A causal core to HOW/WHY alternations: evidence from Changsha Hua *osi*

Phenomenon The phenomenon in which a HOW-interrogative receives a WHY interpretation has been documented across languages (Jaworski, 2009; Šimík and Sláma, 2023; Pak, 2017; Sæbø, 2016). Changsha Hua, a Xiang Chinese variety, displays a similar alternation in the interpretation of the interrogative *osi*, which can receive either a means and method HOW reading or a causal WHY reading. The question in (1) is ambiguous between these two interpretations.

(1) Zouyi osi lai xiojiao?
Zouyi HOW/WHY come school
'How did/will Zouyi come to school?' *means and method* - HOW
'Why did/will Zouyi come to school?' *causes* - WHY

This ambiguity raises the question of what meaning *osi* contributes such that it can yield both HOW and WHY readings. This project proposes that this syncretism has a systematic explanation: HOW-*osi* and WHY-*osi* share a common causal core, differentiated only by the type of causal relata.

Semantic Proposal: two denotations for *osi* I adapt a Hamblin framework of alternative question semantics, in which the meaning of a question is modeled as a set of possible answers (Hamblin, 1973; Karttunen, 1977). Following Tsai's 2008 height-based analysis of Mandarin *zenme*, I adopt his structural split as a syntactic foundation and propose two denotations for *osi* conditioned by syntactic height. The central claim is that these two interpretations are not arbitrary homophones but type-distinct instantiations of a single CAUSE predicate, and this semantic contrast arises from the syntactic height at which *osi* is interpreted. Under a HOW reading, *osi* is evaluated in the VP domain, and the CAUSE predicate applies to event-level arguments. Under the WHY interpretation, *osi* functions as a sentence-level operator, with CAUSE applying to propositional arguments.

(2) $[\![osi_{HOW}]\!] = \lambda f_{\langle v,st\rangle}\lambda e\lambda w\ .\ \exists e'[f(e')(w) \wedge \textsc{cause}(e,e')]$

(3) $[\![osi_{WHY}]\!] = \lambda q_{\langle st\rangle}.\{p : \exists r_{\langle st\rangle}[p = \lambda w.\textsc{cause}(q,r)(w)]\}.$

This proposal unifies the two interpretations of *osi* questions as both questions about causes, with the HOW interpretation asking about eventive causation and the WHY interpretation about propositional causation, and provides a conceptual motivation for the apparent syncretism.

Height-conditioned selection In Mandarin, Tsai (2008) accounts for a similar HOW/WHY alternation through a syntactic split: method-*zenme* is a VP-modifier, while causal-*zenme* is generated higher in the left periphery and takes the entire clause as its complement. This height distinction is supported by the distribution of *zenme* with respect to modals, where pre-modal *zenme* obligatorily yields a causal reading, while post-modal *zenme* allows only a means reading. Zhou and Hsieh (2024) show that Changsha Hua *osi* patterns similarly in its interaction with modals.

(4) a. Zouyi koyi **osi** ke xiojiao?
Zouyi MOD **how** go school
'How can Zouyi go to school?'

b. Ta koyi zuo ce ke (xiojiao)
3.SG MOD to.take bus go (school)
'He can ride the bus to school.'

(5) a. Zouyi **osi** koyi ke xiojiao?
Zouyi **how** MOD go school
'Why can Zouyi go to school?'

b. ta bin hao ga ta
3.SG illness good ASP ASP
'His illness got better.'

Optional particles likewise reveal this height split: In Changsha Hua, *ti* surfaces low in the verbal domain, whereas *ta* functions as an aspect marker, closing the event and producing a propositional

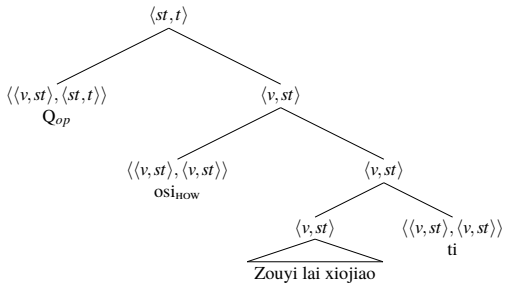
constituent. These markers independently corroborate the modal evidence. Consider the two questions in examples (6) and (7) sharing the interrogative *osi*, differing by particles *ti* and *ta*. Crucially, sentences without the modals or particles *ti* or *ta* are ambiguous, whereas their presence forces HOW and WHY readings respectively.

(6) Zouyi **osi** lai ti xiojiao?
Zouyi **how** to.come TI school
'How did Zouyi come to school?'

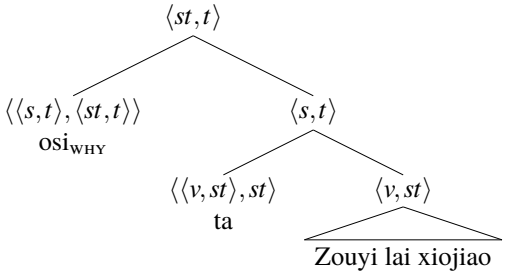
(7) Zouyi **osi** lai ta xiojiao?
Zouyi **why** to.come ASP school
'Why did Zouyi come to school?'

Descriptive work on Xiang (Wu, 1999, 2005) identifies *ti* to be a coganate with Mandarin *de*, which indicates various forms of prenominal modification (Cheng and Sybesma, 2006). Similarly, I analyze *ti* in (6) as an indicator of verbal adjunct modification, taking an event as its argument. This structure supports the HOW reading asking for means and methods, as illustrated by (8). When *ti* appears, *-si* merges low in the clause and accessing an event-level argument, taking on the type $\langle\langle v,st\rangle,\langle v,st\rangle\rangle$, abstracting over events that stand in a causal relation to the event in the prejacent. The denotation of *-si* introduces a CAUSE(e,e') relation, where e' is the event of Zouyi coming to school. The denotation of the question in (6) is thus a set of alternative answer varying by the event e that stands in the CAUSE predicate with e'. Informally, this means-question asks: What event caused the event of Zouyi's coming to school?

(8)



(9)



By contrast, *ta* is a perfective aspect marker, which closes off the event then yields a propositional constituent. This case, *osi* must scope higher, as in (9), and the only semantic argument available to it at this attachment site is propositional. In (7), the perfective *ta* closes off the event, and the denotation of *osi* introduces a CAUSE(q,r) relation, where r is the proposition in the prejacent that Zouyi came to school. The semantics of the question in (7) is thus a set of alternative answers varying by the proposition q that stands in the cause predicate with r. Informally, this yields a causal interpretation: Which proposition caused it to be the case that Zouyi came to school?

Predictions and implications A type-driven causal semantics yields several empirical advantages. First, it predicts the absence of manner readings by Changsha Hua *osi*: manner properties do not constitute causal precursors and therefore fall outside the domain of the operator. Changsha Hua confirms this. Second, the analysis proposes an explanation for how the method–cause alternation arises cross-linguistically in HOW/WHY questions. Changsha Hua provides evidence that causal structure, rather than lexical ambiguity, underlies the broader alternation. This proposal suggests that interrogatives may be organized by the conceptual domains they encode (e.g., causal explanation) rather than by syntactic configuration (i.e. adjunct vs. argument quesitions) or morphological form (i.e. *wh*-questions) alone. This, in turn, invites a broader reconceptualization of the interrogative space in semantic terms.

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