

## From state to change of state by type-shift

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**Introduction** Languages differ with respect to the relationship between words that serve as translational equivalents of English adjectives (property concept lexemes, henceforth PCLs) and words describing changes of state. One group of languages exhibits a relationship which we call *labile*, where there is no surface morphophonological difference between PCLs expressing a stative meaning and lexemes expressing change of state semantics. This is illustrated by Tongan in (1) (Koontz-Garboden 2007), and Mandarin in (2) (see Tham 2013 for discussion).

- (1) Tongan (Koontz-Garboden 2007: 117)      (2) Mandarin
- |    |   |    |   |
|----|---|----|---|
| a. | ‘Oku <i>loloa</i> ho ‘ulu.<br>IMP long your hair<br>‘Your hair is long.’                                  | a. | wo de toufa hen <i>chang</i><br>1.SG DE hair very long<br>‘My hair is long.’                                    |
| b. | ‘Oku <i>loloa</i> vave ho ‘ulu.<br>IMP long fast your hair<br>‘Your hair is quickly <b>getting</b> long.’ | b. | wo de toufa <i>chang</i> de hen kuai<br>1.SG DE hair long DE very fast<br>‘My hair <b>gets long</b> very fast.’ |

We note two additional facts about lability as illustrated in (1) and (2). First, the (a) sentences possess a stative reading only: a change of state reading is not present in the absence of event-selecting material, such as rate adverbials as in the (b) sentences. Second, lability is not attested in all languages: for example, in Japanese, stative PCLs do not have a change of state meaning in the presence of a rate adverbial, and are in fact unacceptable with them. Instead, Japanese makes use of a verb derivationally related to the PCL to express change of state.

- (3) ame -no ato kawa -ga hayaku hirogar -u /#hiro -i  
rain -GEN after river -NOM quickly widen -prs wide -prs  
‘After rain, the river quickly widens.’

**Proposal** In this talk, we propose an analysis of the labile derivational relationship in terms of *type shifting*: in languages with no overt inchoative morphology, a type shifting operation introducing inchoative semantics applies where type-mismatches would otherwise occur. In combination with a Blocking Principle, drawing on Chierchia’s (1998) proposal, the analysis explains why change of state meaning in labile languages only arises in certain grammatical contexts, why such change of state type-shifting is found in complementary distribution with inchoative morphology crosslinguistically, and why it is found only with verbal PCLs.

**Lability as type-shifting** On our analysis, there is no morpheme, either overt or covert, encoding change of state semantics in labile languages. Instead, state/change of state lability arises via a *type-shifting operation* that applies to state-characterizing verbs (or VPs) and returns a predicate of events. Specifically, the operation takes a predicate of states, existentially closes the state argument, and introduces a BECOME relation between an event and the state. We term this operation *Inchoative Shift*, on analogy with Kratzer’s (2005) Causative Shift:

- (4) *Inchoative Shift*

For a verbal constituent V of type  $\langle s, t \rangle$ ,  $\text{SHIFT}(V) = \lambda e. \exists s [\text{BECOME}(e, s) \wedge V(s)]$   
Following an idea found throughout the type-shifting literature (Partee & Rooth 1983, Chierchia 1998, Bittner 1999, Winter 2007, a.o.), Inchoative Shift applies only as a *last resort* mechanism to repair local type mismatches. This property of type-shifting explains the restriction of change of state readings with stative predicates to cases where the VP would serve as an argument of an event modifier: rate adverbs only take predicates of dynamic eventualities as arguments, and composition with a predicate of states would fail if no type-shifting occurred. In the absence of a function demanding an eventive argument, no type mismatch arises, and Inchoative Shift does not apply, explaining the absence of change of state semantics in (1-2a).

**Consequences** As our type-shifting rule applies generally in cases where a function from event predicates needs to compose with a stative predicate, we expect change of state semantics to occur in many more contexts than with just rate adverbials as in the examples above. That this is the case can be seen in (5) and (6), in which change of state semantics is required in the context of the perfect markers *kuo* and *le* in Tongan and Mandarin, respectively (Tham 2013, Koontz-Garboden 2007; cf. Matthewson et al. 2015).

- |     |                                     |     |                       |
|-----|-------------------------------------|-----|-----------------------|
| (5) | Tongan (Koontz-Garboden 2007:132)   | (6) | Mandarin              |
|     | kuo loloa ho ‘ulu.                  |     | wo de toufa chang le  |
|     | PRF long your hair                  |     | 1.SG DE hair long PRF |
|     | ‘Your hair has grown (lengthened).’ |     | ‘My hair got long.’   |

**Blocking Principle** The type-shifting perspective on coercion also lends itself to an explanation for *why* such a type shift is available in labile languages like Tongan and Mandarin, but not languages like Japanese: the latter languages possess overt morphology expressing change of state semantics, as (4) shows, while labile languages do not. This state of affairs is analogous to Chierchia’s (1998) explanation for the availability of the  $\exists$  and  $\iota$  type-shifters in Mandarin, which lacks determiners that would otherwise express such meanings, but not in English, which makes use of *a* and *the* for this purpose. We can thus extend Chierchia’s Blocking Principle to account for blocking effects with type-shifting outside of the nominal domain, as in (7).

- (7) *Generalized Blocking Principle* (adapted from Chierchia’s 1998 Blocking Principle)  
 For any type shifting operation  $\tau$  and any X:  $*\tau(X)$  if there is an expression  $\alpha$  such that for some Y in its domain,  $\alpha(Y) = \tau(X)$

Change of state lability, and its absence in other languages, can thus be seen as part of a broader set of phenomena concerning the inventory of type-shifting operations in language and the principles that constrain their availability cross-linguistically.

**Previous analysis (Koontz-Garboden 2007):** Koontz-Garboden (2007), drawing on Moens & Steedman (1988) and Zucchi (1998), argues that change of state inferences with stative predicates in Tongan are derived through *coercion*, the idea that if two syntactic elements, e.g., a stative predicate and a rate adverbial, have meanings that are inconsistent with one another compositionally, the meaning of one will alter (“coerce”) in order to accommodate the other. Such an analysis raises a number of analytical questions, such as why the stative predicate coerces rather than the rate adverbial, and why the state coerces to a change of state meaning, and more specifically to the particular change of state meaning that it does (rather than to some other change of state meaning). More broadly, it seems to us that there are many possible repairs that could be performed that are not, calling the analysis into question. Koontz-Garboden recognizes these problems, and tries to constrain the process, though not in ways that address all such concerns. Furthermore, Koontz-Garboden’s proposal does not draw a connection between the availability of coercion and the presence of morphology of a certain kind, thus missing the typological generalization we have noted above. Our analysis of change-of-state lability improves on Koontz-Garboden’s proposal by localizing the change-of-state meaning in a particular rule, Inchoative Shift, which applies to stative verbs to deliver event predicates only when type-clash would otherwise result. The proposal, furthermore, makes a testable, cross-linguistic prediction that Koontz-Garboden’s analysis does not: that languages without inchoative morphology, and only these, allow stative verbs to shift to a change-of-state meaning in appropriate contexts.

**Concluding remarks:** We note in closing that we have restricted the application of Inchoative Shift to verbs. This is motivated by the cross-linguistic generalization that state/change-of-state lability occurs with verbs, but not with nouns or adjectives (Bowler et al. 2022). Similar categorical restrictions on type-shifting operations are attested in the formal semantics literature, if only implicitly. For example, Partee’s  $\exists$  and  $\iota$  type-shifters only apply to NPs, though they are type-theoretically compatible with the assumed type of VPs,  $\langle e,t \rangle$ , as well. We simply

encode a similar, explicit category restriction in Inchoative Shift, and thereby tie our analysis into Bowler et al's (2022) cross-linguistic generalization.