TRINITY IN UNITY:
ASKING WHAT, HOW AND WHY WITH *SAO*
IN VIETNAMESE[*]

Trần Phan
National Tsing Hua University

ABSTRACT

Sao in Modern Vietnamese is primarily interpreted as either 'how' or 'why'. We argue it is first and foremost a *what*-element. *Sao*'s omnipresence in adverbial formatives is attributable to the tendency for *how* and *why* to be morphosyntactically built upon *what* in the language. This supports Tsai's (1999b) unselective binding of nominal *wh*-phrases and a *wh*-adverb/*wh*-nominal [1] distinction. We further tease apart various *sao*-related *wh*-constituents in syntactic-interpretative terms before offering a critique of three accounts on strategies for licensing Vietnamese *wh*-questions and on the status of *vậy* and *thế*[2] as binding licensers.

Keywords: *wh*-adverb/nominal, unselective binding, cartography, light verb, grammaticalization, Vietnamese

---

[*] We are grateful for the two anonymous reviewers for their challenging questions and constructive comments. Special thanks go to Wei-Tien Dylan Tsai for his encouragement and support during the production of this paper. All errors are, of course, ours.
[1] A note on terminology. Following Ernst (2002:7), we use *adverbial* to refer to phrasal modifiers of verbs or 'sentential' objects like IP and CP, and *adverb* specifically to adverbials of the category Adv. A *nominal adverbial* (Fujii and Takita 2007) refers to an adverbial containing a nominal. Finally, *adjunct* is used in distinction with *argument* (as a phrase semantically required by some predicate), and denotes adverbials in general.
[2] *Vậy* and *thế* are largely synonymous. The discussion of *vậy* is applicable to *thế* and *vice versa*, unless specified otherwise.

1. INTRODUCTION

Vietnamese is an archetypal analytic language which exhibits *wh*-in-situ. A number of these *wh*-phrases share the same morpho-syntactically simplex form *sao*, although some of them allow more complex alternatives in the language's inventory. The aim of this paper is two-fold. First, it sets out to outline the hierachy of these *sao*-related formatives and uses an array of syntactic diagnostics to confirm Tsai's (1999b et seq.) *wh*-adverb/*wh*-nominal dichotomy in Vietnamese. We suggest that Vietnamese data attests Tsai's establishment of the sentential adverb/*v*P-modifier separation which corresponds to the semantic distinction between quantificational operators and event predicates.

Second, this study dissects relevant *sao*-related formatives to show that *how*- and *why*-denoting forms, both adjunct and argumental, are syntactically built upon a nominal *sao* from a diachronic perspective. Synchronically, those retaining their original internal structure are licensed in situ via unselective binding thanks to a discernible nominal component, whereas those whose internal architecture is long gone function as genuine adverbs and undergo LF movement. We then delve into the murkier waters within the Left Periphery (LP) to substantiate the distinction between the merge sites of denial and causal *wh*-adverbs along the lines of Tsai 2008. The *v*P-domain also receives scrutiny which sheds light on where PP modifiers surface, what dictates their post-spellout positions and how to distinguish between these adverbial phrases and proper predicates.

To show that a *sao*-nominal component is operative in *v*P-modifiers but not in CP-internal adverbs, this study sketches out the various ways *how* and *why* constituents and their corresponding construals come about syntactically. The task is done mainly by adopting a light verb account in Huang 1994, 1997, 2008 and Lin 2001 which views light verbs as eventuality predicates functioning to constitute phrase structures and license sentential arguments. We further take on Tsai's (2014, 2015) insights regarding the inner-outer dichotomy of light verbs: CAUSE as an eventuality predicate heads a functional projection in LP, while DO and others are confined to *v*P. Also assumed is Rizzi's (2004) fine-grained

Split-CP whose distinct functional projections are argued to host various interpretations of *sao*-related adverbials.

Finally, we offer a critique of the following three accounts on strategies for licensing Vietnamese *wh*-in-situ, with a focus on sentence-final particles (SFPs) *vậy* and *thế* and their syntactic nature. We suggest that these particles are not *wh*-particles and do not encode *realis* mood (contra Bruening and Tran (2006) (henceforth B&T) and C.-Y. Tsai (2009)). Although they play no role in determining whether unselective binding is at play (C.- Y. Tsai 2009; Duffield 2019), they are argued to be syntactically integrated nonetheless and should not be treated as mere discourse objects (contra Duffield (2019)). Several other claims in C.-Y. Tsai 2009 are revisited where relevant.

The paper is organized as follows. Section 2 outlines the general structural and interpretive distinctions between a myriad of *sao*-related *wh*-constituents, with special focus on the adverb/nominal dichotomy. Section 3 offers a glimpse into the morpho-syntactic makeup of these *wh*-constituents while arguing for the inherent nominal nature of *sao*. Section 4 is dedicated to an account of SFPs *thế* and *vậy*. Section 5 concludes the paper.

2. VIETNAMESE *WH*-ADVERB/*WH*-NOMINAL DISTINCTION

C.-Y. Tsai (2009) adopts Tsai's (1999b, 2008, inter alia) approach to Mandarin *wh*-questions and suggests a similar distinction between Vietnamese *wh*-adverbs and *wh*-nominals. The latter are licensed through unselective binding by an implicit Q-operator in Spec,CP, the former through covert XP movement. This differentiation shows causal/denial *(làm) sao* 'how come' and reason *(vì) sao* 'why' to be genuine adverbs undergoing movement at LF. They merge in the C layer, unlike modifiers denoting instruments, methods, and so on, which are *v*P-level *wh*-nominal adverbials.

Below we catalog four syntactic diagnostics, the first three originally designed for Mandarin in Tsai 2008, to give the readers an overall idea of how this cross-linguistic *wh*-adverb/*wh*-nominal distinction manifests

itself in Vietnamese and to bring out the defining nature of the two categories. They further reveal a more complex picture concerning *sao*-related phrases: the same *wh*-phrase might occupy more than one structural position, and one surface position might be filled by two distinct *wh*-constituents. Discussions regarding previous works pertinent to the topic are included where relevant.

2.1 Diagnostic I: Agentivity Restriction

Tsai (2008, 2015) claims the instrumental *how* (in fact, *v*P-level *wh*-adverbials in general) is strictly agent-oriented, hence prohibited in agentless constructions. The same pattern is attested in Vietnamese when unaccusative and sentient verb constructions, (1) and (2) respectively, are the testing grounds. The *a*-examples are fine since higher adverbs like causal/denial *(làm) sao* 'how come' and reason *(vì) sao* 'why' survive said contexts. Note that (2b) is ungrammatical because the high adverb *(vì) sao* does not have an interpretation low inside *v*P, not because it is agent-oriented and is thus banned like instrumental/method *(làm) sao* in (1b).

(1) a. Cuốn sách **(làm) sao** (mà)[3] xuất hiện ở đây?
     CL[4] book do what PRT appear at here
     'How come the book appears here?'
     ≈ 'What is the cause x such that the book appears here due to x?' [causal], or
     ≈ 'The book could/should not appear here!' [denial][5]

---

[3] *Mà* as a particle is optional but strongly preferred with causal or denial readings as it conveys the speaker's mirativity and/or negative attitude (Phan and Tsai 2022). Note that *mà* also functions as a relative clause marker and a conjunctive. For the sake of simplicity, we will not include this particle in subsequent examples unless necessary.

[4] The abbreviations used in this paper are glossed as follows: ASR: assertion marker; CL: classifier; CONJ: conjunction; COP: copula; DUR: durative marker; FUT: future marker; INC: inchoative marker; NEG: negative marker; PRN: pronoun; PASS: passive marker; PAST: past tense marker; POSS: possessive marker; PRT: particle; REL: relative marker; TOP: topic marker; VOC: vocative.

[5] The change in illocutionary force from information-seeking to denial is further highlighted with a marked prosody on the part of the denial reading.

b. *Cuốn sách xuất hiện ở   đây (**làm**) **sao**?
    CL   book appear   at   here do   what
  Intended: 'By what means does that book appear here?'
  [*instrumental], or
  'With what manner does that book appear here?' [*manner]

(2) a. Tí   (**vì**) **sao**   thích   cuốn sách   đó?
      Ti   for what like   CL   book   that
    'Why does Ti like that book?' [reason]
  b. *Tí thích cuốn sách   đó (**vì**) **sao**?
      Ti   like CL   book   that for what
    Intended: 'Why does Ti like that book?' [*reason]

Attempting to block the method/instrumental reading of *(làm) sao* using passive constructions, C.-Y. Tsai (2009:75) suggests that while *làm sao* in (3a) construes a causal reading due to its highest scope, in (3b) it occupies a *v*P-peripheral position but is left with no interpretations other than the causal one under the effect of non-agentivity. In (3c) its clause-final position forces a method reading (as well as a resultative reading), even though this construal was previously dismissed in (3b) citing the passive construction.

(3) a. **Làm sao**   cái   chén (bị)   vỡ?
      how   CL   bowl PASS   break
    'How come the bowl was broken?' [causal]
    #'By what means was the bowl broken?' [*method]
  b. Cái   chén **làm sao** (bị)   vỡ?
    CL   bowl how   PASS   break
    'How come the bowl was broken?' [causal]
    #'By what means was the bowl broken?' [*method]

  c. *Cái chén (bị)   vỡ   **làm sao**?[6]
       CL   bowl   PASS   break   how
     'By what means was the break [sic] broken?' [method]
     'To what result was the break [sic] broken?' [resultative]
    (C.-Y. Tsai 2009:75)

We suggest the subject in (3b) is simply topicalized and *làm sao* is still generated in CP. This is because *(làm) sao* must precede CP-level adverbs like evaluative *không may* 'unfortunately' and epistemic *chắc chắn* 'surely' (cf. Cinque 1999; Giorgi 2010), see (4).

(4) a. Cái chén {*không may} (**làm**) **sao** {không may} bị   vỡ?
       CL   bowl   unfortunately   how   unfortunately PASS break
     'How come the bowl was unfortunately broken?' [causal/denial]
     #'By what means was the bowl unfortunately broken?' [*method]
   b. Cái   chén {*chắc chắn} (**làm**) **sao** {chắc chắn} bị   vỡ?
       CL   bowl   surely   how   surely   PASS break
     'How come the bowl was surely broken?' [causal/denial]
     #'By what means was the bowl surely broken?' [*method]

Furthermore, for (3b) to be grammatical, *làm sao* has no choice but to merge CP-internally, because the sentences in (3) exhibit not 'canonical' passives with transitives (in many ways similar to Mandarin *bei* sentences), but 'passives' of intransitives, which are truly agentless (Simpson and Ho 2013).[7] Besides, these predicates typically express a resultant state (here the state of 'being broken'), and not a (causing) event, thus a resultative reading with *làm sao* is also impossible. As such, post-verbal *làm sao* in

---

[6] The brackets and the asterisk are ours.

[7] That *bị* in this kind of construction signals and emphasizes "the negative impact of the event on the subject of the verb" (Simpson and Ho 2013:168) and is in fact optional shows that the label 'passive' here is somewhat problematic. We do not explore this issue any further.

 (i) (**Làm**) **sao** cái   chén (**bị**)   vỡ?
      do   what   CL   bowl   PASS   broken
    'How come the bowl is in the state of being broken?'

(3c) should be ruled out since it cannot have a plausible construal, be it manner, method, or resultative.

Vietnamese 'canonical' passives with transitives indeed allow both construals, as evidenced by (5), and thus are agent-oriented. This explains why they are transformable into a 'long passive' by adding an overt agent argument, as in (6).

(5) a. Tí   (**làm**) **sao**   bị   lừa?
     Ti   do   what PASS deceive
     'How come Ti got deceived?' [causal/denial]
  b. Tí   bị   lừa   (**làm**) **sao**?
     Ti   PASS deceive do   what
     'How did Ti get deceived?' [instrumental/method]

(6) Tí bị   **Tèo** lừa   (**làm**) **sao**?
   Ti PASS Teo deceive do   what
   'How did Ti get deceived by Teo?' [instrumental/method]

On the contrary, this 'long passive' is unavailable with the 'passive' of intransitives, a prediction borne out in (7). This is straightforward as pure unaccusatives like *vỡ* take only an internal argument. That these intransitives do not tolerate a logical external argument consequently clarifies why the 'passive' construction featuring them, but not the 'canonical' passive, is good to filter out *v*P-level *sao*-adverbials (contra C.-Y. Tsai 2009).

(7) (**Làm**) **sao**   cái chén (bị) (***Tèo**) vỡ?
    do   what CL bowl PASS Teo broken
    'How come the bowl is in the state of being broken (#by Teo)?'

2.2 Diagnostic II: Island Constraints

Tsai (2008) hypothesizes that *wh*-adverbs cannot be embedded inside an island since they must undergo LF movement, while *wh*-nominals are not subject to island constraints. The possibility of extracting only pre-

verbal *sao*-elements from (Sentential) Subject, Adjunct, and Complex NP island constructions in (8), (9) and (10) respectively shows that a similar distinction is observed with Vietnamese data.

(8) a. *[Subject Tí **(làm) sao** cãi lại] khiến mẹ nó
           Ti do what argue back make mother PRN
   buồn nhất?
   upset most
   Intended: 'What is the cause x such that Ti talking back at his mother due to x would make her upset the most?' [*causal]

  b. [Subject Tí cãi lại **(làm) sao**] khiến mẹ nó
           Ti argue back do what make mother PRN
   buồn nhất?
   upset most
   'What is the manner x such that Ti talking back at his mother with x would make her upset the most?' [manner]

(9) a. *Tí vẫn giỏi Toán [Adjunct mặc dù **(làm) sao** nó học]?
   Ti still good maths even.though do what PRN study
   Intended: 'What is the cause x such that Ti is still good at maths even though he studies due to x?' [*causal]

  b. Tí vẫn giỏi Toán [Adjunct mặc dù nó học **(làm) sao**]?
   Ti still good maths even.though PRN study how
   'What is the manner/method x such that Ti is still good at maths even though he studies with x? [manner/method]

(10) a. *Tí thích nhất [CNP người [CP (mà) **(vì) sao** <người> làm việc]]?
    Ti like most person REL why person work
    Intended: 'What is the reason x such that Ti likes those who work for x the most?' [*reason]

   b. *Tí thích nhất [CNP người [CP (mà) <người> làm việc **(vì) sao**]]?
    Ti like most person REL person work for what
    Intended: 'What is the purpose x such that Ti likes those who work for x the most?' [*reason]

The *a*-examples show that causal *(làm) sao* (8a, 9a) and reason *(vì) sao* (10a) exhibit island effects. On the contrary, *(làm) sao* with a manner/method reading in (8b) and (9b) are insensitive to blocking contexts. Ungrammaticality occurs in (10b) because the high adverb of reason *(vì) sao* cannot have a reading post-verbally (but see 3.5). This pattern is straightforward if the *a*-examples feature genuine *wh*-adverbs, while *(làm) sao* in the *b*-examples is a nominal adverbial phrase, assuming nominal elements are responsible for unselective binding, and these island-insensitive adverbials contain a *wh*-nominal. In section 3, we show that the latter assumption is indeed the case.

Note that Duffield (2019) opposes B&T's postulation of unselective binding as a strategy to license Vietnamese *wh*-questions on two main grounds: the non-existence of relevant islands in their account and the syntactic non-integration of *thế* as the alleged licenser of a Q-marker in C. Concretely, he argues that B&T's islands are but main clauses (see Duffield 2019 for extended arguments). Although these putative islands appear to be of the same types as those presented here, we maintain that (8-10) are genuine configurations for testing island effects: they are intentionally constructed to avoid alternative analyses that might allow *wh*-elements to be interpreted as part of a main clause. The syntactic nature of *thế* will be discussed at length in section 4 where we claim that it is syntactically integrated (contra Duffield (2019)), albeit its insignificance in licensing *wh*-interrogatives (C.-Y. Tsai 2009; Duffield 2019).

2.3 Diagnostic III: Scope-bearing Elements

Intervention effects occur when an intervening quantificational element, also known as a scope-bearing element (SBE), acts as a barrier for the LF movement of a *wh*-in-situ (see, inter alia, Beck 1996; Pesetsky 2000). C.-Y. Tsai (2009:73-74) applies Tsai's (2008) list of SBEs distinguishing Mandarin CP/IP-internal adverbs from *v*P-internal *wh*-adverbials and suggests a similar pattern for Vietnamese. Given these SBEs (e.g. modals, negation, adverbs of quantification, aspect markers),

except for control verbs, are IP-internal, their ability to draw a line between CP-level and *v*P-level *wh*-adverb(ial)s are straightforward.

Note in passing that the passive element *bị* as in (5) may serve the same purpose as these landmarks. If we accept a bi-clausal analysis of Vietnamese 'canonical' passives the same way we do with the Chinese ones (see Huang 1999, inter alia), then any *sao*-related forms preceding *bị* must be an adverb taking a matrix scope, whereas those following *bị* are PP modifiers located in the embedded clause, as already evidenced in (5). This same rationale is behind the use of control verbs as delimitators.

2.4 Diagnostic IV: SFP *đây*

We propose that SFP *đây,* originally a proximal deictic element meaning 'here', can filter out *wh*-adverbs in LP. The absence of *đây* allows (11a) to have a causal or denial reading, while its presence in (11b) prohibits such construals.

(11) a. (**Làm**) **sao** (mà) Tí đi Đài Bắc?
　　　 do　what　PRT　Ti　go　Taipei
　　　 'How come Ti went to Taipei?' [causal/denial]
　　b. (**Làm**) **sao** (mà) Tí đi Đài Bắc **đây**?
　　　 do　what　PRT　Ti　go Taipei　PRT
　　　 #'How come Ti went to Taipei?' [*causal/*denial]
　　　 'How will Ti go to Taipei? (I have no idea.)' [method]

This anti-denial effect likely comes from a speaker's commitment *đây* realizes: (11b) presupposes the event 'Ti going to Taipei' will somehow be realized, there is no counter-expectation, thus denial reading is unavailable. In *wh*-questions, most of the content except for the information the *wh*-word represents is taken for granted, though not characterized as either fully or not at all committed (Heim and Wiltschko 2020:71). This is aligned with Klein's (2006:253–254) view that *wh*-questions contain presuppositions about "the truth of an underlying less specific proposition" absent in yes-no questions. In (11b) "Ti going to Taipei" is presupposed. What the speaker cannot show commitment to is

the missing information *(làm) sao* captures. We take SFP *đây* to be a deixis-related element relating the proposition to the speaker at the utterance time (cf. Martins's (2012) discussion on European Portuguese *lá/cá* 'there/here'; see also Tsoulas 2017). *Đây* makes salient the speaker's viewpoint with respect to the reported proposition, which has an (indirect) effect of bolstering the speaker's epistemic commitment towards this open proposition. As a 'pure' spatial deictic locative, *đây* anchors an entity to the speaker; as an SFP related to the speaker's epistemic state, what it anchors to the speaker and the utterance time is a proposition. In a denial context, *(làm) sao* functions similarly to a marker of *metalinguistic negation* (Horn 1985) in communicating a denial of the assertability of an earlier utterance or a common ground presupposition. Since in (11b) the open proposition reported is both committed by *đây* and denied by *(làm) sao*, a semantic crash occurs.

That the causal reading is blocked might well be related to the incompatibility of *đây* and past events in general, as evidenced in (12). Note that causal *(làm) sao* is fundamentally associated with a past tense reading (cf. Tsai 2008). This is straightforward given the causing event which *(làm) sao* captures must be established prior to its impact on the effect event presupposed by the speaker. If we assume as an SFP, *đây* ties the question to the utterance time, it is understandable why it does not go well with the "pastness" of the information inquired by causal *(làm) sao*.

(12) a. (**Làm**) **sao** Tí **sẽ**/ *__*đã__ đi Đài Bắc **đây**?
       do what Ti FUT PAST go Taipei PRT
       'How would Ti go to Taipei? (I have no idea.)' [method]
   b. Tí **sẽ**/ *__*đã__ đi **đâu** **đây**?
       Ti FUT PAST go where PRT
       'Where will Ti go?' [locational]

Also recall that *v*P-internal *wh*-adverbials are tolerable only in sentences featuring an agentive subject. We thus predict that the insertion of *đây* to agentless sentences as those discussed in 2.1 yields ungrammaticality, because the causal/denial reading of *(làm) sao*, the only reading possible in such a context, is incompatible with *đây*. This

prediction is also borne out in (13). There is admittedly more to be understood about the nature of SFP *đây*, but we will leave it for future research.

(13) a. *Tí **(làm) sao**   thích   cuốn sách đó   **đây**?
       Ti do what   like   CL   book that PRT
  b. ***(Làm) sao** cái chén bị vỡ   **đây**?[8]
       do   what CL bowl BI broken PRT

Keen readers may notice a method reading for (11b) seems to run counter to our previous claim that manner/method-denoting *(làm) sao* only surfaces post-verbally and will not be found in the CP-domain. Assuming that *wh*-adverbial *(làm) sao* is exclusively generated *v*P-internally, how can (11b) receive a method reading? Here we take the adverbial to raise from *v*P to Spec of the Mod(ifier)P(hrase) in Rizzi's (2004) revised C system.[9]

(14) Force Top* Int Top* Focus **Mod*** Top* Fin IP
    (Rizzi 2004:242)

ModP is the landing site for both adverbs and PP modifiers. A preposed adverb(ial) in ModP is highlighted (Rizzi 2013:203) and shares with a topic a (discourse-)prominence.[10] This highlightedness is aligned

---

[8] (13b) with a causal interpretation is only good if *đây* is associated with a proximal deictic reading: imagine a context where the speaker asks (13b) while pointing at the broken bowl in front of her.

[9] A preposing to ModP is also available with method-denoting alternatives like the prepositional phrase *bằng cách nào* 'by which method' below. In this preposed position, the PP is also more marked as it necessarily adds a sense of perplexity to the host clause.

  (i) *không* *rõ*   ***bằng*** ***cách*** ***nào***   *nó* *lên* *được* *máy bay*
      NEG clear by   way   which PRN go.up can   airplane
      'it is unclear by which way did it get into the airplane (the situation is perplexing)'
      (https://danviet.vn/phat-hien-ran-tren-khoang-may-bay-phai-ha-canh-khan-cap-20220212115522819.htm)

[10] This preposed element however differs from a topic in "not requiring a connection to the discourse context," and also from a focus in "not requiring the contrastive focal

with the fact that an additional sense of perplexity typically emerges when adverbial *(làm) sao* is fronted, as marked with "I have no idea" in the translation of (11b) and (12a). Note that as CP-level *(làm) sao* is either causal or denial by default, this method reading can only be enforced in the presence of *đây*.

The hypothesis that *(làm) sao* in (11b) is moved from within *v*P will receive justification if relativized minimality (RM) effects (Rizzi 1990) are observed in the presence of an intervening adverb. This idea is based on Rizzi's (2004:244) claim that intervening adverbs ban a preposing (of non-focal nature) of an adverb to LP. The contrast between (15a) and (15b), both featuring the epistemic *nhất định* 'definitely', shows that CP-internal *(làm) sao* with a marked method reading is indeed preposed, as only (15b) gives rise to an RM-effect. Such a preposing is unproblematic in the absence of *nhất định*, see (15c). Note further that since *(làm) sao* in (15c) precedes the subject *mày* in Spec,TP, it is not possible for this adverbial to be part of the *v*P-layer.

(15) a. Tí **nhất định** sẽ đi Đài Bắc **(làm) sao** đây?
　　　 Ti definitely FUT go Taipei do what PRT
　　　 How will Ti definitely go to Taipei?

　 b. *(**Làm**) **sao** Tí **nhất định** sẽ đi Đài Bắc <(làm) sao> đây?
　　　　 do what Ti definitely FUT go Taipei do what PRT
　　　 Intended: 'How will Ti definitely go to Taipei? (I have no idea.)'
　　　 [*method]

　 c. (**Làm**) **sao** Tí sẽ đi Đài Bắc <(làm) sao> đây?
　　　　 do what Ti FUT go Taipei do what PRT
　　　 'How will Ti go to Taipei? (I have no idea.)' [method]

So far, we have confirmed a *wh*-adverb/*wh*-nominal dichotomy in Vietnamese and provided a general view on the inventory of *sao*-related *wh*-phrases. The next section will explore the origin of these readings along with their corresponding morpho-syntactic makeup.

---

interpretation" (Rizzi 2004:242).

3. ASKING *HOW* AND *WHY* WITH *WHAT*

The crucial difference between *wh*-adverbs and *wh*-nominals, according to Tsai (1999a et seq.), lies in the morpho-syntactic makeup of the *wh*-adverbials in question. To wit, *wh*-nominals contain a nominal head, while *wh*-adverbs do not. This is grounded on the idea that only nouns may introduce variables in situ and are subject to unselective binding. To maintain this assumption, it is desirable to empirically show that a nominal is operative in *sao*-adverbials and *sao*-arguments, but not in *sao*-adverbs. Such evidence will help overcome the limitation in C.-Y. Tsai's (2009) discussion of the Vietnamese *how-why* alternation, where the nominal nature of *sao*-related adverbials is taken for granted.

In this section, we dissect the Vietnamese *how* and *why sao*-phrases to show that synchronically an operative nominal head is present in all cases of *v*P-level adverbials (and arguments) while absent in CP-level adverbs, although they are all diachronically built upon a nominal *sao*. We first start with a detailed discussion of *sao* as a *wh*-nominal, something that remains untouched in previous works on the topic.

3.1 *Sao* Means *What*

The *wh*-element *sao* is commonly associated with *how* and *why* readings, especially method *how* and reason *why*.[11] We claim it is first and foremost a nominal meaning 'what' which inquires about propositions. While both *gì* and *sao* are *wh*-nominals in the sense of Tsai 1994 et seq., *sao* is only capable of quantifying over propositions (and properties), unlike *gì* 'what' which quantifies over both propositions (and properties) and individuals. Unsurprisingly, verbs that typically select *sao* are those taking clausal complements (e.g. *nghĩ* 'think', *nói* 'say', *tính* 'plan'), while

---

[11] Thompson (1987:143, 147) defines *sao* as either "how, why" or "however, in whatever way, for whatever reason." For Nguyễn (1997:132), *sao* means "how, in what way, for what reason, why." An exception is probably Hoàng (2006), who sees *sao* first as a "word used to indicate something yet to be known clearly" (Hoàng 2006:848).

a verb like *ăn* 'eat', which exclusively s-selects individual-denoting elements, is only compatible with *gì*, as the contrast in (16) shows.[12]

(16) a. Tí   nghĩ   **sao**/   **gì**?
      Ti   think   what   what
     'What did Ti think?'
    b. Tí   ăn   (***sao**)/   **gì**?
      Ti   eat   what   what
     'What did Ti eat?'

This same rationale underlies *sao*'s occurrence in copular constructions which feature so-called "propositional nouns," i.e. nouns labelling a proposition (Hankamer and Mikkelsen 2021), such as *ý tưởng* 'idea' or *giải pháp* 'solution', see (17). *Sao* is also found in a disjunctive clause headed by disjunctive *hay* 'or' to introduce an alternative proposition a question ranges over, as in (18a).[13] We take (18a) to be derived from (18b) via the ellipsis of the bracketed constituent.

(17) Giải pháp   của   Tí   là   **sao**?
     solution   POSS   Ti   COP   what
     'What is Ti's solution?'

(18) a. Tí   muốn   đọc   báo   hay   **sao**?
      Ti   want   read   newspaper   or   what
      'Ti wants to read newspapers or (doing) what?'
    b. Tí   muốn   đọc   báo   hay   [Tí   muốn   (làm)] **sao**?
      Ti   want   read   newspaper   or   Ti   want   do   what
      'Ti wants to read newspapers or he wants to do what?'

---

[12] (16b) is fine with *sao* if it is interpreted as a manner/instrumental/method adverbial, a fact to be returned to later.

[13] The Q-particle *sao* might well be reanalyzed from nominal *sao* in this particular configuration. We will not pursue this matter any further here.

The proposal that *sao* is originally a nominal receives support from the morpho-syntactic simplicity *what*-denoting *sao* exhibits: it can only appear in its simplex form, as in (19). This form is nominal as *sao* can be embedded in syntactic islands, see (20). With *how* and *why* readings, *sao* allows the optional accompaniment of *làm* 'do' or *vì* 'for', see (21).

(19) Tí   nghĩ (***làm**) **sao**?
     Ti   think do   what
     'What did Ti think?' [complement]

(20) [Subject Tí   nghĩ **sao**] khiến mẹ   nó   buồn nhất?
             Ti   think what   make   mother PRN   upset most
     'What is x such that Ti thinking x would make his mother upset the most?'

(21) a. Tí ăn   món này (**làm**) **sao**?
         Ti eat dish this do   what
         'How did Ti eat this dish?' [manner/instrumental/method]
     b. Tí (**vì**)   **sao** ăn món này?
         Ti because what eat dish this
         'Why did Ti eat this dish?' [reason]

Cross-linguistically, that *how*- and *why*-phrases morpho-syntactically incorporate *what*-elements is by no means unusual. In Mandarin, the *zen* component of *zenme* 'how' is derived from constituents featuring *zuo* 'do' and *what*-elements like *mei*, *wu*, or *mo*/*ma* (Lü 1985; Jiang 1994). Similarly, *ganma* 'how' consists of *gan* 'do' and *ma* 'what' which allows it to also have a literal interpretation 'do what'. Further, *weishenme* 'why' is decomposable into *wei* 'for' and *shenme* 'what'. In Japanese, *nande* 'why' is decomposable into *nan(i)* 'what' and -*de* 'with' (Fujii et al. 2014). English *why* itself is a reflex of the Proto-Germanic *$h^w\bar{\imath}$, the instrumental case of *$h^w at$ 'what' (Ringe 2006), whereas the dialectal *forwhy* 'why' combines this instrumental form and the preposition *for*.[14]

---

[14] https://www.merriam-webster.com/dictionary/forwhy.

We will proffer below that these complex forms are the result of the syntactic merger of nominal *sao* and selecting verbal and/or prepositional heads. What complicates the picture is that certain syntactic constituents may be subjected to reanalysis, and of those reanalyzed constituents, varied extents of grammaticalization are demonstrated. What is more, two stages of grammaticalization, reflected in two merge positions, are also attested for a single constituent. Whether a constituent is interpreted as an adverb or an adverbial depends on its degree of reanalysis. Once *sao* ceases to be analyzed as a nominal synchronically, it is opaque to unselective binding. Hypotheses concerning instances of reanalysis will be suggested, but more research is needed to further substantiate the claims.

Before moving on, one peculiar use of nominal *sao* deserves addressing. Given that the *what*-element *gì* has a wider range of use than *sao*, does the fact that an unaccusative 'happen' reading as in (22), i.e. when *làm* is optional, is compatible with *sao* but forbids *gì* suggest this *sao* is not a nominal? Notice that if *gì* is allowed to replace *sao*, as in (23), an agentive reading ensues and the verbal *làm* 'do' is mandatory. This shows that these two instances of the sequence *làm sao* only superficially resemble one another. Below we first discuss the syntactic makeup of *làm sao* in (23), then go back to argue that *sao* in (22) is a true nominal nonetheless.

(22) Tí (**làm**) **sao**/ (***gì**) vậy?
    Ti do what what PRT
    'What happened with Ti?'

(23) Tí **làm sao**/ **gì** [(để) giải quyết chuyện này]?
    Ti do what what in.order.to handle matter this
    'What will Ti do to handle this matter?'
    (= 'How will Ti handle this matter?')

Importantly, we treat *làm* in (23) as a form having no semantic contribution whose only function is to check an uninterpretable formal

feature. It contrasts with the V head *làm* 'do' which selects a DP object in (24).[15]

(24) Tí **làm** bài tập.
    Ti   do   homework
    'Ti does his homework.'

Làm sao 'do what' in (23) is treated as a syntagmatic form consisting of the 'dummy' verb *làm* 'do' and the interrogative pro-form *sao* 'what'. This is reminiscent of the English periphrastic *do what* (i.e. the question counterpart of *do so*). Assuming that Stroik's (2001) treatment of *do* in *do so* as a 'helping verb' (not a main verb) is applicable to *làm* in (23), we take *làm* to be incorporated to *v* which selects a VP complement. *Sao* in *làm sao* must range over VPs, i.e. it substitutes for the main VP of the sentence. The predicate of a question with *sao* is made the variable in this

---

[15] We adopt two tests by Stroik (2001:364) to tease apart the light verb *làm* from the main verb *làm*. In the first test, the two readings of (i) lead to two distinct answers. With *làm* as a light verb, the answer is (ia); conversely, (ib) is the response of choice if *làm* is a main verb.

  (i) Tí   đang **làm** gì?
     Ti   DUR   do   what
     'What is Ti doing?'
   a. Học   Toán.
      study maths
      'Studying maths.' [light verb]
   b. Bài tập.
   homework
      'Homework.' [main verb]

The second test employs a pseudo-cleft construction. In (iia), that the post-copular constituent is a VP suggests *làm* is a light verb selecting a VP complement; on the contrary, *làm* in (iib) is a main verb taking a DP object.

(ii) a. Cái   Tí   đang **làm** là [VP sửa   xe].
       thing Ti   DUR   do   COP   fix   motorbike
       'What Ti is doing is [fixing his motorbike].' [light verb]
    b. Cái   Tí   đang **làm** là [DP bài tập].
       thing Ti   DUR   do   COP   homework
       'What Ti is doing is [his homework].' [main verb]

construction. This explains why the VP in (25) can serve as a possible answer to (23).

(25) *Mượn   tiền   của   gia đình.*
    borrow   money   POSS   family
    '(He will) borrow money from his family (to handle this matter).'

The syntactic structure of *làm sao* in (23) is outlined in (26). We postulate that as there is no lexical verb available in the structure to check the uninterpreted [+V] feature of the light verb *v*, an informationally light *làm* of the category V is drawn from the lexicon to adjoin to *v* à la Stroik (2001:366) for feature-checking purposes.[16]

(26)
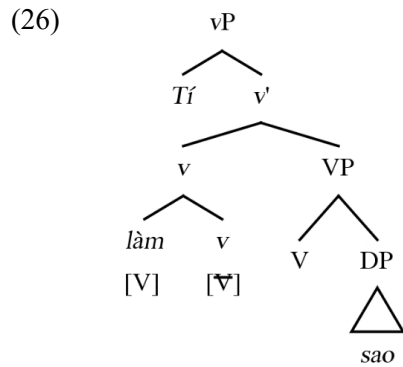
The interpretational disparity between the two instances of *làm sao* in (22) and (23) is attributed to an unaccusativization applied to the former. Reinhart (1997, 2000) proposes that unaccusatives are derived from transitives by the process of argument reduction applying to the external argument. It is not unreasonable to assume that *(làm) sao* in (22) is derived from a transitive construction like that of (26) via a similar operation. This operation is followed by a process of grammaticalization, as evidenced by the optionality of *làm*. Thus, *(làm) sao* in (22) is best treated as a fossilized

---

[16] This light form bears resemblances to the expletive *there* which has no semantic features and whose only role is to satisfy the EPP by checking the feature D of T (Chomsky 1995).

unaccusative predicate lacking the ability to assign its external *θ*-role. That this predicate is not subject to agentivity constraint, see (27), further supports its unaccusative nature.

(27) Cái   bàn   (**làm**)   **sao**   (vậy)?
     CL   table   do   what   PRT
     'What happened with the table?'

A transitive verb exhibiting an unaccusative use with (quasi-) existential meanings like 'happen' or 'exist' in certain constrained contexts is not something unattested cross-linguistically. Joseph (2000a, 2000b) discusses the English *what gives* 'what's happening, what's up' and the German *es gibt* 'there is', both of which are now unproductive and feature an existential use of (di-)transitive verbs *give* and *geben*, respectively. Historically, their origin is traced back to a Proto-West-Germanic **geb-* 'take, hold, have'. Synchronically, just like *(làm) sao* in (22) and (27), they encode non-compositional meanings and do not have internal syntax. As such they are stored in the lexicon as holistic lexical items.

Huang (2013) also proposes for Mandarin a semi-lexical unaccusative verb *gei* 'happen' that is otherwise used as a three-place predicate of giving, see (28a). This one-place predicate is arguably derived from a two-place bystander verb via subject-suppression, as shown in (28b). The overt subject is then raised from within its complement to derive (28c).

(28) a. kanshou **gei**   [fanren   pao-le].   (two-place bystander)
        guard   sustain   prisoner   run-away
       'The guard had the prisoner running away.'
     b. [e] **gei**   [fanren   pao-le]   (subject suppressed)
            happen   prisoner   run-away
       'It happened that the prisoner ran away.'

   c. fanren_i   **gei**   [t_i pao-le]   (raising)
      prisoner   happen   run-away
      'It happened that the prisoner ran away.'
(Huang 2013:109)

Although both Mandarin *gei* and Vietnamese *làm* undergo unaccusativization and have their external argument removed to express a 'happen' reading, *làm* together with its internal argument *sao* must be further grammaticalized to form an inseparable unit.[17] This fossilized predicate is assigned with a special usage: in (29), while both constructions yield a 'happen' reading, (29a) featuring *(làm) sao* inquires about a current or recent state of affairs involving a mandatory affectee. Such an affectee is never presupposed in (29b). Note that in (29a) we take the subject to be *pro* whose referent is contextually determined.

(29) a. (**Làm**) **sao**   (vậy)?
       do   what   PRT
       'What happened (with you)?'
       #'What happened?'
   b. **Xảy ra chuyện gì**   (vậy)?
       happen   matter   what   PRT
       'What happened?'

Keen readers might wonder how subjects like *pro* in (29a) and *Tí* in (22) fit into this analysis. We assume that there is more to the syntactic structure of (22) than meets the eye, as it also features an additional functional projection. Adopting Tsai's (2016, 2018) account on applicatives, we take the subject to be an affectee base-generated in Spec of an Appl(icative)P(hrase) below *v*P before raising to TP, as sketched out in (30). This subject-as-affectee analysis is well-aligned with the apt compatibility of (29a) and passive of intransitive, which typically refers to 'an unpleasant state or action' (Simpson and Ho 2013:166). Passive

---

[17] See also Hagège 2008 for a list of languages exhibiting unanalyzable interrogative verbs which mean either 'do what' or 'what happen(ed)'.

marker *bị* can occur clause-initially in (29a), but not in (29b), albeit their common unaccusativity and similitude in interpretation.

(30)
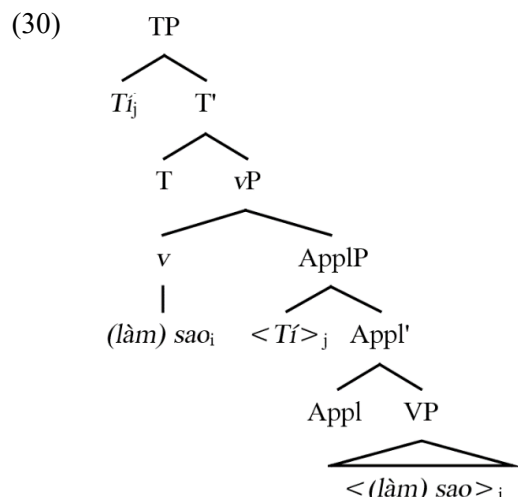
If our analyses are on the right track, then it is maintained that *sao* by itself is a *wh*-nominal with a *what* reading. *Sao* ranges over propositions and properties; in syntactic terms it substitutes for either clauses or VPs, depending on which selecting head is present.
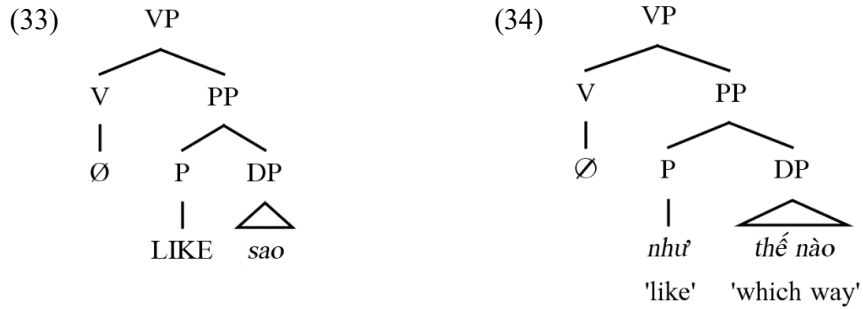
3.2 *Sao* Means Descriptive *How*

Sao, but not *gì*, can express what is canonically conveyed by descriptive *how*. To communicate a general description, only the simplex form of *sao* as in (31) is allowed. If an extra *làm* 'do' is permitted, see (32), the sentence must have a stage-level interpretation, asking about the happening of a certain event leading to a current (resultant) state of the subject. The two sentences also differ in the presence or absence of the SFP *vậy* or *thế*: (31), used to ask for an opinion or a description, forbids them, while they are mandatory in (32).[18] A similar pattern is observed for SFP *rồi* 'already'.

---

[18] When these SFPs are absent, (32) is construed as an echo question.

(31) Thằng đó thì **sao** (*vậy/*rồi)?
　　 guy 　 that TOP what 　PRT PRT
　　 'How is/about that guy?'/ 'What is that guy like?'
　　 #'What happened with that guy?'

(32) Thằng đó (**làm**) **sao** vậy/ rồi?
　　 guy 　 that do 　 what PRT PRT
　　 'What happened to that guy?'
　　 #'How is that guy?'/ 'What is that guy like?'

The *what-how* alternation in (31) is unexpected if *sao* is a *wh*-nominal. We postulate (33) as the underlying structure of (31). Here *sao* is selected by light preposition LIKE.[19] The PP is then selected by a null verbal head, assuming (31) is a zero-copula construction. Intra-linguistically, the postulation of LIKE is supported by the alternative *như thế nào* (lit. 'like which way') where an overt *như* 'like' selects the nominal *thế nào* 'which way/manner' to yield a *like-what* (i.e. *how*) reading. Notice how the structure of *như thế nào* in (34) parallels that of *sao*, and the two are interchangeable in contexts like (35).

(33)
```
         VP
        /  \
       V    PP
       |   /  \
       Ø  P    DP
          |    /\
        LIKE  sao
```

(34)
```
         VP
        /  \
       V    PP
       |   /  \
       Ø  P    DP
          |    /\
        như  thế nào
       'like' 'which way'
```

(35) Mày thấy [_CP_ nó **sao**/ **như thế nào**]?
　　 PRN see 　　 PRN what like 　way which
　　 'How do you think he is?'

---

[19] Willis (2006) claims that the lexical *like* has a dual nature as both a preposition and an adjective. The exact nature of LIKE goes beyond the scope of this study. What is important here is the intuition that LIKE selects *sao* to yield a descriptive *how* reading.

A descriptive *how* built upon *what* is not a rare sight cross-linguistically either. Ancient Chinese *ruhe* 'how' diachronically consists of *ru* 'like' and *he* 'what' which together mean 'like what' or 'what about' as the predicate of an NP (see Anderl 2019 and references therein). Japanese *doo* 'how' is also decomposable into *do* 'what' and *o* 'like'.

This use of *sao* is also found in resultative constructions with verbal *ra* 'turn out'. We assume *ra* selects the PP LIKE+*sao* to solicit the result or a development of an event. That *ra như thế nào* in (36) has the same interpretation as *ra sao* (i.e. 'how (something) turns out to be') further supports our claim that descriptive *sao* consists of a covert LIKE.

(36) Củ   cải   khi nấu với giấm   vị   sẽ
     root radish when cook with vinegar flavor FUT
     ra   **như** **thế** **nào**?
     turn.out like   way   which
     'How will the flavor turn out to be when radish is cooked with vinegar?' (https://haithuycatering.com/tin-tuc/cu-cai-xao-giam.html)
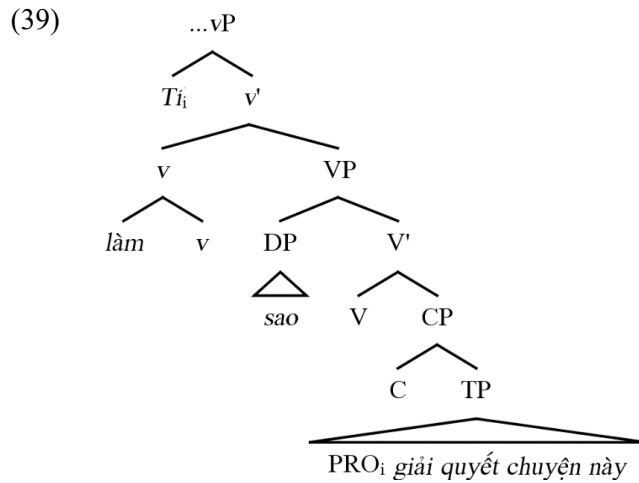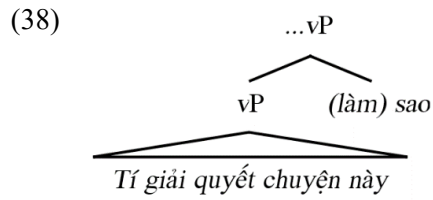
3.3 *Sao* Means Method *How*

Method *how* reading is a prominent reading of *(làm) sao* in Modern Vietnamese.[20] At first glance, a method question seems to feature the string *làm sao* in either a post-verbal or a pre-verbal position, as illustrated in (37).

(37) a. Tí giải quyết chuyện này   **(làm) sao**?
        Ti handle   matter this do   what
        'How does Ti handle this matter?'
     b. Tí **làm sao** giải quyết chuyện này?
        Ti do   what handle   matter this
        'What does Ti do to handle this matter?'

---

[20] Given that instrumental and manner *how* are very similar to method *how* in syntactic terms, here we only focus our discussion on the latter.

A closer inspection reveals that these two instances of *làm sao* are of distinct natures. We see (*làm*) *sao* in (37a) as a nominal adverbial right-adjoined to *v*P and *làm sao* in (37b) as a matrix predicate.[21] As discussed in 3.1, this predicate consists of the pro-form *sao* 'what' and the 'dummy' *làm* 'do' drawn from the lexicon to check the feature V of *v*. The syntactic structures of (37a, b) are outlined in (38) and (39), respectively.

(38)

```
                    ...vP
                   /    \
                 vP    (làm) sao
             ___/\___
            Tí giải quyết chuyện này
```

(39)

```
                 ...vP
                /     \
              Tíᵢ     v'
                    /    \
                   v      VP
                 /  \    /   \
               làm  v  DP     V'
                       /\    /   \
                     sao   V     CP
                              /    \
                             C      TP
                                ___/\___
                               PROᵢ giải quyết chuyện này
```

The predicate *làm sao* in (37b) selects a purposive clause (optionally introduced by the C-element *để* 'for, in order').[22] In alignment with Liao and Lin's (2019) claim for Mandarin *lai* purposive construction, we treat the predication between the embedded and the main predicate *làm sao* as one of means or method, i.e. what the matrix predicate expresses is intended as a means or method to do what is denoted by the embedded purposive clause. [23] This is why (37a) and (37b) have the same means/method interpretation, albeit their distinct syntactic configurations.

We suggest that method *(làm) sao* does not surface pre-verbally inside *v*P (although it could be moved to a CP-internal position, see 2.4), contra C.-Y. Tsai (2009:71). A number of syntactic disparities supports this view. For example, only post-verbal *(làm) sao*, but not the pre-verbal one, is compatible with the time-related adverbs *từng* 'used to' in (40a). Note how (40b) naturally allows *từng* given the predicational status of *làm sao*.

(40) a. Tí từng   *{(**làm**) **sao**} giải quyết chuyện này {(**làm**) **sao**}?
     Ti used.to   do   what handle   matter this   do   what
   'How did Ti use to handle this matter?' [method (adverbial)]
  b. Tí từng   **làm sao**   giải quyết chuyện này?
     Ti used.to do   what handle   matter   this
   'What did Ti use to do to handle this matter?' [method (predicate)]

Second, predicational *làm sao* is fine but adverbial *(làm) sao* is banned in the presence of post-verbal modal *được* 'can'. Adopting Cheng and Sybesma's (2003) modality analysis, we assume in (41) that *có thể* 'can' in Mod(ality)1P(hrase) (projected above *v*P) and *được* 'can' in Mod2P (below VP) together form a single modality of the "forked" type, hence a single operator (see also Cheng and Sybesma 2004; Phan 2022). When

---

[22] We follow Liao and Lin (2019) in assuming the phrase structure theory proposed by Larson (1988), Tang (1990), Bowers (1993), inter alia, and take the Vietnamese subject to be base-generated in Spec,*v*P, the object Spec,VP, while the secondary predication takes V's complement position.

[23] *Làm sao* as a predicate is reminiscent of either *zuo he* (lit. 'do what') in Han-period Chinese, or *gan ma/shenme* ('do what') in Mandarin. This predicational use also parallels the verbal use of Mandarin *zenmeyang* 'how' argued for in Lin et al. 2018.

agreement is established, ungrammaticality occurs only with post-verbal adverbial *(làm) sao*, as the contrast in (42) shows. Assuming Mod2P is always associated with Mod1P, *có thể* is necessarily in existence, either covertly or overtly, in the presence of *được*.

(41) Tí (**có thể**) giải quyết chuyện này **được**.
    Ti can   handle   matter   this   can
    'Ti can handle this matter.'

(42) a. *Tí (**có thể**) giải quyết chuyện này **được** (**làm**) **sao**?
      Ti can   handle   matter   this   can   do   what
      Intended: 'How can Ti handle this matter?'
   b. Tí {(**có thể**)} **làm sao**   (để)   {(**có thể**)} giải quyết
     Ti   can   do   what   CONJ   can   handle
     chuyện này **được**?
     matter   this   can
     'What can Ti do to handle this matter?'
     'What does Ti have to do to be able to handle this matter?'

The ungrammaticality of (42a) is attributable to intervening effects (Rizzi 2004) if the adverbial is also an operator intervening the connection between the two Mod projections, see (43).[24] That (42b) is fine is

---

[24] A reviewer asks if this intervention account is extendable to other adverbs, since an adverb like *khi nào* 'when' seems to be allowed to either precede or follow *có thể* in (i).
 (i) Tí {(có thể)} khi nào {(có thể)} giải quyết chuyện này được?
    Ti can   when   can   handle   matter   this   can
Our view is that only the lower *có thể* in (i) could have a root reading and may agree with *được* to form a single modal element. Here *khi nào* does not intervene between the two Mod heads. When *có thể* precedes *khi nào*, it is at best an epistemic modal element with a pragmatic dimension. That is, it might mitigate what may come across as forceful, showing that the speaker is noncommittal to the propositional content, or signaling politeness, and is quite comparable to the English *probably*, see (ii). Since this higher *có thể* does not agree with *được*, (i) should not constitute a counterexample to our analysis.
 (ii) Tí <u>có thể</u> khi nào giải quyết chuyện này được?
    Ti can   when   handle   matter   this   can
   'When can Ti <u>possibly</u> handle this matter?'

straightforward if *làm sao* is a predicate.[25] This also explains why the Mod1^0 *có thể* has two possible merge sites corresponding to two distinct readings.

(43)
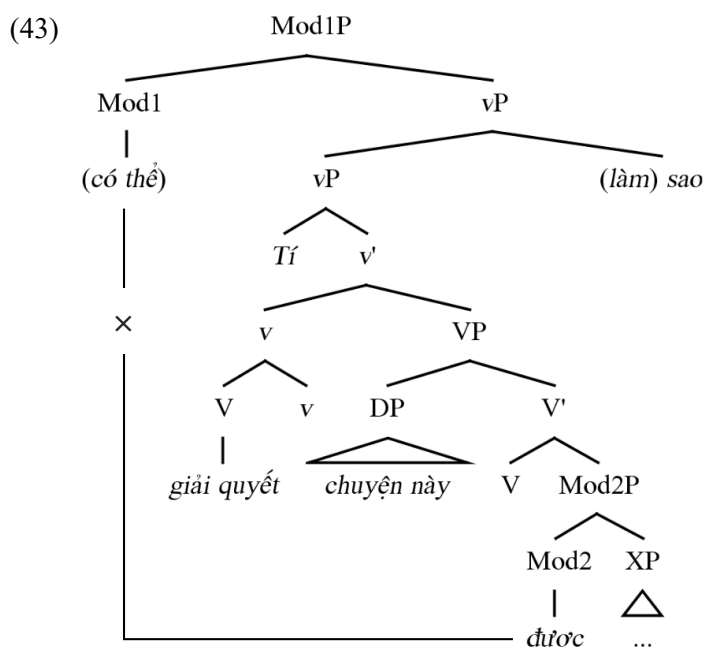
By assuming this predicate/adverbial distinction, we can account for a phonological difference between the two instantiations of *làm*. To wit, *làm*

---

25 A reviewer asks where the merge position of *(làm) sao* could be when it precedes *được* in (i), given the proposed schematization in (43).

  (i) Tí (có thể) giải quyết chuyện này (làm) sao được?

    Ti   can   handle   matter   this   do what DUOC

We suggest that *được* here is distinct from the post-verbal modal heading Mod2P, and (i) with overt *có thể* could not be interpreted simply as 'How can Ti handle this matter?' as claimed by the reviewer. The sentence is most natural if the topic marker *thì* is added before *được*. This way, *được* is similar to a lexical verb meaning roughly 'okay', and the entire sequence preceding it is a sentential subject (Duffield 1999; Sybesma 2008). Since *được* is not a clause-mate to *có thể*, no Agree relation is established, which explains why the presence of *v*P-level *(làm) sao* is unproblematic.
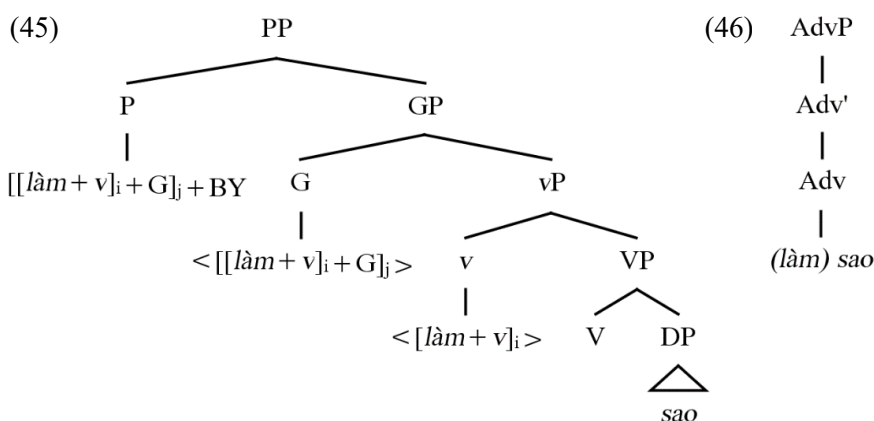
156

in (37a) is either phonologically reduced (i.e. cannot be stressed) or null, whereas in (37b) it can receive stress and is not subject to phonological omission. This disparity is explicable if the former is part of an adverbial phrase which no longer exhibits full verbal characteristics.

All in all, method *(làm) sao* as a *wh*-adjunct can only appear post-verbally. Any seemingly 'pre-verbal' occurrences must be treated as matrix predicates, unless they are preposed adverbials (see 2.4) or higher adverbs (see 3.4). Our proposal hence also goes against C.-Y. Tsai's (2009:14, 71) claim that method *làm sao* may appear pre-verbally if licensed by the abilitive modality. Two points speak against this claim. First, when *được* 'can' in (44a) is omitted and the ability reading is absent, the presumed 'pre-verbal' position of *làm sao* does not lead to ungrammaticality, see (44b). This falsifies the ability to license *wh*-adjuncts of abilitive modals. Second, (44a) is best construed as projecting a denial force ('I cannot eat this soup!'), not an interrogative force directed at a method ('What is the method x such that I can eat the soup with x?').

(44) a. Canh mặn quá   tôi   **làm sao** ăn   (được)?
      Soup salty extremely PRN how   eat can
      'The soup is so salty; how can I eat it?' (C.-Y. Tsai 2009:14)
   b. Canh mặn quá   tôi   **làm sao** ăn?
      Soup salty extremely PRN how   eat
      'The soup is so salty; how do I eat it?'

One final question to be addressed: since *sao* means *what*, how does *(làm) sao* in (37a) come to express the method *how*? We postulate that this adjunct was reanalyzed from the structure in (45). Here, the now familiar *làm sao* 'do what' (see (26)) is merged under a G(erundive)P(hrase) à la Huang (2008), then a null head BY (or WITH, to the same effect) selects this nominalized predicate to form an underlying PP that questions a means or method. This is not unreasonable as method *how* can be realized by the alternative *bằng cách nào* (lit. 'by which method'), which consists of the prepositional *bằng* 'by' and a nominal *cách nào* 'which way'. Recall that Japanese *nande* 'why' can be interpreted as 'with what' if it is analyzed as a PP headed by postposition *-de* 'with' (Fujii et al. 2014).

157

A subsequent reanalysis targeting this PP led to the adverbial form *(làm) sao*. Its grammaticalized nature is reflected in the optionality of *làm*, although it seems yet to have morphed into a genuine adverb like (46), and the nominal *sao* is still operative. This point is particularly relevant given Tsai's adverb/nominal distinction between adverbial phrases.

(45) PP

P — GP

$[[làm + v]_i + G]_j + BY$ G — vP

$<[[làm + v]_i + G]_j>$

v — VP

$<[làm + v]_i>$ V   DP

sao

(46) AdvP

Adv'

Adv

(làm) sao

3.4 *Sao* Means Causal and Denial *How*

While *(làm) sao* in *v*P is mainly associated with a method interpretation, it brings out a causal or denial reading as a higher adverb in CP, as shown in (47).

(47) (**Làm**) **sao** *Tí đến trễ?*
   do   what Ti arrive late
   'What is the cause x such that Ti arrived late because of x?' [causal]
   'Ti could/should not arrive late!' [denial]

Given *(làm) sao*'s causality, this adverb might have as its diachronic precursor a causer argument of some sort. A likely candidate is the unaccusative *(làm) sao*, which translates to 'what happened with x (x being contextually determined)'. We take in the insights from the analysis of sentential subjects as headless complex DPs (see Davies and Dubinsky

2009 and citations therein) and propose that causal adverb *(làm) sao* might have started out as the DP approximated in (48).

(48) [$_{DP}$ ∅ [$_{CP}$ *pro$_i$* (**làm**) **sao**]] *Tí$_i$ đến trễ?*
              do   what Ti arrive late
    '[$_{DP}$ [$_{CP}$ That what happened]] is the cause x such that Ti arrived late because of x?'

We hypothesize that an eventuality predicate CAUSE heading an outer *v* selects this complex DP as its first argument (cf. Lin 2001), see (49).[26] This enables the DP to be construed as a question into the cause of the event or state the second argument denotes, i.e. the lower TP. The headless DP was later reanalyzed into the causal *(làm) sao*.

(49)
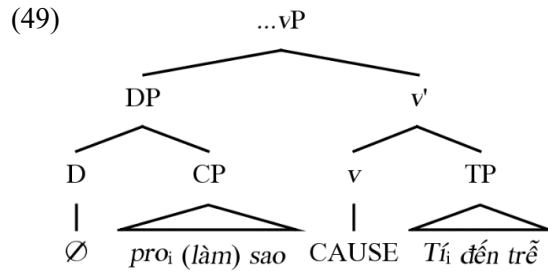
Our proposal is not unreasonable given (47) and (48) can both be answered with something like (50). Notice that (50) actually features causative verbs like *làm* 'make' or *khiến* 'cause' in the same position as CAUSE, and its DP causer denotes an event leading to a resulting event/state. This kind of periphrastic causative construction fits the profile of indirect causation as i) the causer is non-intentional, and ii) there is no spatiotemporal proximity between the causing and the caused events.

---

[26] This is reminiscent of the Cau(se)P(hrase) in Tsai (2015). CauP encodes eventuality causation and is ultimately inspired by Ramchand's (2008) causation/process distinction within *v*P.

(50) [_{DP} ∅ [_{CP} *Xe   hỏng*]]   **làm/ khiến** *Tí đến trẽ.*
               bike break.down make cause Ti arrive late
    '[_{DP} [_{CP} That his bike broke down]] caused Ti to arrive late.'

How is the causal reading of adverb *(làm) sao* encoded syntactically? We adopt Rizzi's (2001) postulation of a CP-internal Interrogative Phrase as the base-generation site for higher sentential adverbials like Italian *perché* 'why' and *come mai* 'how come' or Mandarin *zenme* 'how come' (Tsai 2015), and propose that *(làm) sao* also merges as the head of IntP to acquire an interrogative construal.

We further suggest that the ability to directly head IntP is attributable to the highly grammaticalized nature of this adverb compared to the CP *làm sao* 'what happened'. Specifically, while the interrogative force in (48) is activated through unselective binding thanks to *sao*'s nominal nature, adverb *(làm) sao* in (47) with presumably no internal structure must raise to IntP for feature-checking purposes.[27]

Tsai (2008) proposes that Mandarin causal *zenme* and denial *zenme* are placed in two different syntactic positions in the Mandarin LP. The latter is merged in the higher ForceP in accordance with a change of illocutionary force from information seeking to denial. Despite this insightful intuition, the dissociation in syntactic locus of these two *zenme*s is harder to show, and their interpretations are not very clear-cut. We propose that Vietnamese denial *(làm) sao* is also merged in ForceP to alter the illocutionary force, and apply the SFPs *vậy* and *thế* to tear apart the two adverbs. These SFPs are compatible with causal, but not with denial construal, as shown in (51).

---

[27] Grammaticalization typically involves structural simplification entailing a "reanalysis of an XP, a category with a certain amount of internal syntactic structure, as a simple head X, a category with no internal syntactic structure" (Roberts and Roussou 2003:16). Structural trimming also goes hand in hand with an 'upwards' reanalysis along the functional structure (Roberts and Roussou 2003). Notice how IntP is assumed to locate hierarchically higher than the outer *v*P.

(51) (**Làm**) **sao** Tí đến trễ **thế/vậy**?
    do what Ti arrive late PRT
    'What is the cause x such that Ti arrived late because of x?' [causal]
    #'Ti could/would not arrive late!' [*denial]

Interestingly, these SFPs are somewhat reminiscent of the Cantonese SFP *ga* which can decide between a method and a more rhetorical (question) reading of *dim* 'how', the Cantonese counterpart of Mandarin *zenme* (Cheng and Sybesma 2003). *Ga* sanctions the rhetorical reading 'how or why in the world would/could' (essentially overlapping with Tsai's denial reading) that is potentially invoked by *dim*, as shown by (52).

(52) a. *keoi* *dim* *hak-dou* *A Can* *ga?*
    PRN how frighten-success Ah Chan PRT
    Method only: 'By what means did he frighten Ah Chan?'
   b. *keoi* *dim* *hak-dou* *A Can* *le?*
    PRN how frighten-success Ah Chan PRT
    Rhetorical only: 'Why in the world could he frighten Ah Chan?'
    (Cheng and Sybesma 2003:18)

To account for this phenomenon, we suggest that *thế* and *vậy* in *wh*-questions signal the speaker's belief or expectation about the (potential) truth of the proposition expressed, that something is or will be the case, and leave only the *wh*-parts to be questioned (see the discussion on SFP *đây* in 2.4).[28] It is this nature which prohibits a denial construal of *sao* in

---

[28] Our view hence counters B&T's (2006:334) and C.-Y. Tsai's (2009:83-85) claims that the event must have been realized to be compatible with *thế* and *vậy*. A critique of C.-Y. Tsai's (2009) arguments for the *realis*-encoding nature of *vậy* goes as follows. First, the putatively ungrammatical trio in (i) are in fact well formed. The events 'Nam going somewhere', 'Nam going to meet someone, and 'Nam eating something' are believed by the speaker to happen by the future event time 'tomorrow'. What is questioned are the goal/destination at which Nam will arrive, the person with whom Nam will meet, and the thing Nam will eat, respectively.

(i) a. *Ngày mai Nam sẽ đi **đâu** **vậy**?
    tomorrow Nam FUT go where PRT
  b. *Ngày mai Nam sẽ đi gặp **ai** **vậy**?

LP. [29] Note that we disagree with B&T (2006:324) and C.-Y. Tsai (2009:50) that these SFP are exclusive to *wh*-questions and are banned in yes-no questions. This will be returned to in section 4.

3.5 *Sao* Means *Why*

(Vì) sao is a canonical form expressing reason/causal *why* in Vietnamese. As shown in (10a), repeated here as (53), it observes both agentivity restriction and island effects, thus a proper adverb. It is worth noting that this sentence might be judged as quite acceptable by certain native speakers. We attribute this curious effect to the way *(vì) sao* 'why' is interpreted. To wit, *vì sao* can be treated either as a proper adverb, i.e. an inseparable lexical item, or as a PP in which the preposition *vì* 'for' selects the nominal *sao*.[30]

(53) *Tí   thích nhất [CNP người [CP (mà) **(vì) sao** <người> làm việc]]?
    Ti   like   most   person   REL why   person work

---

    tomorrow   Nam   FUT   go   meet   who PRT
 c. *Ngày mai Nam   sẽ   ăn   **gì**   **vậy**?
    tomorrow   Nam   FUT   eat   what PRT (C.-Y. Tsai 2009:85)
Second, contra C.-Y. Tsai (2009:85-86), nothing prevents a *wh*-question taking *vậy* to be interpreted as generic: (iia) has a 'type' reading, (iib) has an 'ability' reading. Since *vậy* and *thế* are compatible with *irrealis* contexts, they are not *realis* SFPs.
 (ii) a. Ba ơi,   bò   thì   ăn   cỏ,   còn   voi   thì   ăn   gì   **vậy**?
        dad VOC   cow TOP   eat grass CONJ elephant TOP   eat what PRT
        'Dad, (I know) cows eat grass, but what do elephants eat?' [generic/*specific]
      b. Tí   nhìn khỏe quá. Nó   mang được bao nhiêu   đá   **vậy**?
         Ti   look strong very PRN   carry can how.many   stone PRT
         'Ti looks so strong. How many stones can he carry?' [generic/*specific]
[29] A similar argument might apply to Cantonese *ga*, assuming *ga* (or *gaa3*) is a contraction of *ge3* and *aa3* (Fung 2000; Matthews and Yip 2011). *Ge3* is associated with the assertion of facts and the speaker's commitment to the truth/certainty of the proposition conveyed by the utterance (Kwok 1984 (quoted in Lee and Yiu 1998); Fung 2000; Matthews and Yip 2011, inter alia).
[30] To bring about a *why* reading, *what*-elements can also be selected by a light verb FOR. See Lau and Tsai 2020, Phan and Tsai 2022 and references therein for discussions concerning this construal in Taiwan Southern Min, Mandarin, and Vietnamese.

Intended: 'What is the reason x such that Ti likes those who work for x the most?' [*reason]

While no semantic difference is obvious, the adverb reading plainly leads to the ungrammaticality of (53), while the PP reading does not. The phrasal nature of the latter is highlighted by its stress pattern: *vì* 'for' never receives stress in the adverb *(vì) sao*, but bears stress in the PP. If 0 stands for 'no stress' and 1 for 'stress', the pattern is [01] for the adverb, but [11] for the PP. For (53) to be strictly acceptable, *vì* must be pronounced and cannot be phonologically weakened. Similarly, (2b), repeated here as (54), could be grammatical if *vì* is treated as a preposition heading a PP.

(54) **Tí thích cuốn sách đó (**vì**) **sao**?*
　　 Ti like CL book that for what
　　 Intended: 'For what purpose does Ti like that book?' [*reason]

This stress pattern disparity bears a strong resemblance to the distinction between *weishenme* 'for what reason' and *wei(-le)shenme* 'for what purpose' in Mandarin (Tsai 2008:93; Stepanov and Tsai 2008:594). In both languages, the PP evolves onto the adverb. The difference is that both forms mean 'for what reason' in Vietnamese. *Vì cái gì* (lit. 'for what'), which features the other *what* element *cái gì*, yields the purpose reading. Since both *cái gì* and *sao* are *wh*-nominals, it is not surprising the PPs of which they are part are insusceptible to island constraints, assuming Tsai's unselective binding. Note that this adverb/nominal distinction for reason *wh*-phrases is not unique to Mandarin and Vietnamese: for example, Japanese adverb *naze* 'why' is island sensitive while its PP equivalent *donna riyuu-de* 'for what reason' is not (Nishigauchi 1990).

4. AN ACCOUNT OF SFPS *VẬY* AND *THẾ*

In this section we contest B&T's (2006:324) and C.-Y. Tsai's (2009:50) claims that particles *vậy* and *thế* are used exclusively for *wh*-questions and are not compatible with yes-no questions. Not only do they appear in yes-no questions (55a-b), they are also found in disjunctive questions (55c). This intuition is shared by Duffield (2019), although he argues against the syntactic particle status of *thế*, a point we will return to shortly.

(55) a. Tí (có) đi Đài Bắc không **thế/vậy**?
      Ti ASR go Taipei NEG PRT
      'So, is Ti going to Taipei?'
   b. Tí (có) đi Đài Bắc chưa **thế/vậy**?
      Ti ASR go Taipei not.yet PRT
      'So, has Ti gone to Taipei?'
   c. Tí đi Đài Bắc hay Tân Bắc **thế/vậy**?
      Ti go Taipei or New.Taipei PRT
      'So, has Ti gone to Taipei or New Taipei?'

Thus, contra B&T and C.-Y. Tsai (2009), *thế* and *vậy* are not *wh*-particles in Cheng's (1991) term. They do not signify "a clause unequivocally as a *wh*-interrogative," and do not guarantee "a clause involving *wh*-words to be a *wh*-question" as C.-Y. Tsai (2009:50) claims, as evidenced by the yes-no reading in (56). These particles, contra B&T, also do not play a role in determining whether unselective binding is operative in Vietnamese *wh*-questions (see C.-Y. Tsai 2009 and Duffield 2019 for an extended discussion). Since Tsai's (1999b et seq.) take on *wh*-licensing strategies is grounded on the adverb/nominal distinction, we take it to be fitter with Vietnamese data than B&T's version.

(56) Có **ai** đi Đài Bắc không **thế/vậy**?
    have who go Taipei NEG PRT
    'So, is there someone/anyone going to Taipei?'
    #'So, who is going to Taipei?'

The aforementioned 'presupposition bias' in *wh*-questions is nevertheless present in yes-no questions featuring *thế* and *vậy*. A pure yes-no question as in (57a) is presuppositionally neutral: the speaker does not have a predisposition on whether the proposition expressed by the question is true or not. The inclusion of *thế/vậy*, however, highlights the speaker's belief in (or expectation of) the truthfulness of the proposition. It also supplements a confirmation-seeking or validity-checking component to the question, something along the lines of 'is it still the case that x (x is the questioned proposition)?', as shown in (57b). In a context where A and B are in a store, (57b), but not (57a), is felicitous if A notices B has spent a significant amount of time going up and down the aisles, thus assuming B intends to purchase something. Conversely, only (57a) is felicitous if B merely has a look at the store as they pass by it.

(57) a. Em (có) muốn mua gì   không?
       PRN ASR want   buy   what NEG
     'Do you want to buy something?'
    b. Em (có) muốn mua gì   không **vậy**?
       PRN ASR want   buy   what NEG   PRT
     'Do you (still) want to buy something?'

Although it is not required, this epistemic commitment/bias of the speaker towards a proposition might be accompanied by a sense of impatience from the speaker, see (58b).

(58) Context: A booked an Uber car to arrive at 8:00, but at 8:15 the car still has not come.
    a. Xe tới   không/ chua?
       car come   NEG   not.yet
     'Will/have the car come?
    b. Xe tới   không/ chua **vậy**?
       car come   NEG   not.yet PRT
     'Is it still the case that the car will come?'/ 'Shouldn't the car be here already?'

That *vậy* is associated with an interrogative force is also shown vividly in contexts where it yields a causal question without an overt *why*-interrogative. In (59) *vậy* seems to both acknowledge the extreme coldness of the environment and question its cause. Sybesma and Li (2007:1747), among others, suggests questions with Cantonese *gé* are also construed as *why*-questions, albeit the absence of any relevant *wh*-word. *Vậy* in (59) indeed bears a strong resemblance to *gé* in (60), which Yip and Matthews (1994:349) claim to express puzzlement about a fact. (61) further demonstrates this parallel.

(59) Lạnh   quá **vậy**?
    cold   so   PRT
    'It's so cold, why?'/ 'Why is it so cold?'

(60) Gám   tung   **gé**!
    so   cold   PRT
    'It's so cold! (Why?)' (Yip and Matthews 1994:349)

(61) a. Tsìh   tou   **gé**?   (Fang 2003: 91)
     late   arrive   PRT
     'How come you are late?' (glossing and translation ours)
   b. Tới   trễ   **vậy**?
     arrive late   PRT
     'How come you are late?'

Syntactically, we provisionally propose that *vậy* is merged to ForceP. This prevents *(làm) sao* from occupying this position to derive a denial reading. Consequently, *(làm) sao* can only be interpreted in the lower IntP to express a causal reading. This view contradicts Duffield's (2019:86) claim that *thế* (and thus also *vậy*) is syntactically unintegrated and should be considered an "extra-syntactic discourse particle" or a "*turn-level object within a Turn Construction Unit,*" not a sentential element. His argument is that *thế* is both syntactically and illocutionarily inert, and its presence/absence does not make an impact on the interpretation of others or of the sentence as a whole. *Thế* is viewed in direct contrast with clause-

final *không* 'not' in terms of syntactic activeness: in (62), *không* makes sure the object DP *gì* 'what' is interpreted as an indefinite, not as a *wh*-interrogative.

(62) a. Chị mua cái gì?
   PRN buy CL what
   'What did you buy?'
 b. Chị mua cái gì **không**?
   PRN buy CL what NEG
   'Did you buy something?' (Duffield 2019:89)

Although we oppose C.-Y. Tsai's (2009) treatment of *vậy*/*thế* as a *wh*-particle, we agree with him that *vậy* can force a clause containing an indefinite *wh*-word to be a *wh*-interrogative by scoping over it, as long as the negative *không* does not intervene as in (55). In an NPI-licensing environment like (63a), *wh*-word *gì* is ambiguous between an NPI 'anything' and an interrogative 'what'. When *vậy* is added in (63b), it secures the wide scope and sets the Q-operator as the binder of *wh*-elements, making sure *gì* only has the interrogative reading.

(63) a. Anh ấy không ăn **gì**
   he   NEG eat what
   'He did not eat anything.' [not > *what*]
   'What did he not eat?' [*what* > not]
 b. Anh ấy không ăn **gì** **vậy**?
   he   NEG eat what PRT
   #'He did not eat anything.' [*not > *what*]
   'What did he not eat?' [*what* > not] (C.-Y. Tsai 2009:52)

Another NPI-licensing environment is presented in (64). *Đâu* in (64a) is ambiguous between an indefinite 'somewhere' and an interrogative 'where' reading. When *vậy* emerges between the indefinite *wh*-element and SFP *hả*, only the interrogative reading of *đâu* is possible. *Vậy*/*thế* and *không* thus have exactly opposite roles with regard to the interpretation of *wh*-words, and one is as much syntactically active as the next in this

respect. Moreover, they can alter the illocutionary force of the sentence they are attached to by either adding a confirmation-seeking/validity-checking component to a yes-no question, or by turning an affirmative sentence to an interrogative.

(64) a. Anh   đi   **đâu**   hả?
       PRN   go   where PRT?
       'Are you going somewhere?'
       'Where are you going?'
    b. Anh   đi   **đâu**   **vậy**   hả?
       PRN   go   where PRT PRT?
       #'Are you going somewhere?'
       'Where are you going?'

The claim that these SFPs are exclusively discourse-oriented is also questionable. In the context leading to (65), the speaker, who is the only occupant of an island, notices the birds flying around are behaving strangely, so he utters this question before climbing up a rock peak to check for possible outsiders. Note in passing that the (Southern) particle *cà* marks a question as being directed at the speaker himself. That this talking-to-oneself situation naturally features *vậy* speaks against C.-Y. Tsai's (2009) claim that *vậy/thế* cannot take place in contexts such as self-murmuring.

(65) Bữa nay họ   làm cái   gì   **vậy** **cà**?
    today   PRN do   CL   what PRT PRT
    'What are they doing today?'
    (https://tuoitre.vn/hon-co-tron-280137.htm)

More importantly, this fact runs counter to Duffield's (2019) view of *thế/vậy* as a discourse particle on a par with British English *innit*, Canadian English *eh*, etc. whose conversational function is "usually to elicit some contribution from the hearer" (2019:86). Consequently, we maintain that

thế and *vậy* are integrated sentential elements, not discourse-objects, contra Duffield (2019).[31]

5. CONCLUSION

This paper has navigated through a myriad of *sao*-related *wh*-phrases and syntactic constituents in Modern Vietnamese to accomplish two major objectives. First, it outlined the distinct structural positions corresponding to distinct interpretations of various constituents featuring *sao*, and suggested how they could be told apart. Second, it proposed how these constituents are morpho-syntactically made up and how they are related to one another in morpho-syntactic terms: we employed a light verb account and argued that these *how*- and *why*-phrases are diachronically built upon the nominal *sao* 'what', a phenomenon attested also in other typologically different languages. This finding supports Tsai's (1999 et seq.) adverb/nominal distinction and his take on strategies for *wh*-in-situ licensing, which pivots around the idea that an operative nominal is required for unselective binding to obtain.

To these aims, we also provided a review of certain details in C.-Y. Tsai's (2009) discussion about the Vietnamese *wh*-dependencies, B&T's versions of unselective binding, and Duffield's (2019) opposition to the said strategy. Especially focused on was the debate on the syntactic nature and the illocutionary role of *thế* and *vậy*. We argued that these SFPs are

---

[31] It is not impossible that there are two distinct instances of *thế* at the Vietnamese right edge after all: one is a sentential element and the other (further rightward) is a discourse marker as Duffield (2019) argues for. Discourse *thế* seems to be comparable with Mandarin *ne* (Paul and Pan 2016). The examples below show that *vậy* and *thế* can in fact co-exist, especially if a right-edge vocative is present. We will not pursue this issue further here.

(i) *cái   này   chơi thế nào **vậy   thế**   mọi   người*
    CL   this   play how   PRT PRT every person
    'How do you play with this, everyone?'
    (https://vn.investing.com/crypto/bitcoin/chat)

(ii) *Dạ,   có   việc   gì   **vậy   thế**   chú*
    yes   have matter what PRT PRT uncle
    'Yes, what's the matter uncle?' (https://vozer.vn/tu-tu/chap-15.html)

genuine sentential particles, contra Duffield (2019), although they play no role in determining whether unselective binding applies, contra B&T.

REFERENCES

Anderl, Christoph. 2019. Modality without modals: the case of interrogatives in early vernacular texts. In *New Perspectives on Aspect and Modality in Chinese Historical Linguistics*, ed. Barbara Meisterernst, pp. 221–238. Beijing/Singapore: Peking University Press and Springer.

Beck, Sigrid. 1996. Quantified structures as barriers for LF-movement. *Natural Language Semantics* 4:1–56.

Bowers, John. 1993. The syntax of predication. *Linguistic Inquiry* 24:591–656.

Bruening, Benjamin and Tran Thuan. 2006. Wh-questions in Vietnamese. *Journal of East Asian Linguistics* 15:319–341.

Cheng, Lisa L.-S. 1991. *On the Typology of Wh-Questions*. Cambridge: MIT dissertation.

Cheng, Lisa L.-S. and Rint Sybesma. 2003. Forked modality. *Linguistics in the Netherlands* 20(1):13–23.

Cheng, Lisa L.-S. and Rint Sybesma. 2003. Postverbal 'can' in Cantonese (and Hakka) and Agree. *Lingua* 114(4): 419–445.

Cinque, Guglielmo. 1999. *Adverbs and Functional Heads. A Cross-linguistic Perspective*. New York: Oxford University Press.

Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge: MIT Press.

Davies, William D., and Stanley Dubinsky. 2009. On the existence (and distribution) of sentential subjects. In *Hypothesis A/hypothesis B: Linguistic Explorations in Honor of David M. Perlmutter*, eds. Donna B. Gerdts, John C. Moore, and Maria Polinksy, pp. 111–128. Cambridge: MIT Press.

Duffield, Nigel. 1999. Final modals, adverbs and antisymmetry in Vietnamese. *Revue québécoise de linguistique* 27:92–129.

Duffield, Nigel. 2013. Head-First: On the head-initiality of Vietnamese clauses. In *Linguistics of Vietnamese: An International Survey*, eds. Daniel Hole and Elisabeth Löbel, pp. 127–154. Germany: De Gruyter Mouton.

Duffield, Nigel. 2019. Illusory islands: On '*wh*-questions in Vietnamese'. In *Interdisciplinary Perspectives on Vietnamese Linguistics*, Nigel Duffield, Trang Phan, and Tue Trinh, pp. 81–112. Amsterdam/Philadelphia: John Benjamins Publishing.

Enfield, Nick J. 2003. *Linguistic Epidemiology. Semantics and Grammar in Mainland South-East Asia*. London: Routledge.

Ernst, Thomas. 2002. *The Syntax of Adjuncts*. Cambridge: Cambridge University Press.

Fang, Xiaoyan. 2003. 廣州方言句末語氣助詞 [Sentence final modal particles in the Guangzhou dialect]. Guǎngzhōu: Jinan University Press.

Fujii, Tomohiro and Kensuke Takita. 2007. Wh-adverbials in-situ, their island-(in)sensitivity and the role of demonstratives in wh-in-situ licensing. *Nanzan Linguistics: Special Issue* 3(1):107–126.

Fujii, Tomohiro, Kensuke Takita, Barry C.-Y. Yang, and Dylan W.-T. Tsai. 2014. Comparative remarks on *wh*-adverbials *in situ* in Japanese and Chinese. In *Japanese Syntax in Comparative Perspective*, ed. Mamoru Saito, pp. 181–205. Oxford: Oxford University Press.

Fung, Roxana S.-Y. 2000. *Final particles in standard Cantonese: Semantic extension and pragmatic inference*. Ohio: Ohio State University dissertation.

Giorgi, Alessandra. 2010. *About the Speaker: Towards a Syntax of Indexicality*. Oxford: Oxford University Press.

Hagège, Claude. 2008. Towards a typology of interrogative verbs. *Linguistic Typology*

12(1):1–44.

Hankamer, Jorge and Line Mikkelsen. 2021. CP Complements to D. *Linguistic Inquiry* 52(3):473–518.

Heim, Johannes M. and Martina E. Wiltschko. 2020. Deconstructing questions: Reanalyzing a heterogenous class of speech acts via commitment and engagement. *Scandinavian Studies in Language* 11(1):56–82.

Hoàng, Phê (ed.). 2006. *Vietnamese Dictionary (Từ điển tiếng Việt)*. Hà Nội/Đà Nẵng: Nhà xuất bản Đà Nẵng/Trung tâm Từ điển học.

Horn, Laurence R. 1985. Metalinguistic negation and pragmatic ambiguity. *Language*, 61(1):121–174.

Huang, C.-T. James. 1982. *Logical relations in Chinese and the theory of grammar*. Cambridge: MIT dissertation.

Huang, C.-T. James. 1994. Verb movement and some syntax-semantics mismatches in Chinese. In *Chinese Languages and Linguistics*, Vol. 2: *Historical Linguistics*, eds. Paul J.-K. Li, Chu-Ren Huang, and Chih-Chen J. Tang, pp. 587-613. Taipei: Institute of History and Philology, Academia Sinica.

Huang, C.-T. James. 1997. On lexical structure and syntactic projection. *Chinese Languages and Linguistics* 3:45–89

Huang, C.-T. James. 1999. Chinese passives in comparative perspective. *Tsing Hua Journal of Chinese Studies* 29:423–509.

Huang, C.-T. James. 2013. Variations in non-canonical passives. In *Non-canonical Passives*, eds. Artemis Alexiadou and Florian Schäfer, pp. 95–114. Amsterdam/ Philadelphia: John Benjamins.

Jiang, Shaoyu. 1994. 近代汉语研究概况 [A Survey Study on Early Mandarin]. Beijing: Peking University Press.

Joseph, Brian. 2000a. What gives with *what gives*? Contribution to Jorge Hankamer WebFest. Retrieved from https://babel.ucsc.edu/jorgewebfest/joseph.html.

Joseph, Brian. 2000b. What gives with es gibt? Typological and comparative perspectives on existentials in German, Germanic, and Indo-European. *American Journal of Germanic Linguistics and Literatures* 12(2):187–200.

Klein, Wolfgang. 2006. On finiteness. In *Semantics in Acquisition*, ed. Veerle van Geenhoven, pp. 245–272. The Netherlands: Springer.

Kwok, Helen. 1984. *Sentence Particles in Cantonese*. Hong Kong: Center of Asian Studies.

Larson, Richard K. 1988. On the double object construction. *Linguistic Inquiry*, 19(3):335–391.

Lau, Seng-Hian and W.-T. Dylan Tsai. 2020. A comparative study of *how* and *why* in Taiwan Southern Min and Mandarin Chinese. *Language and Linguistics* 21(2):254–284.

Lee, Thomas H.-T. and Yiu Y.-M. Carine. 1998. Paper presented in the Annual Research Forum of Linguistics Society of Hong Kong December 5-6, 1998, The Hong Kong Polytechnic University

Liao, Wei-wen R. and Jonah T.-H. Lin. 2019. Syntactic structures of Mandarin purposives. *Linguistics* 57(1):87–126.

Lin, Jonah T.-H. 2001. *Light Verb Syntax and the Theory of Phrase Structure*. Irvine: University of California dissertation.

Lin, Jonah T.-H., Jia-Chi Yu and Tzu-Ling Chen. 2018. "Modifiers" as verbs: the case of Mandarin. *Studia Linguistica* 72(3):625-661.

Lü, Shuxiang. 1985. 近代汉语指代词 [Demonstrative Pronouns in Modern Chinese]. Shanghai: Academia Press.

Martins, Ana M. 2012. Deictic locatives, emphasis, and metalinguistic negation. In *Parameter Theory and Linguistic Change*, eds. Charlotte Galves, Sonia Cyrino, Ruth Lopes, Filomena Sandalo, and Juanito Avelar, pp. 214–237. Oxford: Oxford University Press.

Nishigauchi, Taisuke. 1990. *Quantification in the Theory of Grammar*. Dordrecht: Kluwer.

Nguyễn, Đình-Hoà. 1997. *Vietnamese: Tiếng Việt không son phấn*. Amsterdam/Philadelphia: John Benjamins.

Paul, Waltraud and Victor J. Pan. 2016. What you see is what you get: Chinese sentence-final particles as head-final complementizers. In *Discourse Particles – Formal Approaches to their Syntax and Semantics*, eds. Joseph Bayer and Volker Struckmeier, pp. 49–77. Berlin: De Gruyter.

Pesetsky, David. 2000. *Phrasal Movement and its Kin*. MA: MIT Press.

Phan, Trần. 2022. *Vietnamese modal system of dynamic possibility: a diachronic perspective*. Taiwan: National Tsing Hua University manuscript.

Phan, Trần and W.-T. Dylan Tsai. 2022. Surprise-denial/disapproval *what*-questions in Vietnamese: a comparative perspective. *Journal of the Southeast Asian Linguistics Society: Special Publication* 9:169–192.

Reinhart, Tanya. 1997. Syntactic effects of lexical operations: reflexives and unaccusatives. *OTS Working Papers in Linguistics*, University of Utrecht.

Reinhart, Tanya. 2000. The Theta system: syntactic realization of verbal concepts. *OTS Working Papers in Linguistics*, University of Utrecht.

Ringe, Donald. 2006. *From Proto-Indo-European to Proto-Germanic: A Linguistic History of English*, vol. 1. Oxford: Oxford University Press.

Rizzi, Luigi. 1990. *Relativized Minimality*. MA: MIT Press.

Rizzi, Luigi. 1997. The fine structure of the Left Periphery. In *Elements of Grammar*, ed. Liliane Haegeman, pp. 281–338. The Netherlands: Kluwer.

Rizzi, Luigi. 2001. On the position 'Int(errogative)' in the Left Periphery of the clause. In *Current Studies in Italian Syntax: Essays Offered to Lorenzo Renzi*, eds. Guglielmo Cinque and Giampaolo Salvi, pp. 267–296. Amsterdam: Elsevier.

Rizzi, Luigi. 2004. Locality and Left Periphery. In *Structures and Beyond: The Cartography of Syntactic Structures*, ed. Adriana Belletti, pp. 223–251. New York: Oxford University Press.

Rizzi, Luigi. 2013. Notes on cartography and further explanation. *Probus* 25(1):197–226.

Roberts, Ian and Anna Roussou. 2003. *Syntactic Change: A Minimalist Approach to Grammaticalization*. New York: Cambridge University Press.

Simpson, Andrew and Ho Hao Tam. 2013. Vietnamese and the typology of passive constructions. In *Linguistics of Vietnamese: An International Survey*, eds. Daniel Hole and Elisabeth Löbel, pp. 155–184. Germany: De Gruyter Mouton.

Stepanov, Arthur and Tsai W.-T. Dylan. 2008. Cartography and licensing of *wh*-adjuncts: a cross-linguistic perspective. *Natural Language & Linguistic Theory* 26(3):589–638.

Stroik, Thomas. 2001. On the light verb hypothesis. *Linguistic Inquiry* 32:362–369.

Sybesma, Rint. 2008. Zhuang: A Tai language with some Sinitic characteristics. Postverbal 'can' in Zhuang, Cantonese, Vietnamese and Lao. In *From Linguistic Areas to Areal Linguistics*, ed. Pieter Muysken, pp. 221–274. Amsterdam: John Benjamins Publishing.

Sybesma, Rint and Li Boya. 2007. The dissection and structural mapping of Cantonese sentence final particles. *Lingua* 117(10):1739–1783.

Tang, C.-C. Jane. 1990. *Chinese Phrase Structure and the Extended X'-theory*. Ithaca: Cornell University dissertation.

Thompson, Laurence C. 1987 [1965]. *A Vietnamese Reference Grammar* (Mon Khmer Studies 13-14). Honolulu: University of Hawai'i Press.

Tsai, C.-Y. Edwin. 2009. *Wh-dependency in Vietnamese and the Syntax of Wh-in-situ*. Taiwan: National Tsing Hua University MA thesis.

Tsai, W.-T. Dylan. 1994. *On Economizing the Theory of A-bar Dependencies*. MA: MIT dissertation.

Tsai, W.-T. Dylan. 1999a. On lexical courtesy. *Journal of East Asian Linguistics* 8(1):39–73.

Tsai, W.-T. Dylan. 1999b. The hows of *why* and the whys of *how*. In *UCI Working Papers in Linguistics* 5, eds. Francesca Del Gobbo and Hidehito Hoshi, pp. 155-184. Irvine: University of California.

Tsai, W.-T. Dylan. 2008. Left Periphery and *how-why* alternations. *Journal of East Asian Linguistics* 17:83–115.

Tsai, W.-T. Dylan. 2014. Syntax-semantics mismatches, focus movement and light verb syntax. In *Peaches and Plums: Language and Linguistics Monograph Series 54*, eds. C.-T. James Huang and Feng-hsi Liu, pp. 203–226. Taipei: Institute of Linguistics, Academia Sinica.

Tsai, W.-T. Dylan. 2015. A tale of two peripheries: evidence from Chinese adverbials, light verbs, applicatives and object fronting. In *The Cartography of Chinese Syntax*, ed. W.-T. Dylan Tsai, pp. 1–32. New York: Oxford University Press.

Tsai, W.-T. Dylan. 2016. 論漢語內、外輕動詞的分佈與詮釋 [On the distribution and interpretation of inner and outer light verbs in Chinese]. *Linguistic Sciences* 15(4):362–376.

Tsai, W.-T. Dylan. 2018. High applicatives are not high enough: A cartographic solution. *Lingua Sinica* 4(2):1–21.

Tsoulas, George. 2017. The common syntax of deixis and affirmation. In *Order and Structure in Syntax*, eds. Laura R. Bailey and Michelle Sheehan, pp. 281–309. Berlin: Language Science Press.

Willis, Davis. 2006. Incipient Jespersen's cycle in Old English negation. In *Let Us Have Articles Betwixt Us – Papers in Historical and Comparative Linguistics in Honour of Johanna L. Wood*, eds. Sten Vikner, Henrik Jørgensen, and Elly van Gelderen, pp. 465–491. Aarhus: Aarhus University.

Yip, Virginia and Stephen Matthews. 1994. *Cantonese: A Comprehensive Grammar*. London: Routledge.

Trần Phan
Graduate Institute of Linguistics
National Tsing Hua University
101, Sec. 2, Guangfu Rd., East Dist., Hsinchu, Taiwan
tranphan@gapp.nthu.edu.tw

三位一體：用越南語的「SAO」
來問「什麼」、「如何/怎麼」和「為什麼」

潘玉陳
國立清華大學

在現代越南語中，疑問詞 sao 主要是跟「如何／怎麼」和「為什麼」的表達有關聯。這篇文章提出 sao 起初是作為名詞用，表示「什麼」，而 sao 出現在「如何／怎麼」和「為什麼」中是因為「如何／怎麼」和「為什麼」在構詞句法上是由「什麼」延伸而來。此分析支持了蔡維天（1999b 及其後著作）對疑問詞組提出的無擇約束理論以及跨語言上疑問副詞和疑問名詞的區別。此外，這篇文章以句法及釋義的角度將和 sao 相關的疑問成分拆解分析，並且以輕動詞來解釋非「什麼」的疑問語意是如何產生的。同時，本文也回顧了學者對認可（license）越南語疑問句的策略以及對越南語助詞 thế/vậy 作為無擇約束認可語（licenser）的討論，並提出不同的看法。

關鍵字：疑問副詞/名詞、無擇約束、製圖理論、輕動詞、語法化、越南語