

# Comparison of Miratives in Mandarin Chinese: A Preliminary Study

<sup>1</sup>Jiun-Shiung Wu, <sup>2</sup>Yu-Chien Hsu

Institute of Linguistics, National Chung Cheng University, Minhsiung, Chiayi County, Taiwan, 621

<sup>1</sup>Ingwujs@ccu.edu.tw, <sup>2</sup>AnnYCHsu@alum.ccu.edu.tw

## Abstract

This paper compares sources and strength of mirativity among four miratives in Mandarin Chinese: *jìngrán*, *yuánlái*, *cái* mirative and *jiù* mirative. We argue that sources of mirativity are closely associated with strength. There are four sources: contrast with expectation, negation with strong sentiment, new information, and partial contrast with a previous proposition. And the strength of mirativity decreases in the same order. Then, we propose dynamic semantics to account for the similarity and differences of these four types of miratives.

## 1 Introduction

In this paper, we examine the sources of four miratives in Mandarin Chinese (for short, Chinese) and explain their variability of strength.

Delancey (1997, 2001, 2012) treats mirativity as expressing new or unexpected information, suggesting surprise. On the other hand, Aikhenvald (2002) suggests an array of mirative meanings: sudden discovery, surprise, unprepared mind of the speaker, counterexpectation and new information. Portner (2018, Sect. 3.3.4) classifies mirative (exclamative in Portner's terms) as a minor type of sentence mood

In Chinese, Tsai & Yang (2012) discuss the syntax of mirative *yuánlái* ... *a*<sup>0</sup> 'it turn out' and how mirativity is derived. Wu (2008) examines evaluative modal *jìngrán* 'contrary to one's expectation'. Wu (2024) explores two constructions denoting mirativity: *jiù* miratives and

*cái* miratives. Examples of the four miratives are as in (1).

- (1) a. Tā yuánlái shì xiǎotō *a*<sup>0</sup>!  
he YUANLAI be thief Prc  
'It turns out that he is a thief!'
- b. Tā jìngrán shì xiǎotōu!  
he JINGRAN be thief  
'Contrary to expectation, he is a thief!'
- c. Sān tiān qián néng tōngzhī jiù  
three day before DYN<sup>1</sup> notify JIU  
āmítuófó le, bié shuō yī zhōu le!  
Amitabha Prc, not say one week Prc  
'It would be a blessing if a notification  
could be made three days before (a date),  
let alone one week!'
- d. Yī zhōu qián néng tōngzhī cái  
one week before DYN notify CAI  
guài!  
strange  
'No way that a notification can be made  
one week before (a date)!'

While Tsai and Yang (2022), Wu (2008, 2024) provide detailed analysis on different constructions expressing mirativity, cross-categorical comparison has not been done. It has not been discussed how to distinguish their sources of mirativity. Moreover, variability of strength of mirativity receives little, if any, attention. In this paper, we put these two issues under examination.

This paper is organized as below. Section 2 is literature review, where Tsai & Yang (2012), Wu (2008, 2024) are reviewed. We point out that, while

<sup>1</sup> The abbreviations used in this paper include: CL for a classifier, DYN for a dynamic modal expression, DEON for a deontic modal expression, Prc for a particle.

the constructions discussed in these studies all express mirativity, the sources and strength of mirativity remain unclarified. In Section 3, we present our analysis and a dynamic semantic account. Section 4 concludes this paper.

## 2 Literature Review

In this paper, we briefly review Tsai and Yang (2012), Wu (2008, 2024),<sup>2</sup> and present the niche for our current study.

Tsai and Yang (2012) propose a syntactic account for *yuánlái*... *a*<sup>0</sup> ‘it turn out Prc’, which expresses mirativity.<sup>3</sup> They suggest the following. *Yuánlái* exists under Evidential Phrase (EviP). SAP2 comes with a feature [mirative], which expresses surprise. *Yuánlái* merges with the head of SAP2. Then, Agree assigns [mirative] of the SAP2 head to *yuánlái*. See the bracketed structure below:

- (2) a. [<sub>SAP2</sub> *a*<sup>0</sup><sub>[mirative]</sub> [<sub>EviP</sub> *yuánlái* [<sub>MoodP</sub> Mood<sup>0</sup><sub>[indicative]</sub> ... [<sub>IP</sub> ...]]]]  
 b. [<sub>SAP2</sub> *yuánlái*<sub>[mirative]</sub> SA2<sup>0</sup><sub>[mirative]</sub> [<sub>EviP</sub> *t<sub>i</sub>* Evi<sup>0</sup> [<sub>MoodP</sub> Mood<sup>0</sup><sub>[indicative]</sub> ... [<sub>IP</sub> ...]]]]

In (2a), *yuánlái* is inside the EviP. In (2b), it merges with SA2<sup>0</sup> and gets the feature [mirative] from SA2<sup>0</sup>. This is how *yuánlái*... *a*<sup>0</sup> gets a mirative reading.

Wu (2008) examines two evaluative modals – *guǒrán* ‘as expected’ and *jìngrán* ‘contrary to expectation’. He proposes a modal semantics for *jìngrán*:

- (3) *Jìngrán* presents a proposition which is a simple necessity of negation in *w* with respect to an evaluative conversational background.

An evaluation conversational background is a set of possible worlds where propositions are expected to be true. (3) says that *jìngrán* presents a proposition not true in this set of worlds, i.e., a proposition not expected. While Wu (2008) does not say anything about mirativity, a mirative reading arises from unexpectedness or counterexpectation.

Wu (2024) examples two mirative constructions: *jiù* and *cái* mirative. Let’s look at two examples. In order to express his/her attitude of surprise toward (4a), the speaker can utter (4b) and (4c):

- (4) a. Qíxiàn qián yì zhōu yào jiāo  
 deadline before one week DEON turn.in  
 zuòyè.  
 assignment  
 ‘Turn in your assignment one week before the deadline.’  
 b. Sān tiān qián néng jiāo jiù  
 three day before DYN turn.in JIU  
 āmítuófó le!  
 Amitabha Prc  
 ‘It would be a blessing from God if we could turn in three days before the deadline!’  
 c. Yì xīngqí qián néng jiāo cái  
 one week before DYN turn.in CAI  
 guài!  
 strange  
 ‘No way that we can turn in one week before the deadline!’

(4b) uses *jiù āmítuófó le* ‘JIU Amitabha Prc’ to express the speaker’s surprise by proposing a more plausible time. On the other hand, (4b) spells out the speaker’s surprise by directly negating the possibility of the date in (4a).

Among many things, Wu (2024) suggests that mirativity of these two constructions come from the interaction of contradiction to an expectation and strong sentiment. (4a) is an expectation. (4b) and (4c) both express something contrary to the expectation. In addition, (4a) shows strong sentiment by proposing a more likely alternative and showing the speaker’s frustration with the original request. In (4b), *cái guài* ‘CAI strange’ itself is a strong negation. Wu (2024:7) points out that “[w]hile contradiction could lead to mirativity, contradiction plus strong sentiment guarantees mirativity.”

Given the above brief review, we have a good idea of how different constructions produce a mirative reading. But, one question immediately arises: do they express exactly the same mirativity? Or, to take a step further, is there only one type of

<sup>2</sup> Fang (2018) discusses the mirative reading of sentential *le*. But there is evidence that mirativity is not an inherent property of sentential *le*. Hence, we do not review this paper. And due to space limit, we will not discuss sentential *le* at all.

<sup>3</sup> Please note that Tsai and Yang (2012) also discusses *zěnme*, which also denotes mirativity. Due to space limit, we will not review *zěnme* and leave the source and strength of mirativity for *zěnme* for future studies.

mirativity or are there different types of mirativity? This question is not addressed in the literature on Chinese miratives. Moreover, variability of strength of mirativity is not explored. We wish to take a preliminary look at these two issues.

### 3 Sources, Strength and Dynamic Semantics

While expressing mirativity, the four miratives as shown by the examples in (1) intuitively manifest subtle differences. In this section, we discuss three issues: (i) sources of mirativity, (ii) strength of mirativity, and (iii) dynamic semantics. We argue that different sources of mirativity result in different types and that sources are closely associated with strength. Finally, we propose dynamic semantics to model the similarity and differences of the four miratives under examination.

#### 3.1 Source of Mirativity

As the review in Section 2 points out, all of *jìngrán*, *jiù* miratives and *cái* miratives show a certain type of contradiction. While Tsai & Yang (2012) do not really talk about the (compositional) semantics of *yuánlái*, Wu (2012) proposes a semantics of contrast for *yuánlái* which expresses a mirative reading:<sup>4</sup> it presents a proposition which was known to be not true at a past time or whose truth was unknown at a past time, but is known to be true at a later time. That is, Wu's (2012) semantics for mirative *yuánlái* shows contradiction (in terms of a proposition being known to be true at different times) as well. While these four miratives all involve contrast/contradiction, they produce contrast/contradiction in very different ways, which results in different types of mirativity. Let's see examples below.

- (5) a. Tā jìngrán yào wǒmen yì-ge yuè  
he JINGRAN want us one-CL month  
qián jiāo kǒshìgǎo, wǒ  
before turn.in draft.for.defense I  
hái yǐwéi shì yì zhōu  
still mistakenly.think be one week  
qián!

before

'Contrary to expectation, he wanted us to turn in our drafts for defense one month before the deadline! I thought it was one week before!'

- b. Tā jìngrán yào wǒmen yì-ge yuè  
he JINGRAN want us one-CL month  
qián jiāo kǒshìgǎo, wǒ  
before turn.in draft.for.defense I  
hái yǐwéi **bùyòng jiāo.**  
still mistakenly.think no.need turn.in  
'Contrary to expectation, he wanted us to turn in our drafts for defense one month before the deadline! I thought we did not have to!'
- c. Tā jìngrán yào wǒmen yì-ge yuè  
he JINGRAN want us one-CL month  
qián jiāo kǒshìgǎo, #wǒ  
before turn.in draft.for.defense I  
hái yǐwéi shì yào **jiāo**  
still mistakenly.think be DEON turn.in  
**zuòyè.**

assignment

'He wanted us to turn in our drafts for defense one month before the deadline! #I thought he wanted us to turn in our assignment.'

- (6) a. Tā yuánlái yào wǒmen yì-ge yuè  
he YUANLAI want us one-CL month  
qián jiāo kǒshìgǎo, wǒ  
before turn.in draft.for.defense I  
hái yǐwéi shì yì zhōu  
still mistakenly.think be one week  
**qián.**  
before

'It turned out that he wanted us to turn in our drafts for defense one month before the deadline! I thought it was one week before!'

- b. Tā yuánlái yào wǒmen yì-ge yuè  
he YUANLAI want us one-CL month  
qián jiāo kǒshìgǎo, wǒ  
before turn.in draft.for.defense I  
hái yǐwéi **bùyòng jiāo.**  
still mistakenly.think no.need turn.in  
'It turned out that he wanted us to turn in our drafts for defense one month before

<sup>4</sup> *Yuánlái* is actually ambiguous: it can present a proposition which was (known to be) true at a past time but is true at a later time, or one which was (known to be) not true at a past time or whose truth was unknown at a past time but is (known to be) true at a later time. Please refer to Wu (2012) for a

detailed discussion. Please also note that Wu (2012) does not refer to *yuánlái* as a mirative, but the latter semantics presented above *does* accommodate mirativity.

the deadline! I thought we did not have to!’

- c. Tā yuánlái yào wǒmen yì-ge yuè  
he YUANLAI want us one-CL month  
qián jiāo kǒshìgǎo, wǒ  
before turn.in draft.for.defense I  
hái yǐwéi shì yào jiāo  
still mistakenly.think be DEON turn.in  
zuòyè.  
assignment

‘It turned out that he wanted us to turn in our drafts for defense one month before the deadline! I thought he wanted us to turn in our assignment.’

While *jìngrán* and *yuánlái* express mirativity by means of contradiction, (5) and (6) show a subtle difference. In (5), *jìngrán* presents an event contrary to one of the same type. In (5a), the contrasted event is to turn in one week before the deadline. In (5b), the one is not to turn in a draft at all. In (5c), the second clause (the contrasted event) is to turn in an assignment, rather than a draft for defense, and (5c) is infelicitous.

On the other hand, as the examples in (6) show, the contrasted propositions can be to turn in a draft one week before the deadline, as (6a), not to turn in a draft at all, as (6b), and to turn in an assignment, instead of a draft for defense, as (6c). And, all of (6a), (6b) and (6c) are felicitous.

If we examine (5) and (6) carefully, we can find that the difference in felicity shown in these two sets of examples lies in the following: in (5), the proposition presented by *jìngrán* and the contrasted propositions in (5a, b) are of the same type: to turn in a draft for defense, but the contrasted proposition in (5c) differs from the previous set of propositions: to turn in an assignment in (5c) vs. to turn in a draft for defense in (5a-b).

On the other hand, *yuánlái* is not sensitive to whether a contrasted event is of the same type or not. In (6), the contrasted event can be to turn in a draft for defense, as in (6a, b) or to turn in an assignment, as in (6c).

Therefore, based on the difference between (5) and (6), we argue that, in terms of mirativity, *jìngrán* and *yuánlái* differ in the sense that *jìngrán* presents a proposition contrasted with one of the same type, while *yuánlái* identifies one contrasted

with another one, which can be of the same type or not of the same type.

As for *jiù* and *cái* miratives discussed in Wu (2024), they definitely contrast with a proposition of the same type. If a professor gives the following order: *yì-ge yuè qián yào jiāo kǒshìgǎo* ‘do turn in your draft for defense one month before the deadline’, students can make the following responses as in (7):

- (7) a. yì zhōu qián néng jiāo jiù  
one week before DYN turn.in JIU  
āmítuófó le!  
Amitabha Prc  
‘It would be a blessing from God if we could turn in (our draft) one week before the deadline!’  
b. yì-ge yuè néng jiāo cái guài!  
one-CL month DYN turn.in cai strange  
‘No way that we can turn in (our draft) one month before the deadline.’

Uttering (7a), the student presents a more plausible alternative, while speaking (7b), the student directly negates the possibility of the professor’s request. Regardless of whether a speaker provides a more plausible alternative or negates the original request, the speaker responds with the same type of propositions. In (7), in the utterances of the professor, (7a) and (7b), the contrasted event is to turn in a draft for defense.

Following the related literature where mirativity originates from contradiction/contrast, we furthermore classify sources of mirativity into four finer types: (i) contrast with a proposition of the same type, (ii) contrast with a proposition either of the same type or not of the same type, (iii) proposing a more plausible alternative and (iv) direct negation.

This finer classification of mirativity can explain native speakers’ intuition about the subtle differences among the sentences expressing mirativity, such as those four types under discussion in this paper. Although *jìngrán*, *yuánlái*, *jiù* miratives and *cái* miratives all carry an overtone of surprise, native speakers of Chinese<sup>5</sup> still have the intuitive feelings that they are somehow different. Our discussion here can, at least to a certain extent, explain this difference.

<sup>5</sup> At least, for us and our informants, this subtle difference concerning these mirative sentences is true.

### 3.2 Strength of Mirativity

While it is difficult to prove, we and our informants have this intuition concerning the variability of strength of mirativity. The variability of strength can be represented, from strong to weak, as below:

- (8) *jìngrán* > *cái* mirative > *yuánlái* > *jiù* mirative

For the variability of strength for *jìngrán* and *yuánlái*, we argue that the variability lies in the distinction between expectation and realization. As pointed out by many studies, e.g., Wu (2008), *jìngrán* is suggested to involve expectation.

On the other hand, *yuánlái* has an epistemic reading. For example, when someone utters *tā yuánlái shì jīngchá* ‘it turned out that he was a police officer’, the most likely scenario is: the speaker did not know he was a police officer and came to realize, later, that he was a police officer. To put it differently, while *yuánlái* shows contradiction and/or contrast, it involves realization, i.e., new knowledge or new information, rather than expectation.

Expectation is a strong sentiment, and as a result, contrast to an expectation is also a strong sentiment. New knowledge can result in surprise, but surprise is not an inherent property of new knowledge. This is why *jìngrán* expresses stronger mirativity than *yuánlái*.

Neither *cái* miratives nor *jiù* miratives involve expectation. But, *cái* miratives inherently express strong sentiment. In addition to *cái guài* ‘CAI strange’, *cái* miratives include *cái yǒu guǐ* ‘CAI have ghost’, *cái bù kěnnéng* ‘CAI impossible’, *cái bù yòng xiǎng* ‘CAI no need to think’, etc. All of these phrases describe a degree next to impossibility and are inherently of strong sentiment, as argued in Wu (2024). Surprise resulted from contrast with an expectation denotes strong sentiment. *Cái* miratives ranks the second on the scale of strength of mirativity because, while not involving expectation, it describes next to impossibility, though not absolute impossibility. Next to impossibility is a sentiment less strong than an expectation and absolute impossibility.

*Jiù* miratives are weakest in terms of the scale of strength of mirativity because they are used to offer a more plausible alternative. By means of providing a more likely alternative, the speaker does not completely reject the original request, but

compromises to a certain degree by suggesting something more doable for him.

To put it a different way, a *jiù* mirative does not completely contrast with or contradict to a previous request. Instead, it complies partially. This is why a *jiù* mirative gets the weakest mirativity among the four miratives under discussion in this paper.

Since *jìngrán* ranks the highest on the scale of strength of mirativity, a *cái* mirative ranks the second and a *jiù* mirative ranks the lowest, *yuánlái* will have to rank the third.

To sum up, in this section, we present a scale of strength of mirativity. We argue that contrast to an expectation is the strongest. Next to impossibility ranks the second. New information ranks the third. Compromising by suggesting an alternative ranks the lowest.

### 3.3 Dynamic Semantics

There are some formal analyses of the semantics of miratives, e.g., Rett (2008, 2009, 2011), Rett & Murray (2013), etc. In order to explain the semantics of *wh*-exclamatives, which Rett (2009) uses to refer to mirative, Rett (2009:610) proposes a degree semantics:

- (9) DEGREE E-FORCE ( $\mathcal{D}_{d, \langle s, d \rangle}$ ) is expressively correct in context *C* iff  $\mathcal{D}$  is salient in *C*, and  $\exists d, d > s$  [the speaker in *C* is surprised that  $\lambda w \mathcal{D}(d)(w)$ ].

(9) essentially says the following: one’s utterance of a *wh*-exclamative is valid under the following conditions. First, this *wh*-exclamative contains a degree reading, which is salient in the current context. Second, the speaker is surprised that a particular degree is true of the degree reading. And, third, the degree is greater than a contextually specified standard *s*.

Rett and Murray (2013) examine mirative evidentials and propose a dynamic semantics for mirative as follows:

(10) a. Hawk won-*hoo'o*.

b.

at-issue prop.	$p = \lambda w. \text{hawk won in } w$
not-at-issue prop.	$E \models p$
illocutionary relation	Propose to add $p$ to $CG$ $e_s \in \text{TARGET}(e_i) \rightarrow p \notin E_i^{(e_i)}$

(10b) is the dynamic semantics of mirative suffix *-hoo'o*. In the context of mirativity, the salient  $E$  is the speaker's set of expectations.  $e_s \in \text{TARGET}(e_i)$  stands for a recency restriction, i.e. the utterance of the event denoted by  $p$  must immediately follow the *Hawk won* event. And, if this is true, then  $p$  is not in  $E$ , i.e.  $p$  is not expected.

However, since Rett (2008, 2009, 2011), Rett and Murray (2013) do not talk about variability of sources and strength of mirativity, naturally their semantics cannot take care of what we discuss in this paper.

In Section 3.2, we argue that types (sources) of mirativity are closely related to strength of mirativity in Chinese. The four types/sources in the order of strength are: counter-expectation, direct negation with strong sentiment, new information, and partial contrast by proposing a more plausible alternative.

We attempt to propose a dynamic semantics, which is capable of distinguishing the four types of sources and hence the variability of strength.

First, we define the interpretation of discourse  $\mathcal{D}$  and ADD, which adds a proposition into the components of  $\mathcal{D}$ . What is proposed in (11) stands for the knowledge of a speaker of a mirative.

- (11) a. The interpretation of discourse,  $\mathcal{D}$ , is a tuple  $\langle CG, E \rangle$ , where  $CG$  (= common ground) and  $E$  (= expectation) are sets of propositions. That is,  $\mathcal{D} = \langle CG, E \rangle$ .  
 b.  $p$  is a proposition. ADD  $p$  to  $CG$  iff  $CG \cup \{p\}$ . And likewise for  $E$ .

In (11a), we define the interpretation of discourse as a tuple of two sets.  $CG$ , common ground, is where shared knowledge in a discourse is stored, e.g., Stalnaker (2002). As a discourse

progresses, participants ADD new propositions into  $CG$ .  $CG$  is a mechanism very common in dynamic approaches to semantics.

And, due to the significant role expectation plays in distinguishing the sources and strength of mirativity, we argue that, in addition to  $CG$ , the interpretation of discourse requires  $E$  (expectation), as well.

Given this dynamic semantics schema, we can model the four sources of mirativity. In all of (12–15), the (a) clause represents the interpretation of discourse before a mirative sentence comes in, while the (b) clause stands for the operation of the corresponding mirative to the interpretation of discourse.

(12) *jìngrán*( $p$ )

- a.  $\langle CG = \{\}, E = \{\neg p\} \rangle$   
 b. ADD  $p$  to  $CG$ .

For *jìngrán*,  $E$  contains a proposition  $\neg p$ . And, *jìngrán* ADD  $p$  to  $CG$ . Naturally, a contradiction arises and a mirative reading is produced. What is more, because an expectation carries strong sentiment, this is why  $E$  needs to be listed, independent of  $CG$ .

(13) *cái* mirative( $q$ )

- a.  $\langle CG = \{p\}, E = \{\} \rangle$   
 b. ADD  $p$  to  $CG$ , where  $q$  iff  $\neg p$  and  $q$  carries strong sentiment.

A *cái* mirative does not have an expectation, and therefore  $E$  is an empty set. In addition, a *cái* mirative presents a negative proposition which carries strong sentiment. This (negative) proposition is added into  $CG$ . Because  $q$  is contrasted with/contradictory to  $p$ , a mirative reading is yielded.

(14) *yuánlái*( $p$ )

- a.  $\langle CG = \{\}, E = \{\} \rangle$   
 b. ADD  $p$  to  $CG$ .

*Yuánlái* does not have an expectation as well. What (14b) shows is the following. Before the *yuánlái* sentence comes into the discourse, the  $CG$  is empty and so is  $E$ . An empty  $CG$  means that there is no previous knowledge about any proposition,<sup>6</sup>

<sup>6</sup> One might ask how our theory distinguish the start of a discourse and *yuánlái* since in both cases  $CG$  is empty.

Please note that, as we point out, (11) represent the knowledge of a speaker of a mirative. Mirative *yuánlái*

including  $p$ . When a *yuánlái* sentence comes in,  $p$  is added to  $CG$ . This operation means that a new realization about  $p$  comes into the set of shared beliefs. This new information yields a mirative reading.

- (15) *jiù* mirative( $q$ )  
 a.  $\langle CG = \{p\}, E = \{\} \rangle$   
 b. ADD  $q$  to  $CG$ , where  $q$  is partially contrasted with  $p$ .

For a *jiù* mirative, the  $CG$  contains a proposition  $p$ , which is a request already existing in the discourse. A *jiù* mirative provides a more plausible alternative, which is partially contrasted with  $p$ . This contrast, while partial, produces a mirative reading.

Moreover, (13) and (15) capture a very important similarity between a *cái* mirative and a *jiù* mirative: they are both used as a response to a previous proposition. In (13) and (15),  $CG$  is not empty, which models this similarity.

To sum up, in this section, we propose a dynamic semantics, which can model and explain the sources and variability of strength of mirativity in Chinese. The interpretation of discourse  $\mathcal{D}$  is a tuple  $\langle CG, E \rangle$ . For *jìngrán*,  $E$  contains a proposition, while  $CG$  is empty. For *yuánlái*, both  $CG$  and  $E$  are empty. For *cái* and *jiù* miratives,  $CG$  contains a proposition, but  $E$  is empty. *Jìngrán* introduces a proposition into the discourse, which contradicts with the proposition in  $E$ . A *cái* mirative introduces a proposition with strong sentiment, which negates the proposition in  $CG$ , whereas a *jiù* mirative presents a proposition into the discourse, which partially contrasts the one in  $CG$ .

## 4 Conclusion

In this paper we discuss the sources and strength of mirativity for four miratives in Chinese: *jìngrán*, *yuánlái*, *cái* miratives and *jiù* miratives. We argue the following. First, the subtle differences of mirativity of these four miratives are associated with sources of mirativity: contrast with expectation, new information, direct negation with strong sentiment and partial contrast by proposing a more plausible alternative.

In terms of strength of mirativity, because expectation is very strong sentiment, contrast with expectation is strong as well and ranks the first. Direct negation with strong sentiment ranks the second because of next to impossibility, rather than absolute impossibility. New information comes the third. Partial contrast by proposing a plausible alternative comes the last because it actually complies partially but does not contrast or contradict completely.

We propose a dynamic semantics to capture the similarity and differences of these four miratives. The interpretation of discourse  $\mathcal{D}$  is a tuple  $\langle CG, E \rangle$ , that is, common ground and expectation, both of which are sets of propositions. For *jìngrán*,  $CG$  is empty but  $E$  contains a proposition  $\neg p$ . *Jìngrán* introduces  $p$  into  $CG$ . A contradiction arises and a mirative reading is derived. For *yuánlái*,  $CG$  and  $E$  are both empty. *Yuánlái* adds  $p$  into  $CG$ . Because  $CG$  is originally empty and then  $p$  is added into  $CG$ , *yuánlái* presents new information, which yields a mirative reading. For a *jiù* mirative and a *cái* mirative,  $CG$  contains a proposition  $p$ , which these two types of miratives respond to, and  $E$  is empty. A *cái* mirative introduces a proposition into  $CG$ , which directly negates, with strong sentiment, the existing proposition, while a *jiù* mirative adds a proposition into  $CG$ , which partially contrasts with the existing proposition. Contrast/contradiction arises and a mirative interpretation is produced.

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can be used only when the speaker has new information. That is, there must be something in the context that comes to the speaker's attention. However, at the beginning of a discourse, nothing comes to the

speaker's attention (or to the addressee's attention). This point distinguishes the start of a discourse from the case where mirative *yuánlái* is used.

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