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On Aggressively Non-D-Linking and Causal *Wh*-adjuncts*

Masao Ochi

1. Introduction

Causal *wh*-adjuncts such as *how come* in English are known to have syntactic and semantic properties that are not shared by ordinary reason *wh*-adjuncts such as *why*. Tsai (2008) explicitly distinguishes the two types of *wh*-adjuncts, arguing that causal *wh*-adjuncts convey a sense of counter-expectation, which arises due to the existence of a particular presupposition in causal *wh*-questions.

(1) a. How come the sky is blue?
b. Why the hell is the sky blue?
c. Why is the sky blue?

The *how come* question in (1a) presupposes that the sky is blue and, furthermore, that something caused the sky to be blue. From the latter presupposition, we could derive the observation that such a causal *wh*-question is often accompanied by a counter-expectation on the part of the speaker, e.g., "the sky should not be blue." Essentially the same point applies to *why the hell* questions, with the aggressively non-D-linker *the hell* signaling the counter-expectation. We might say that this counter-expectation is the source of the 'negative' attitude (e.g., the sense of puzzlement, surprise, disapproval, etc.) that is characteristic of a causal *wh*-adjunct and, perhaps more clearly, of an aggressively non-D-linker. In this respect both *how come* and *the hell* attribute an attitude or a viewpoint to the external (or the internal) speaker, who held an expectation that turned out to be unfulfilled. (1c), which employs the reason *wh*-adjunct *why*, merely presupposes that the sky is blue, and the speaker in this case might not expect any particular event to be responsible for the sky being blue.

Thus, the causal *wh*-adjunct and the aggressively non-D-linker share some trait. Nevertheless, Chou (2012) reports that they fail to co-exist as clauemates in Chinese and seeks a syntactic explanation for this restriction. I show in this paper that slightly modifying Chou's analysis and combining it with Ochi's (2004, 2014) analysis of multiple *wh*-questions leads to a better empirical coverage. This in turn supports Chou's overall idea that the source of the logophoric nature of a causal *wh*-phrase and an aggressively non-D-linker is to be found in the syntactic structure.

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2. Causal *Zenme* and the Aggressively Non-D-linker *Daodi*

Kuo (1996) and Huang and Ochi (2004) observe that the Chinese adverb *daodi*, which literally means 'to the bottom,' has a similar function to *the hell* in English.[1]

(2) Ta daodi mei-le shenme?
he the hell buy-Asp what
'What the hell did he buy?'

As discussed by den Dikken and Giannakidou (2002), Huang and Ochi (2004), and Chou (2012), the use of an aggressively non-D-linker, such as *the hell* and *daodi*, reflects a negative attitude that is ascribed to a speaker. When *daodi* appears in the matrix clause as in (2), it reflects the external speaker's negative viewpoint. As shown in (3), when it appears in the indirect question, it is the matrix subject (the "internal speaker") to whom such negative attitude is ascribed.

(3) Zhangsan xiang-zhidao [Lisi daodi mai-le shenme].
Zhangsan wonder Lisi the hell buy-Asp what
'Zhangsan wonders what the hell Lisi bought.' (Chou 2012: 9)

In order to capture such logophoric nature of *daodi*, Huang and Ochi (2004) postulate Attitude Phrase, whose presence in the structure gives rise to the special pragmatic flavor of *daodi* questions noted above. Pursuing a similar line of analysis, Chou (2012) postulates an operator in the left periphery of a clause, which he calls the Point of View (POV) operator, that licenses *daodi*. I will discuss this point below.

In a similar vein, Chou examines the causal *wh*-adjunct *zenme* 'how come,' which also expresses the negative attitude of the external speaker when occurring in the matrix clause and that of the matrix subject (the internal speaker) when occurring in the embedded clause. The following examples are taken from Chou (2012: 11). In (4b), the negative attitude contributed by *zenme* in the embedded clause belongs to the matrix subject *Zhangsan*.

(4) a. Lisi zenme mei lai shang ke?
Lisi how come not come attend class
'How come Lisi did not attend the class?'

[1] As Huang and Ochi (2004) point out, *daodi* and *ittai* in Japanese are not complete equivalents of *the hell* in English. In particular, *daodi* and *ittai* are fine in *which*-questions, unlike *the hell* (Pesetsky 1987). Thus, the term 'aggressively non-D-linker' is a misnomer for *daodi* and *ittai*, although I will continue to use this term, following the standard practice in the field.

b. Zhangsan xiang-zhidao [Lisi zenme mei lai shang ke].
Zhangsan wonder Lisi how come not come attend class
'Zhangsan wonders how come Lisi did not attend the class.'

Based on such observations as these, Chou proposes that both *daodi* and *zenme* have a common feature, called the Point-of-View (POV) feature, as part of their lexical entries. Being unvalued, this POV feature needs to receive a value from the Point of View Operator (POV-op). Due to space limitation, I will confine the discussion to the cases where *daodi* or *zenme* appears in the matrix clause and expresses the negative attitude of the external speaker. Now in order to capture this speaker-orientation of *daodi*, Chou proposes that the POV-op probe in the matrix clause has the feature specification [+ discourse participant, + addresser], which probes and values the unvalued [pov] feature of *daodi/zenme* as [+d] (which stands for 'discourse participant'). As a result of this syntactic valuation, the holder of the negative attitude is fixed to the addresser. In this way, the logophoric nature of *daodi* and causal *zenme* is syntactically encoded in Chou's analysis.

(5) a. [$_{CP}$ POV-op [$_{TP}$ you **daodi** bought what]
[+d, +a] [*u*pov: +d]

b. [$_{CP}$ POV-op [$_{TP}$ the sky **zenme** be blue]
[+d, +a] [*u*pov: +d]

Interestingly, Chou reports that *daodi* and causal *zenme* cannot co-occur. (6a) is provided to me by Dylan Tsai (p.c.), for which I am grateful. Note that reason *weishenme* 'why' has no problem occurring with *daodi*, as shown in (6b).

(6) a. *tiankong daodi zenme shi lande?
sky the hell how come be blue
'How come (*the hell) the sky is blue?'
b. tiankong daodi weishenme shi lande?
sky the hell why be blue
'Why the hell is the sky blue?'

Chou argues that the impossibility of having *daodi* together with *zenme* follows from minimality considerations. As shown in (7), the POV operator establishes an Agree relation with *daodi*, the highest

element in its c-command domain that carries an [*u*pov] feature. Once this relation is established, the probe ceases to be active. As a result, the [pov] feature of causal *zenme* remains without any value, leading the derivation to crash.

(7) [$_{CP}$ POV-op [$_{TP}$ the sky **daodi** **zenme** be blue]
[+d, +a] [*u*pov: +d] [*u*pov:]

Although this is an interesting analysis, it faces a challenge when we look at another type of causal *wh*-adjunct, *shenme* 'what' as 'why' (See Ochi 2004, 2014). Unlike causal *zenme*, causal *shenme* has no problem occurring with *daodi* (thanks to Dylan Tsai for the data and discussion).

(8) tiankong daodi zai lan sheme? (ta yinggai shi huide.)
sky the hell Prog blue what it should be gray
'Why the hell is the sky blue? (It should be gray.)'

If the causal *shenme* also bears an [*u*pov] feature, which is a reasonable thing to say as it also expresses a negative attitude on the part of the external speaker (or the matrix subject when *shenme* occurs in indirect questions), this example should also induce a minimality violation.

(9) [$_{CP}$ POV-op [$_{TP}$ the sky **daodi** be blue **zenme**]
[+d, +a] [*u*pov: +d] [*u*pov:]

Yet, the example is perfectly fine. Below I would like to propose a few modifications to Chou's analysis, which allow us to maintain Chou's original insight while correctly distinguishing (6a) from (8).

3. Proposal

One significant difference between causal *zenme* and causal *shenme* is their base positions. There is a good reason to suppose that causal *zenme* 'how come' is externally merged into the spec of the interrogative CP and undergoes no movement. In particular, as pointed out by Tsai (2008) and Chou (2012), causal *zenme,* unlike *weishenme* 'why,' does not establish a long-distance construal. The contrast in (10), taken from Tsai (2008), shows that causal *zenme* cannot occur in a clause selected by a verb like *renwei* 'think' that selects a non-interrogative clause. See Ochi (2014) for more discussion.

(10) a. Akiu renwei [Xiaodi weishenme hui cizhi]?
Akiu think Xiaodi why will resign
'Why does Akiu think [Xiaodi will resign *t*]?'
b. *Akiu renwei [Xiaodi zenme hui chiuli zhe-jian shi]?
Akiu think Xiaodi how will handle this-CL matter
'How come Akiu thinks [Xiaodi will handle this matter *t*]?'

In this respect the distribution of causal *zenme* is parallel to that of *how come* in English, which also disallows a long-distance construal (Collins 1991).

(11) a. Why did John say Mary left? (ambiguous)
b. How come John said Mary left? (matrix only)

On the other hand, causal *shenme* occurs very low in the structure, as it occurs post-verbally. According to Ochi (2014), the distribution of causal *shenme* parallels that of nominal frequency adverbs, which are V'-adjuncts according to Huang et. al (2009):

(12) a. Lisi qiao shenme men?
Lisi knock what door
'Why is Lisi knocking on the door?'
b. ?Lisi qiao men qiao shenme?
Lisi knock door knock what
'Why is Lisi knocking on the door?'

(13) a. Lisi qiao-le san-ci men.
Lisi knock-ASP three-times door
'Lisi knocked on the door three times.'
b. Lisi qiao men qiao-le san-ci.
Lisi knock door knock-Asp three-times
'Lisi knocked on the door three times.' (Ochi 1999, 2014)

I would like to connect this point to another point that also distinguishes causal *how come* and *zenme* from reason *why* and *weishenme*. As Collins (1991) points out, *how come* does not participate in multiple *wh*-questions. Tsai (2008) observes the same point for causal *zenme*.[2]

[2] Tsai (2008) (see also Huang (1982)) reports that reason *weishenme* does not participate in multiple *wh*-questions, but a speaker I consulted allows a data like the following.

(14) a. Why did John buy what?

b. *How come John bought what?

(15) *ni zenme hui he na-zhong jiu?

you how will drink which-kind wine

'*How come you will drink which kind of wine?' (Tsai 2008: 104)

Let me briefly review Ochi's (2004, 2014) account of this contrast. Ochi assumes that the interrogative C probes and assigns a value to a *wh*-phrase, which carries an unvalued Q-feature. For multiple *wh*-questions such as *who bought what?*, Ochi adopts multiple Agree (Hiraiwa 2001), which states that the probe P can agree with multiple goals in a simultaneous fashion, and that intervention effects are evaded insofar as an intervening element is rendered inactive by P.

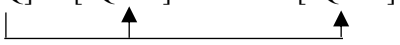
(16) [$_{CP}$ C [$_{TP}$ who bought what]

[*i*Q] [*u*Q: wh] [*u*Q: wh]

Assuming that *why* is merged in a TP region, (14a) can be analyzed in a similar way.

(17) [$_{CP}$ C [$_{TP}$ why you buy what]

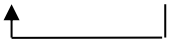
[*i*Q] [*u*Q: wh] [*u*Q: wh]



As for (14b), slightly departing from Ochi's (2014) analysis, let us suppose that the relevant Agree relation is established as *how come* and the C' (in the traditional sense) are merged, creating a spec-head configuration (cf. Chomsky's (2013, 2015) discussion of labeling via feature sharing in the spec-head configuration).

(18) [$_{CP}$ how come [$_{C'}$ C [$_{TP}$ …..]]]

[*u*Q: wh] [*i*Q]



So there are two ways in which feature valuation takes place: by Agree (where X c-commands Y and Y is the closest goal for X) or by external merge (where Y becomes the spec of X). Now let us examine the

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(i) Ni weishenme mai-le shenme?

you why buy-Asp what 'Why did you buy what?'

following crucial configuration, exemplifying (14b).

(19) *[$_{CP}$ *how come* [$_{C'}$ C [$_{TP}$ ….. *what* …]
[*u*Q:] [*i*Q] [*u*Q:]

Unlike in (16), in which a single operation, multiple Agree, takes care of both of the unvalued [pov] features in the structure, two strategies for valuation, Agree and external merge, are needed in this case. Probing (or Agreeing) by the C head would take care of the *u*Q of *what*, whereas the *u*Q of *how come* is taken care of via externally merging *how come* (i.e., valuation via the spec-head configuration). I suggested in Ochi (2014) that this situation results in a derivational crash. To see why, let us consider a point in the derivation at which the interrogative C is merged with TP, with *how come* still in the numeration and ready to be introduced into the derivation.

(20) [$_{CP}$ C [$_{TP}$ ... *what* …]] N = { *how come* }
[*i*Q] [*u*Q:] [*u*Q:]

Two different derivational paths are available: (i) Agree holding of C and *what*, and (ii) *how come* being inserted into the specifier of the interrogative CP. Suppose that Agree holds of the C head and *what* first. As shown in (21) below, the unvalued Q-feature of *what* is taken care of. However, the unvalued Q-feature of *how come* remains. When we insert *how come* as a next step, the C head is no longer active.

(21) [$_{CP}$ C [$_{TP}$ John bought *wh*at] N = {*how come*}
[*i*Q] [*u*Q: wh] [*u*Q:]

Suppose instead that *how come* is merged into the structure immediately after the derivational point shown in (20) is reached. As discussed above, I assume that *how come* and the interrogative C establish an Agree relation upon external merge. Although this Agree relation takes care of the unvalued Q-feature of *how come*, the unvalued Q-feature of *what* remains unvalued.

(22) [$_{CP}$ *how come* [$_{C'}$ C [$_{TP}$ you bought *what*]
[*u*Q: wh] [*i*Q] [*u*Q:]

In short, once a configuration in (20) is constructed, the derivation is bound to crash in one way or another. Note that I am advocating here a highly derivational approach to feature valuation: a probe (and presumably

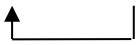
goals as well) becomes inactive as soon as it enters into an Agree relation.

Returning to the distribution of *daodi* and causal *zenme*, I would like to argue that the ill-formedness of (6a) falls under the same line of analysis. Let us reexamine the relevant examples from Chou. Instead of Chou's proposal shown in (7), I propose that this example has the structure in (23), which reflects the view that causal *zenme* is always externally merged into the specifier of the interrogative CP. I assume that the subject *tiankong* 'sky' has undergone local topicalization to the edge of CP (see Ko 2005). Also, given that *daodi* must c-command a *wh*-element (Kuo 1996, Huang and Ochi 2004), I assume that *daodi* in this example is externally merged into the left periphery of CP, on top of *zenme*.

(23) [$_{CP}$ the sky [$_{CP}$ **daodi** [$_{CP}$ **zenme** [$_{C'}$ **POV** [$_{TP}$ <the sky> be blue]]]]]
[*u*pov:] [*u*pov:] [+d, +a]

This structure yields no convergent derivation essentially for the same reason as for (14b). Consider a point in the derivation where causal *zenme* is externally merged into the spec of the interrogative CP whose head hosts a [pov] feature.

(24) [$_{CP}$ **zenme** [$_{C'}$ **POV** [$_{TP}$ the sky be blue]]] N = {daodi}
[*u*pov: +d] [+d, +a] [*u*pov:]



As *zenme* and the C head agree, the former receives a value from the latter, upon which both of them cease to be syntactically active. Therefore, when *daodi* is merged at a next step of the derivation, it cannot receive any value for its [*u*pov] feature. Hence this derivation does not converge.

This analysis correctly rules in (8). As shown in (25) below, the pov-probe of the C head c-commands both *daodi* and causal *shenme* 'what.' This structure is analogous to those in (16) and (17), and the pov-probe assigns a value to both *daodi* and *zenme* in a single derivational step.

(25) [$_{CP}$ C [$_{TP}$ the sky **daodi** be blue **shenme**]
[+d, +a] [pov: +d] [pov: +d]

This analysis provides us with an additional bonus when we turn to English. As noted by Culicover (1999) among others, the sequence *how come the hell* is ungrammatical in English.

(26) How come (*the hell) you did that? (Culicover 1999: 161)

However, Radford (2018: 234) reports a number of internet-sourced examples in which *how come* and *the hell* co-occur. Interestingly, they all have an aggressively non-D-linker (*the hell*, *on earth*, *the heck*, etc.) sandwiched between *how* and *come*.

(27) a. How the hell come we stick these low-life bastards in this big-ass hotels anyway?
b. How the heck come I don't get my fair share?
c. How on earth come they offer you some crap for 120p?

This clearly shows that a causal *wh*-adjunct and an aggressively non-D-linker are not inherently incompatible in English. The proposed analysis correctly accommodates this fact. As shown in (28), *how* and *the hell* are merged, and the resulting chunk is merged with *come*, creating *how the hell come*. I assume without any additional discussion that the [*u*pov] feature of *how come* resides in *how*.[3]

(28) a. {how, the hell}
[*u*pov:] [*u*pov:]
b. {{how, the hell}, come}
[*u*pov:] [*u*pov:]

This complex *wh*-phrase is then merged with the projection of C (C' in the traditional sense), creating the spec-head configuration. Crucially, both instances of the [pov] feature are valued simultaneously, because they are inserted into the structure as one complex phrase.

(29) [$_{CP}$ [how the hell] come] [$_{C'}$ C [$_{TP}$ .....]]]
[*u*pov: +d] [*u*pov: +d] [+d, +a]

4. Conclusion

Following Chou (2012), I have argued in this paper that the incompatibility of the aggressively non-D-linker *daodi* and the causal *zenme* is rooted in syntax. I hope to have shown that adding a few modifications to Chou's analysis and combining it with Ochi's (2004, 2014) analysis of multiple *wh*-questions opens up a promising venue to pursue. More generally, the discussion in this paper supports the

[3] As pointed out by Radford (2018: 234), who credits Merchant (2002) for the relevant observation, *the hell* can occur inside a complex *wh*-phrase. Crucially, *the hell* must immediately follow a *wh*-element.

(i) What the hell kind of a doctor is she?

(ii) *What kind of a doctor the hell is she?

view that the syntactic valuation of a discourse-related feature is at work at the CP zone in Chinese (see Miyagawa 2017).

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