state, cf. (2), the latter is far more productive and may also be attached to verb stems. One of the functions of *-te* is to indicate a kind of middle voice, involving a self-induced state of affairs, where the sole participant is associated with two semantic roles, e.g., *kik-te* ‘stand (sg)’, *jap-te* ‘stand (pl)’, *beabocha-te* ‘put shoes one’, *tajjo’o-te* ‘get dressed’, *koba-te* ‘get dressed from waist up’, *chichik-e* ‘brush’, *bua-te* ‘tie a cloth on the head’, *so’i-te* ‘swing’.

(2) Inchoative verbs marked by *-tu*

Base form	Inchoative		Causative	
<i>ona</i> 'salt'	<i>on-tu</i>	'get salty'	<i>on-tua</i>	'put salt'
<i>seboa</i> 'thorn'	<i>seboa-tua</i>	'prick'	<i>seboa-tua</i>	'prick (tr)'
<i>sa'awa</i> 'sore'	<i>sa'awa-tu</i>	'get a sore'	<i>sa'awa-nia</i>	'hurt a sore'
<i>waki</i> 'thin'	<i>wakil-tu</i>	'get thin'	<i>wakil-te</i>	'make thin'
<i>yo'o-</i> 'growth'	<i>yo'o-tu</i>	'grow'	<i>yo'o-tu-ria</i>	'raise'

When added to nouns and adjectives, these suffixes modify the aspectual properties of their bases: they convert a stative situation into a non-induced process, i.e. into an accomplishment or achievement.

3.2 Highly lexicalized causative verbs³

There are three main strategies for expressing a non-verbal causative situation.⁴ The first one, the 'prototypical' lexical causative (Comrie 1989: 170), employs suppletive forms. As in most Uto-Aztecan languages, most suppletive forms also distinguish the number of the semantic argument undergoing the change (cf. 3).

(3) Suppletive verbs

inchoative/causative (Sg)	inchoative/causative (Pl)	
<i>muuke / me'a</i>	<i>koko / sua</i>	'die, kill'
<i>weeche / watta</i>	<i>watte / watta</i>	'fall, drop'
<i>kibake / kibacha</i>	<i>kiimu / kiima</i>	'enter, bring into'
<i>yejte / yecha</i>	<i>jo'ote / joa</i>	'sit, put'
<i>kikte / kecha</i>	<i>japte / ja'abwa</i>	'stand, put'
<i>bo'ote / teeka</i>	<i>to'ote / to'a</i>	'lay down, put'

For instance, *muuke* 'die' and *me'a* 'kill' both express a change of state of the undergoer. In the non-causative version, the undergoer functions as the syntactic subject and receives nominative case. In the causative version, it functions as the object and is marked with the accusative.

The second strategy involves valence-endings. There is a large number of verb pairs that morphologically distinguish between an intransitive pair ending in *-e*, *-te*, or *-ke*, and a transitive pair ending in *-a*, *-ta*, or *-cha*.⁵ These are cases of non-directed (equipollent) alternation: neither the intransitive nor the transitive version is derived from the other (Haspelmath 1993). When the basic stem describes a telic (non-activity) situation, these verb pairs encode an inchoative/causative distinction; when the basic stem denotes an atelic (activity) event, the endings indicate a merely syntactic valence alternation. It belongs to the properties of telic events (accomplishments and achievements) to encode an inherently temporally unbounded change of state. In Yaqui, telic verbs have a stative counterpart ending in *-i*, *-ti*, or *-ia*, and allow a causative expressed by means of a morphological structure, maintaining the meaning and number of participants, e.g., *beete/beeta* ‘burn’, *bwase/bwasa* ‘cook’, *waake/waacha* ‘dry’. The examples below show the three aspectual classes of the verb ‘to break’. *Kokti* (4a) refers to the resulting state, the accomplishment *kokte* (4b) focuses on the end point of a non-induced process. In both cases, the undergoer takes the nominative. The causative accomplishment *kokta* (4c) explicitly expresses the external cause which provoked the change in the undergoer, while (4d) is the causative paraphrase of (4c).

(4) a. *U mesa-∅ kokti.*

DET table-NOM break:STA

‘The table is broken.’

b. *U mesa-∅ kokte-k.*

DET table-NOM break:INCH-PF

‘The table broke.’

c. *Kajlos-∅ mesa-ta kokta-k.*

Carlos-NOM table-ACC break:CAUS-PF

‘Carlos broke the table.’

d. *Kajlos-∅ mesa-ta kokti-tua-k.*

Carlos-NOM table-ACC break-CAUS-PRF

‘Carlos made the table break.’

An atelic verb refers to a dynamic, temporally unbounded situation. In Yaqui, active verbs cannot take the stative form, nor do they enter into the causative paraphrase, e.g., *omte* ‘get angry’, *omta* ‘hate’, *kuakte* ‘twist’, *kuakta* ‘twist (tr)’, *weeye* ‘move’, *weeya* ‘take’. This is illustrated in (5) by means of the verb *waate* ‘miss’ and its counterpart *waata* ‘love’.

(5) a. *Lupe-Ø (e-u) waate-Ø.*

Lupe-NOM 2SG-DIR miss-PRS

‘Lupe is missing (you).’

b. *Lupe-Ø kaa enchi waata-Ø.*

Lupe-NOM NEG 2SG.ACC want-PRS

‘Lupe does not love you.’

c. **Empo kaa waati.*

2SG.NOM NEG want:STA

‘You are not loved, missed.’

d. **Lupe-Ø kaa enchi waati-tua-k.*

Lupe-NOM NEG 2SG.ACC want-CAUS-PRS

‘Rosita didn’t make you to be missed/to miss/to love.’

Thus, although active transitive verbs may formally overlap with lexical causatives, they do not imply a causative meaning. This is a mismatch between the morphological marking and the semantic class of Yaqui verbs: activity verbs ending in *-e/-a* do not encode a non-causative/causative meaning (Guerrero 2004a).

The third strategy for expressing a non-verbal causative situation involves a limited set of verbs marked by the suffixes *-te* and *-ria*. In addition to marking inchoative verbs, the suffix *-te* may also derive a causative based on nouns, e.g., *taj-te* ‘make *tortillas*’, *jo’a-te* ‘build houses’. It may be also added to adjectives, although this is less common, e.g., *bwe’u* ‘big’ > *bwe’u-te* ‘make big’, *wiki-la* ‘thin’ > *wikil-te* ‘make thin’, *tu’u* ‘good’ > *tu’u-te* ‘make good, fix’.

(6) a. *U beea-Ø bwalko.*

DET skin-NOM soft

‘The skin is soft.’

b. *Bwia-ta te bwalko-te seewa-m-betchi’ibo.*

ground-ACC 1PL.NOM soft-CAUS flower-PL-for

‘We soften the ground for the flowers.’

The use of the applicative suffix in order to increase the valence by adding an agent-type argument plus causative semantics seems to be common in other closely related languages, i.e., the suffix *-id/-di* in Pima Bajo (cf. Zarina Estrada’s discussion of Pima Bajo in this volume). This process is far less common in Yaqui, however. Although there are a few examples where *-ria* is added to adjectival forms to create a causative, e.g., *bwichop-ria* ‘bleach’, *bali-ria* ‘make cold’, *yosi-ria* ‘make hot’, *awi-ria* ‘make fat’, and *suka-ria* ‘make hot’, this last construction being illustrated in (7), this suffix usually serves to introduce a beneficiary participant.

(7) a. *Ba’am suka.*

water:PL hot

‘The water is hot.’

b. *Ba’am suka-e-Ø.*

water:PL hot-INCH-PRS

‘The water is getting hot.’

c. *Nepo ba’am suka-ria-Ø.*

1SG.NOM water:PL hot-APPL-PRS

‘I heat the water.’

The highly lexicalized causatives discussed so far may be positioned at an intermediate level between lexical and morphological forms. On the one hand, they do not count as purely lexical, since they involve a more or less productive process in which causatives are derived from non-causatives by adding a causative suffix. That is, the causatives might be predicted on the basis of the stative forms, and it is possible to establish the direction of the derivation (inchoative > causative). On the other hand, they show irregular markings (i.e.,

endings), and they are not fully productive. We shall now turn to the two most productive devices to derive non-verbal causatives.

3.3 Result-state causatives

Verbs denoting states and qualities of inanimate and animate entities, such as taste, color, shape, and size, may be turned into non-causatives by adding the main verb *au* ~ *aane* ~ *ayuu* ‘have, become’, and into causatives by adding *yaa* ~ *joa* ‘to make’. The state, accomplishment, and causative accomplishment versions of the verb meaning ‘to bleach’ are exemplified below.⁶

(8) a. *U-me tajkai-m namaka-Ø.*

DET-PL tortilla-PL hard-PRS

‘The tortilla is hard (dried).’

b. *U-me tajkai-m namaka-si aayu-k.*

DET-PL tortilla-PL hard-INT become-PF

‘The tortillas become hard (dried).’

c. *U ta’a-Ø namaka-si am yaa-k.*

DET sun-NOM hard-INT 3PL.ACC make-PF

‘The sun caused them to become hard (dried).’

Whereas the stative predicate (8a) is unmarked, the inchoative (accomplishment) version employs the predicate *aayu* ‘to become’, preceded by the result-state marked by *-si* (8b), and the causative accomplishment (8c) is constructed from the result-state plus the main verb *yaa* ‘to make’. These clauses refer to exactly the same situation as highly lexicalized causatives, but here the cause and result events are expressed by two separate units.

3.4 Morphological causatives

The most productive causative suffix is *-tua*, which combines with any kind of base form, including nouns (9a) and statives (9b).⁷

(9) Lexical causatives taking *-tua*

Base form	Causative
a. <i>maatu</i> ‘charcoal’	<i>maatu-tua</i> ‘to blacken’

<i>maniam</i>	‘break’	<i>mania-tua</i>	‘to hold, stop’
<i>tapojtim</i>	‘metal, iron’	<i>tapojti-tua</i>	‘to shoe (horse)’
<i>chichi</i>	‘saliva’	<i>chichi-tua</i>	‘salivate/savor’
<i>jiu</i>	‘sound’	<i>jiu-tua</i>	‘turn on (make sound)’
b. <i>alle’a</i>	‘be happy’	<i>alle’a-tua</i>	‘comfort’
<i>beje’e</i>	‘cost’	<i>beje’e-tua</i>	‘pay’
<i>elpea</i>	‘be healthy’	<i>elpe-tua</i>	‘relieve’

It has been stated that lexically causative predicates such as ‘give’ are not common bases for morphology-derived causatives across languages (Dixon 2000)—in Yaqui, they are. The constructions in (10) illustrate intransitive, transitive and ditransitive base forms.

(10)a. *Luis-∅ Ivan-ta tubukti-tua-k.*

Luis-NOM Ivan-ACC jump-CAUS-PF

‘Luis made/let Ivan jump.’

b. *Aurelia-∅ enchi toto’i-m sua-tua-k.*

Aurelia-NOM 2SG.ACC hen-PL kill-CAUS-PF

‘Aurelia made/let you kill the hens.’

c. *Peo-∅ usi-ta mansana-ta yoem-ta miik-tua-∅.*

Peo-NOM child-ACC apple-ACC man-ACC give-CAUS-PRS

‘The teacher made/let the child give the man the apple.’

In a typical causative situation, the actor forces the undergoer to be involved in a process or change. When the causee is inanimate, the actor does not encounter any kind of reluctance or resistance in bringing about the change in the undergoer; this is the simple case of direct causation expressed by the lexicalized forms discussed above. When the causee is animate, it is difficult to decide whether the situation involves a direct manipulation or a permissive causality. A simple example of this ambiguity is observed when causativization is applied to motion and change-of-position verbs. When the causee is a human being, there are two options: the more lexicalized form (11a) implies that the actor acts directly on the

undergoer; the derived verb (11b) is open to two interpretations: (i) the actor physically acts on the undergoer, or (ii) she permits the undergoer to perform the change on its own. That is, the animacy property of the causee allows a causative situation derived by *-tua* to be interpreted as either direct or permissive causality. This option is not available for highly lexicalized causatives, which always express a direct manipulative causation.

(11) a. *María-Ø ili usi-ta tebat-po te'eka-k.*

María-NOM little child-ACC bed-LOC put-PF

‘María put the child on the bed.’

b. *María-Ø ili usi-ta tebat-po bo'o-te-tua-k.*

María-NOM little child-ACC bed-LOC lie down-INCH-CAUS-PF

‘María put / let the child lie down on the bed.’

c. *María-Ø u-ka soto'i-ta mesa-po te'eka-k.*

María-NOM DET-ACC pot-ACC table-LOC put-PF

‘María put the pot on the table.’

d. **María-Ø u-ka soto'i-ta mesa-po bo'o-te-tua-k.*

María-NOM DET-ACC pot-ACC table-LOC lie down-INCH-CAUS-PF

‘María put / let the pot lie down on the table.’

From a syntactic point of view, the analysis of these constructions is interesting because causativization increases the valence of the basic verb to a three- or a four-place predicate. In contrast to Korean or Romance languages, where the case marking of the causee depends on the syntactic valence of the caused event (i.e., it is expressed by an accusative or dative NP if there is another accusative argument in the clause), in Yaqui transitive- and ditransitive-based causatives result in multiple accusative arguments: accusative causee, accusative theme, and even accusative recipient (cf. Guerrero and Van Valin 2004).

To sum up: similar to suppletives, highly lexicalized causatives based on noun and state-like stems reflect a direct (physical or manipulative) causative situation, where the change on the undergoer is brought about by the external force directly acting on it. In suppletives and highly lexicalized forms, the undergoer is an affected non-agentive

argument, and both show the highest degree of fusion between the causing and the caused events, i.e., they have become grammaticalized as a simple predicate. As in many other languages, when the undergoer plays a patient role, e.g., *Mary put the pot on the table*, the causative situation is strongly lexicalized. When it may play an agent role, e.g., *Maria put/let the child lie down on the bed*, the situation tends to be morphologically derived, but this is not a necessity. When the undergoer is required to be an agent, as in *Mary made you laugh*, the causative is always morphologically derived. In other words, causative events based on nouns and predicates containing a state component are more likely to be lexicalized as a single predicate, whereas causatives derived from activity verbs strongly resist lexicalization. As a result, the suffix *-tua* is used to fill gaps in the lexical domain, i.e., there are no lexicalized forms of causative events involving two agentive participants.

4. Verbal causation

The previous section has shown that morphological causatives taking *-tua* may express either direct manipulative or permissive causality, depending on the lexical properties of the basic verb and the animacy properties of the causee. In both interpretations, however, the causee is always under the causer's direct (physical) control. Yaqui makes use of other strategies to indicate that the actor employs verbal means to induce the causee to perform an action or be involved in a process. Jussive verbs, as listed in (12), explicitly specify the way in which the causer effects the caused event: by means of certain speech acts.

(12) Jussive verbs in Yaqui

<i>sawe</i>	'order to'	<i>su'utoja</i>	'allow to'
<i>tejwa</i>	'tell to'	<i>ujbwana</i>	'ask (polite request)'

Verbal causation implies that the causee acts independently and/or with resistance with respect to the actor's control. As a result, the event induced by a jussive verb is restricted to activity and causative predicates. Apart from this semantic restriction, verbal causatives are fully productive and, more interestingly, vary in the degree of syntactic integration of the two events: the more difficult it is to bring about the caused event, the more explicitly the causative meaning must be indicated.

The jussive verbs *sawe* 'order' and *su'utoja* 'allow' highlight the independency of the two events involved in the causative situation: one in which the causer induces an

action, and the other in which the action is performed by the causee. These verbs allow two—equally common—formal representations: the morphological structure (13a) and the syntactic structure (13b), taking the caused event as a complement unit (indicated by ‘[]’ to facilitate reading). In any case, the undergoer of the main verb must be coreferent with the agent of the linked verb, i.e. the causee. In the morphological construction, the jussive verb *sawe* appears as a reduced form *sae*.

- (13) a. *Empo Goyo-ta Aurelia-ta kape-ta u'ura-sae-k.*
 2SG.NOM Goyo-ACC Aurelia-ACC coffee-ACC take.away-order-PF
 ‘You ordered Goyo to deprive Aurelia (of) the coffee.’

- b. *Empo Goyo-ta_i sawe-k [Aurelia-ta kape-ta a_i u'ura-'u]*
 2SG.NOM Goyo-ACC order-PF Aurelia-ACC coffee-ACC 3SG.ACC take.away-COMP
 ‘You ordered Goyo to deprive Aurelia (of) the coffee.’

Notice that the causee *Goyo* appears once in the morphological version but twice in the syntactic construction: in the latter, the full NP tends to occur as a direct core argument of the matrix predicate, whereas the linked unit takes a coreferential accusative pronoun. There exist fully syntactic causative constructions which focus on both the force-dynamics of the two events and the causee’s volition as separate from the actor. These structures are expressed by the verbs *tejwa* ‘tell to do’ and *ujbwana* ‘ask to do’.

- (14) a. *Bempo enchi tejwa-k [enchi Kajeme-u siime-'u].*
 3PL.NOM 2SG.ACC tell-PF 2SG.ACC Cajeme-DIR go(SG)-COMP
 ‘They told you that you go to Cajeme.’

- b. *Bempo e-u_i ujbwana-Ø [enchi_i sim-ne-'u].*
 3PL.NOM 2SG-DIR ask-PRS 2SG.ACC go-EXPE-COMP
 ‘They ask you to leave.’

Among the defining characteristics of the syntactic construction is the fact that the causing and the caused events are two independent units, such as the complement serves as a syntactic and semantic argument of the matrix (jussive) predicate. The other two core arguments are the actor (causer) and the undergoer (causee). The complement must have

all its core arguments expressed and is marked by the complementizer *-’u*. The complement hardly ever occupies the ‘object’ position in the main clause (i.e., embedded); rather, as the unmarked case, it appears extraposed to the right. There is another type of syntactic construction expressing some sort of verbal causation. Below, there is a jussive predicate taking a complement but, in contrast to (14), the dependent unit must be marked by either *-sae* ‘order’ (15a) or *-’ii’aa* ‘want, wish’ (15b), followed by the complementizer *-kai*. According to Lindenfeld (1973: 114), only those complements marked by *-sae-kai* or *-’ii’aa-kai*, constitute ‘real’ complex constructions, as they overtly show a matrix predicate followed by a sentential complement.

- (15) a. *Nepo ili uusi-ta_i tejwa-k [aman a_i wee-sae-kai]*.
 1SG.NOM little child-ACC tell-PF there 3SG.ACC walk-order-COMP
 ‘I told the child to go there.’ (Lindenfeld 1973)
- b. *Nepo enchi sawe-k [enchi uba-’ii’aa-kai]*
 1SG.NOM 2SG.ACC order-PF 2SG.ACC bath-want-COMP
 ‘I ordered you to take a bath.’

In the following section, I shall examine the syntactic-semantic correlation among the units involved in non-verbal and verbal causation. For the sake of space, the discussion is restricted to those instances where actor and undergoer are animate, since they allow more than one syntactic representation, and hence more than one semantic interpretation. Before proceeding to the analysis, it is necessary to introduce some theoretical principles related to juncture-nexus relations.

5. Syntactic-semantic interclausal relations

5.1 The theory of clause union

Role and Reference Grammar [henceforth RRG] (Van Valin 1993, 2005; Van Valin and LaPolla 1997) proposes three components for the study of clause union: the theory of juncture, the theory of nexus, and the interclausal semantic relation. The theory of juncture deals with the units which constitute complex sentences: NUCLEAR, CORE and CLAUSE. The theory of nexus concerns the syntactic relationship between the units (subordination, coordination, and cosubordination), distinguished on the basis of structural and operator dependency. In subordination, the linked unit functions either as an argument, as in

complementation, or as a modifier. In coordination, the two units are ‘added together in a sequence’ in a relationship of equivalence and independence. Cosubordination shows properties of both: there are two units of equivalent size joined together, as in coordination, but one unit depends on the other, as in subordination. This dependency relationship holds between one element and tense-aspect-mood (TAM) operators of the other element: in cosubordination, the linked verb must depend upon the matrix verb for the expression of one or more operators at the level of juncture, whereas in coordination the two verbs can, but need not be, independently specified for the relevant operators. These syntactic combinations may be organized into the Syntactic Relation Hierarchy, in which they are ranked in terms of syntactic tightness. These abstract syntactic combinations are then used to express a wide variety of semantic relations between the units in the juncture, e.g., causation, psych-action, perception, cognition. The Semantic Relation Hierarchy is the result of the interaction of semantic sub-hierarchies which include, but are not limited to, temporality, causation, the participant’s mental disposition, and obligatory argument sharing (cf. Guerrero 2004b; Van Valin 2005).

It is well known that there are systematic correlations between the semantic structure of an event and its morpho-syntax representation (cf. Silverstein 1976; Givón 1980; Haiman 1985; Horie 2000). The form-function iconicity principle predicts that the closer the events denoted by a predicate and its complement are, the more syntactically integrated the predicate-complement construction will be. For Yaqui, the syntactic and semantic integration among the units in a causative situation is based on the following properties: coreferentiality vs. argument sharing, passive voice, operator dependency, scope of adverbial phrases, and semantic implication.

5.2 Syntactic and semantic integrations

5.2.1 Coreferentiality vs. argument sharing

Constructions in which there are two coreferential NPs are less tight than constructions in which there is a missing syntactic argument, such that the two units share that argument. All morphological structures encoding causation in Yaqui must share a core argument: the causee. In (16a-b), *Goyo* plays two semantic roles—it is the actor of the caused event and the undergoer of the causing event—, but it is overtly expressed only once. In the syntactic constructions, the two events have coreferential arguments; in (16c), *Goyo* is an argument of the matrix core, whereas the linked unit contains an accusative pronoun co-indexed with

it. What is not possible for a syntactic structure is to share an argument, i.e., to have missing arguments in the linked unit. Those clauses where the complement is marked by – *sae-kai* (16d) not only show coreferential NPs, but they also have a missing argument: although there are two causative forms, there is no explicit reference to the causer in the linked unit, which happens to be the same as the logical causer of the matrix predicate. Any other combination is ruled out.

- (16) a. *Nepo Goyo-ta toto'i-m sua-tua-ne.*
 1SG.NOM Goyo-ACC hen-PL kill-CAUS-EXPE
 'I will make Goyo kill the hens.'
- b. *Nepo Goyo-ta toto'i-m sua-sae-ne.*
 1SG.NOM Goyo-ACC hen-PL kill-order-EXPE
 'I will order Goyo to kill the hens.'
- c. *Nepo Goyo-ta_i sawe-k [toto'i-m a_i sua-ne-'u].*
 1SG.NOM Goyo-ACC order-PF hen-PL 3SG.ACC kill-EXPE-COMP
 'I will order Goyo_i that he_i kill the hens.'
- d. *Nepo Goyo-ta_i tejwa-k [toto'i-m a_i sua-sae-kai].*
 1SG.NOM Goyo-ACC tell-PF hen-PL 3SG.ACC kill-order-COMP
 'I will tell Goyo_i such that he_i kills the hens.'
- e.* *Nepo Ø tejwa-k [Goyo-ta toto'i-m sua-sae-kai].*
 1SG.NOM tell-PF Goyo-ACC hen-PL kill-order-COMP
- f. * *Nepo Goyo-ta_i tejwa-k [ne toto'i-m a_i sua-sae-kai].*
 1SG.NOM Goyo-ACC tell-PF 1SG.NOM hen-PL 3SG.ACC kill-order-COMP

5.2.2 Passive voice

Independently of the structure type, when the dependent subject functions as an argument of the matrix predicate, it acts as the passive subject and takes nominative case marking. The passive versions of the clauses in (16) are illustrated below. For those structures taking a complement marked by -'u, the resulting clause may be passive or impersonal, depending

on whether the causee carries the accusative in the active voice. The structure involving – *sae-kai* disallows the use of the passive voice. According to the intuition of my consultant, the ungrammaticality of (17d) is due to the difficulty of construing a causative situation where someone gives an order to the undergoer, wanting her to do the event in question, without overtly expressing the causer participant.

(17) a. *Goyo-Ø toto'i-m sua-tua-wa-ne.*

Goyo-NOM hen-PL kill-CAUS-PASS-EXPE

‘Goyo will be made to kill the hens.’

b. *Goyo-Ø toto'i-m sua-sae-wa-ne.*

Goyo-NOM hen-PL kill-order-PASS-EXPE

‘Goyo will be ordered to kill the hens.’

c. *Goyo-Ø_i sawe-wa-k [toto'i-m a_i sua-ne-'u].*

Goyo-NOM order-PASS-PF hen-PL 3SG.ACC kill-EXPE-COMP

‘Goyo_i was ordered that he_i would kill the hens.’

d.* *Goyo-Ø_i tejwa-wa-k [toto'i-m a_i sua-sae-kai].*

Goyo-NOM tell-PASS-PF hen-PL 3SG.ACC kill-order-COMP

5.2.3 Operator dependency

Non-verbal causation marked by *-tua* requires the caused event to be unmarked for operators. This means that the caused event depends on the TAM information coded in the matrix core, which explains the ungrammaticality of the example in (18a). By contrast, all instances of verbal causation allow the dependent unit to be unmarked or to be marked by the aspectual suffix *-ne* ‘expected’, but never by tense suffixes, as shown in (18b). When the complement unit is marked by *-sae-kai* (18c-d), the linked unit must be unmarked.

(18) a.* *Nepo Goyo-ta toto'i-m sua-ne-tua.*

1SG.NOM Goyo-ACC hen-PL kill-EXPE-CAUS

b. *Nepo Goyo-ta toto'i-m sua-ne-sae-k.*

1SG.NOM Goyo-ACC hen-PL kill-EXPE-order-PF

‘I ordered Goyo to kill the hens.’

c. **Nepo Goyo-ta_i tejwa-k [totoim a_i sua-sae-ne-kai]*.

1SG.NOM Goyo-ACC tell-PF hen-PL 3SG.ACC kill-order-EXPE-COMP

d.* *Nepo Goyo-ta_i tejwa-k [totoim a_i sua-ne-sae-kai]*.

1SG.NOM Goyo-ACC tell-PF hen-PL 3SG.ACC kill-EXPE-order-COMP

5.2.4 Spatio-temporal contiguity

In a non-verbal causative situation, the causing event and the caused event are conceptually and physically adjacent, and are conceptualized as two phases of a single incident. In a verbal causative situation, the two events establish a sequential relation rather than an adjacent contiguity: the caused event must be posterior to the speech act event. The scope of temporal adverbs helps us to distinguish this semantic property. The sole interpretation for the clause in (19a) is the one where the temporal phrase *ian lautia* ‘early today’ modifies the causing event. In (19b), the same phrase might modify either the causing or the caused event. This is true for morphological and syntactic verbal constructions (19a-c), except when the complement unit is marked by the sequence *-sae-kai* (19d), which cannot be independently modified.

(19) a. *Nepo enchi uba-tua-k ian laulauti*.

1SG.NOM 2SG.ACC bath-CAUS-PF today early

‘Early this morning I made you take a shower.’

b. *Tuuka nepo enchi uba-sae-k*.

yesterday 1SG.NOM 2SG.ACC bath-order-PF

‘Yesterday, I ordered you to take a shower.’

‘I ordered you to take a shower yesterday.’

c. *Tuuka nepo enchi sawe-k [enchi uba-ka-’u ian laulauti]*

Yesterday 1SG.NOM 2SG.ACC order-PF 2SG.ACC bath- PF-COMP today early

‘Yesterday, I ordered you that you take a shower early today.’

d.* *Tuuka nepo enchi sawe-k [enchi*

Yesterday 1SG.NOM 2SG.ACC order-PF 2SG.ACC

uba-'ii'aa-kai ian laulautia]

bath-want-COMP today early

5.2.5 Semantic implication

Causatives require a semantic entailment relation between the causing and the caused event. They are implicative in the sense that the truth of the caused event holds whenever the causing event is true. This is clear in (20a), where denying the result-state expressed by the caused event results in ungrammaticality. With jussives, however, the caused event can be negated, for they do not imply the completion of the caused event, as in (20b).

(20) a. **Ne uusi-ta kot-tua-k bweta ka a kocho-k.*

1SG.NOM child-ACC sleep-CAUS-PF but NEG 3SG.ACC sleep-PF

‘I made the child sleep but he didn’t sleep.’

b. *Aapo enchi uba-sae-k empo bweta*

3SG.NOM 2SG.ACC bath-order-PF 3SG.NOM and

kaa a yaa-bae-Ø.

NEG 3SG.ACC make-DESID-PRS

‘She ordered you to take a bath, but you do not want to do it.’

5.3 Juncture-nexus types in Yaqui

Based on these morpho-syntactic and semantic properties, Yaqui makes use of four juncture-nexus types to express verbal and non-verbal causation: nuclear cosubordination, core cosubordination, core coordination, and clausal subordination. Each of these syntactic combinations allows particular semantic interpretations. More importantly, the degree of syntactic tightness between the units corresponds to the degree of semantic cohesion among the events, i.e., conforms to Haiman’s formulation of iconic motivation (Haiman 1983: 782).

The structures involving the suffix *-tua* exhibit the tightest syntactic links. Depending on the syntactic valence of the base form, the units may be nuclear (intransitive-based) or central (transitive-based). If it is intransitive, as in *I made you bathe*, the actor of *make* and

the actor of *bathe* constitute the central arguments of the two nuclei verbal form, and hence the construction is classifiable as a nuclear juncture. If the base form is transitive, as in *I made you kill the hens*, *I* is the actor of *made* only, and *hens* is the undergoer of *kill* only; both predicates share a core argument, the causee *you*. The juncture is then situated at the core level. In terms of nexus, subordination is ruled out, since the caused event does not function as a syntactic core argument of the causative for the purpose of passivization, and there is no independent unit marked by a complementizer, i.e., there is not structural dependency. A dependency relation holds with respect to operators: the caused event depends on the TAM information encoded in the matrix event. This operator dependency excludes coordination. Thus, non-verbal causation in Yaqui is syntactically expressed by nuclear and core cosubordination. Although structurally different, the result-state construction is also an instance of core cosubordination. A simplified representation of the clause *I made Goyo kill the hens* (16a) is represented below. Notice that the two cores, the cause and result predicates, are linked to a core node; notice also that the shared NP *Goyo* functions as a core argument of the causative predicate.

[FIGURE 1]

The structures involving *-tua* also entail the highest values on the semantic sub-hierarchies. They constitute a stronger temporal relation, since the causing and caused events are phases of a single event. The actor intends the undergoer to be involved in the process in question, such that the participants establish direct physical contact. Both syntactic units—necessarily—share a core argument, the causee.

The units concerned to the structures encoding verbal causation are two cores. On the one hand, each of the predicates takes its own set of core arguments, although they might share one; this disallows nuclear junctures. On the other hand, the fact that they may be marked by aspectual operators (but not tense) indicates that the units are not two clauses; hence there is a juncture at the core level. The morphological and syntactic constructions differ in terms of nexus. In the former, the content of the complement unit does not show structural dependency, meaning that subordination is ruled out. Instead, the linked unit is missing a syntactic core argument (the causee is expressed only once), such that the causee acts as the passive subject. Cosubordination is also excluded, since the verb may be independently marked by the aspectual operator *-ne* ‘expected’, and may be modified by temporal adverbs. This means that morphological structures involving jussive predicates

are an instance of core coordination. A simplified representation of the clause *I ordered Goyo to kill the hens* (16b) is shown below. In contrast to Figure 1, here the two core units are directly linked to the clausal node, as two equivalent units.

[FIGURE 2]

The jussive predicate in a syntactic construction, as any other speech-act verb, takes three core arguments: the actor (causer), the addressee (causee, undergoer), and the command expressed in the linked unit. The linked unit is formally marked by the complementizer *-’u*, and can be independently modified by tempo-aspectual adverbs. More importantly, in contrast to the morphological structure, the syntactic complement codes all its core arguments. That is, the causee is expressed twice in the logical construction: as an argument of the matrix predicate and as a coreferential pronoun in the linked unit. Because of this, the nexus relation among the two units is one of subordination, as represented in Figure 3. Due to the fact that the linked unit is not embedded in the main clause but appears extraposed to the right, it is said to occupy the post-core slot (PoCS).

[FIGURE 3]

As regards the semantic cohesion, both types of juncture-nexus combinations establish a sequential relation. First of all, the two events are treated as different but tightly sequentialized events, i.e., the causer first gives an order, and then the causee either performs the ordered action or not. Since the actor acts on the causee by means of speech, the causal relation is not physical, but verbal. Although the causer’s mental disposition is more or less the same as in non-verbal causation, i.e., a strong intention for the caused event to take place, the degree of agentive control on the undergoer may vary. Within a morphological structure taking a jussive morpheme, the causee can hardly resist the actor’s command; that is, although the undergoer might refuse to perform the event in question, it would be better if she conformed to the order. In a syntactic structure, by contrast, the causer has less agentive control on the causee, such that she can act according to her own intentions, and may even decide not to obey the actor’s order, e.g. *I ordered her to take a shower but she denied*.⁸

Finally, it has been demonstrated that the constructions taking a complement marked by *-sae-kai* or *-’ii’aa-kai* behave differently in most respects. First, the causative morpheme in the linked unit lacks a syntactic argument (its causer). This suggests that the

causative verb does not act as a main verb, but has been grammaticalized as a kind of ‘epistemic’ marker. Secondly, the linked verb cannot take any operator, but depends on the information coded in the matrix predicate. Thirdly, the complement unit is not marked by any of the common clause linkage markers indicating subordination. Dedrick and Casad (1999: 315) claim that *-kai* “reinforces the notion of anteriority to the present speech situation of the situation designated by the subordinate clause of complex sentences”. Besides this temporal-aspectual function, they never mention that: (i) *-kai* takes a TAM unmarked verb (i.e., a bare form); (ii) a *-kai* clause must lack a syntactic argument; and (iii) the controller of this missing syntactic argument must be the subject NP of the matrix core. In other words, *-kai* is restricted to a situation where the subject of the matrix core is also the subject of the non-matrix core. In fact, the function of *-kai* closely resembles a switch-reference tracking device, commonly found in verb-final languages: this suffix indicates that the missing syntactic argument within the linked unit (the embedded causer), must be co-indexed with the nominal causer in the matrix core.

The properties of *-kai* introduce the possibility for another explanation of this construction type. In contrast to Lindenfeld’s analysis where *-sae-kai* and *-’ii’aa-kai* are the unique syntactic causative constructions, I suggest that they express simultaneous events sharing the actor, i.e., core cosubordination. That is, the clause in (16d) expresses a simultaneous temporal relationship between the matrix predicate *tejwa* ‘tell’ and the second jussive verb *-sae*: ‘I told Goyo, ordering him’. By itself, the linked unit constitutes another instance of a core cosubordination juncture-nexus relation.

6. Final remarks

As demonstrated by data from the Yaqui language, causation is one of the most complex semantic classes of constructions, and hence can be expressed by multiple syntactic means. What the analysis reveals is that there is a form-function correlation in Yaqui for expressing causation. Following Haiman’s formulation of iconic motivation (Haiman 1983: 782), causatives expressed by *-tua* display the smallest linguistic distance—the tightest syntactic linkage being nuclear and core cosubordination—as well as the closest conceptual distance between the cause and result: a direct, physical relation, phases of a single event, and spatio-temporal overlap. Like in suppletives and highly lexicalized causatives, the undergoer in a *-tua* construction is not agent-oriented. This is also the most frequent and productive mechanism to express causation. In addition, the suffix *-tua* is also

added to activity-based causatives, which resist lexicalization. Although result-state structures encode a typical or familiar causative situation and are semantically more transparent (Shibatani 2003), they require a more explicit formal coding and are, apparently, less productive. In terms of linkage, however, they are encoded by the same core cosubordination juncture-nexus.

Causatives expressed by a jussive predicate taking a syntactic complement correspond to the largest linguistic distance—the least tight syntactic linkage being clausal subordination—, and looser conceptual distance: the events are sequential, without spatio-temporal overlap, and each of the predicates takes its own core arguments. Those two structures correspond to the distinction between direct vs. indirect causation. While direct causation involves an agentive causer and a patientive causee, indirect causation involves two agentive participants (Shibatani and Pardeshi 2002: 89).

Moreover, the language permits a third possibility involving two agentive participants: verbal causation expressed by core coordination, i.e., halfway in linguistic distance. As in indirect causation, the command and the result events are sequential. Yet, like in direct causation, the two events must share a core argument, the causee. The two jussive constructions can be further distinguished in terms of agentive control. In subordination, the causee acts according to her own intentions, as she can refuse the actor's order. In coordination, the causee can hardly resist the actor's command, suggesting a closer semantic cohesion. Furthermore, in subordination, the situation is slightly more complex and less familiar, i.e., the caused event may even not occur. This possibility is less expected with coordination. Accordingly, the complexity of the causative event increases, as the causee gains independence from the causer's control.

Notes

¹ The Yaqui language was traditionally spoken by the Yoeme people living along the Rio Yaqui in Sonora, Mexico. After the Mexican Revolution in 1920, a large group of speakers settled in Arizona. Today, there are approximately 15,000 speakers in Sonora and an estimated 5,000 in Arizona. This paper is a revised version of a chapter of my dissertation on Yaqui complex sentences, and the data stems from my own fieldwork, based on the Sonora dialect.

² Abbreviations: 1, 2, 3 = first, second and third person; ACC = Accusative; APPL = Applicative; CAUS = Causative; COMPL = Complementizer; DET = Determiner; DESID = Desiderative; DIR = Directional; EXPE = Expected; INCH = Inchoative; INT = Intensifier; INTR = Intransitive; NOM = Nominative; NEG = Negation; LOC = Locative; PASS = Passive; PF = Past Perfective; PL = Plural; PRS = Present; SG = Singular; STA = Stative; TR = Transitive.

³ For a better understanding of the morphological properties of Yaqui verbal classes, see also *Participios estativos en yaqui y mecanismos de detransitivización* (Albert Álvarez González, this volume).

⁴ There are also some active intransitive/transitive verbs distinguished by the use of suprasegmentals and other phonological devices, i.e., *'ea* 'to think' / *'eiyaa* 'to esteem', *ju'unea* 'know about X' / *ju'uneiyaa* 'to know X', *taáwa* 'to remain' / *tawáa* 'to leave, abandon', *uba* 'to take a bath' / *ubba* 'to bathe X'.

⁵ Yaqui alternation of the inchoative *-(t)e* and causative *-(t)a* is exactly the opposite of what is found in Cora, another Southern Uto-Aztecan language (Vázquez 2000).

⁶ This structure is different from attributive adjectival phrases. When a noun takes an adjective, the adjective tends to be unmarked or agree in number/case with the head noun (i); within a result state clause, the agreement pattern is neutralized (ii); only the intensifier suffix *-si* is attached.

(i) *Aurelia-Ø bwe'ere tajkai-m nee ya'a-tua-k.*

Aurelia-NOM big:PL tortilla-PL 1SG.ACC make-CAUS-PF

'Aurelia made me make big tortillas.'

(ii) *A'apo bwe'u-si kari-m yaa-k.*

3SG.NOM big-INT house-PL make-PF

'He made the houses big.'

⁷ This suffix is well attested in other Southern Uto-Aztecan languages, e.g., *-tia* in Huichol and *-tia* in Nahuatl, and it is directly related to the causative suffix **-tu-(y)a* proposed for PUA. Langacker (1977:145-6) suggests that the first syllable of this proto-form is probably related to a verbalizing suffix meaning 'be' or 'become', while the second syllable

probably relates at some remote stage to the *-na / *-ca causative, and possibly also to the active [transitive] *-a. If this is so, it may be the case that in Yaqui the occurrence of the ending *-a* in lexicalized causative verbs corresponds to this historical causative suffix, whereas the most general suffix *-tua* involves the combination of the inchoative *-tu* plus *-a*.

⁸ Although more data is necessary, it seems that the morphological structure reflects a more coercive situation compared to the fully syntactic construction: in the latter, the causee is less compelled to perform the induced action.

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	Nominative	Acusative	Objeto de posp.	Genitivo
1 Sg	inepo = ne	nee	ne-	in, nim
2 Sg	empo = 'e	enchi	e-	em
3 Sg	aapo	apo'ik / a	a-	a- / apo'ik
1 Pl	itepo = te	itom	ito-	itom
2 Pl	eme'e = 'em	enchim	emo-	em, enchim
3 Pl	bempo	apo'im / am	ame-	bem, bempo'im

Table 1. Pronominal system in Yaqui

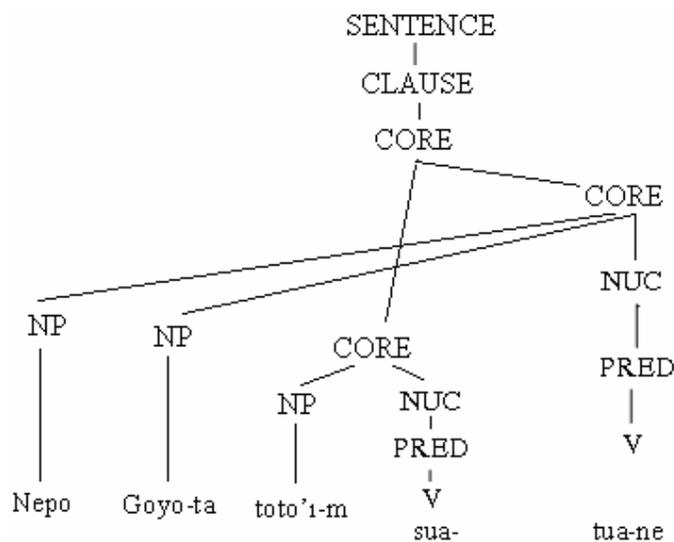


Figure 1. Core cosubordination for the construction

I made Goyo to kill the hens (16a)

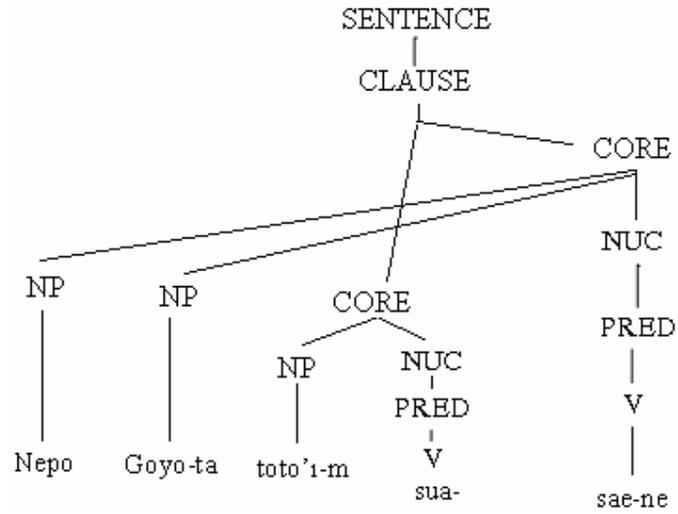


Figure 2. Core coordination for the construction

I ordered Goyo to kill the hens (16b)

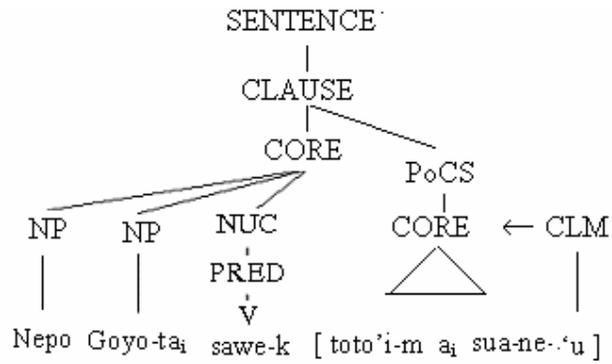


Figure 3. Clausal subordination for the construction

I ordered Goyo that he would kill the hens (16c)