THE STORY OF A LIGHT VERB MODAL IN CHINESE

Modals based on light verbs are pervasive across languages (e.g. English *have to*), but often grammaticalized away from their origin. We shed light on how such modals originate and develop by looking in historical corpora at Chinese modal DE (*děi, dé*) built from the light verb 'get' (see Sun 1996 for work on uses of DE historically). Results support hypotheses from Jeretič 2021: a) light verb modals are formed from type-flexible existential semantics, with an underspecified relation encoding possession or modality; b) a shift to necessity through a stage where it is obtained from possibility via exhaustification.

HISTORICAL CORPUS STUDY. We collect pre-modern Chinese uses of DE from historical sources digitalized by Chinese Text Project and Wikisource, and annotate them for force (possibility ◇/necessity □), flavor (circumstantial, teleological, deontic, ability), and form (±negation, co-occurring particles, etc.). Our results for modal uses of DE are summarized below (modern uses based on introspection):

BCE 5th - CE 9th C.	CE 16-17th C.		CE 18-19th C.		Modern	
◇	◇	*+hái/yě*: □	◇	*+(hái/yě)*: □	+NEG: ¬◇	(*+hái*:) □
deon,circ	deon,circ,	teleo	deon,circ	deon,circ,	deon	deon,circ,
abil	abil		abil	teleo		teleo,epist

FROM LEXICAL VERB TO POSSIBILITY MODAL. We focus on analyzing the origin of the possibility modal use of DE in this abstract for space reasons. The first available use of DE was its lexical verb use, as reported in Meisterernst 2019: in the Early Archaic Chinese text *Shijing*, DE is only attested as a lexical predicate with the basic meanings 'get, obtain, find, catch'. The possibility uses of DE are later found in written texts from BCE 5th-3rd. We established our corpora for this period of time based on sections from *Lunyu* and *Liji*. In 63704 characters, 95 occurrences of DE were found, with 47 modal uses (100% possibility; 55.32% circumstantial, 29.79% deontic, 14.89% ability).

(1) de jian junzi zhe, si ke yi.
DE see gentleman NOM then sufficient P
'To get to meet a true gentleman - that alone is enough.' (Circumstantial possibility, *Lunyu*)

(2) tugong bu xing, dafu bu de zao chema.
civil.engineering NEG flourish official NEG DE build chariot
(Talking about times of natural disaster) 'Civil engineering should be halted, and officials are not allowed to build chariots.' (Deontic possibility, *Liji*)

ANALYSIS. We identify an initial stage in which non-modal and modal DE are subsumed under one type-flexible lexical item. We analyze non-modal DE as a change of state whose resulting state is a possession (individual-individual) relation, modeled by an implicit causing event. Modal DE is the same but involves a world-world relation. The semantics is exemplified below with Ling as the subject:

(3) $[\![\text{Ling DE benevolence.}]\!]^w = \exists e.\exists e'.\text{CAUSE}_w(e',e) \wedge \exists x.\text{benevolence}_w(x) \wedge R_w(\text{Ling},x,e)$

(4) $[\![\text{Ling DE to go.}]\!]^w = \exists e.\exists e'.\text{CAUSE}_w(e',e) \wedge \exists w'.\text{Ling-go}(w') \wedge R_w(w,w',e)$

The possibility modal meaning is obtained by existential quantification over worlds in which Ling goes. Just like the possession relation R is underspecified (e.g. 'ownership', 'attribute'...), the modal relation is too (as in standard Kratzer modal semantics). We assume it picks up by default circumstantial accessibility ($\lambda w'.\lambda w.$the relevant circumstances in w obtain in w'). The semantics encodes an implicit causing event to the relation state: we assume this event is the circumstances relevant for the modal relation. In its 'receive' meaning, non-modal DE encodes an implicit giver as the agent of the causing event; in this case, the only possible modal meaning is deontic.

FROM POSSIBILITY TO NECESSITY. We now briefly discuss the emergence of the necessity modal force. In CE 16-17th c., we observe that DE has a necessity meaning when it co-occurs with particles *hái* 'still' or *yě* 'also'. We propose that HAI and YE function as exhaustifiers of DE's subdomain alternatives.

(5) a. $[\![\text{ DE p }]\!] = \exists w \in M.p(w)$ b. $\text{Alt}(\text{DE p}) = \{\exists w \in M'.p(w) | M' \subseteq M\}$

Modeling the meaning of HAI/YE after the EXH operator from Bar-Lev and Fox 2020, we obtain a scaleless implicature, i.e. a pragmatic strengthening to necessity.

(6) $[\![\text{ HAI/YE DE p }]\!] = \forall w \in M.p(w)$

This analysis finds support in that 1) the HAI particle is found at the left edge of disjuncts in that time period, a common place for an exhaustifier to apply and force exclusivity, and 2) both particles HAI and YE have 'even'-like uses obtained by exhaustifying over more likely alternatives to a proposition.