THE SURPRISE FACTOR: A SEMANTIC THEORY OF MIRATIVITY

A Dissertation

Presented to the Faculty of the Graduate School

of Cornell University

in Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy

by

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May 2023

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Cornell University 2023

This dissertation is a systematic study of the semantics of mirativity, a descriptive category for surprise-related meanings and their expression in natural language. Building on both typological and formal research traditions, I argue for a concerted research program for investigating this domain of meaning. Specifically, I address three foundational questions: (i) what is mirativity (semantic identity); (ii) what is the content of mirative meaning, and (iii) how does mirative meaning arise from evidential meaning.

Despite a strong intuition that linguistic expressions of surprise form a natural category (mirativity), existing literature has persistently faced a certain amount of ambiguity over the definition and usage of this notion. I first resolve this ambiguity by articulating a semantic definition of mirativity grounded in the cognitive science of SURPRISE: mirativity is a range of *attitudes* which characterize mental states induced by the experience of SURPRISE. These attitudes necessarily contain a dimension of either *novelty* or *counterexpectation*: the latter causally induces SURPRISE, and the former is a necessary condition of the latter.

Second, previous work has shown mirative meaning to have either propositional or speech-act-level content. I argue that there is a third typological possibility: novel data on the mirative marker *yikaon* in Shanghai Wu (Sinitic, China) show that the content of a mirative attitude can be the union of a *set* of propositions: such miratives can crucially predicate an attitude over both single propositions in the declarative and questions with non-trivial informative content. I analyze this mirative contribution as an emotive attitude update to the speaker's Discourse Commitments, which scopes over sentential force.

Third, across languages, mirative markers are often also evidentials. I argue that the semantic affinity between evidentiality and mirativity has diverse theoretical characters: indi-

rect, reportative and inferential evidentials do not evoke mirative meaning in the same way. Specifically, I argue that the connection between reportative evidentiality and mirativity can be due to diachronic reanalysis. Reportatives frequently trigger Conversational Implicatures about the SPKR's attitude because they encode perspectively asymmetric Discourse Commitments and QUD-addressing proposals. I argue that reportatives are often reanalyzed as SPKR-attitude markers due to the conventionalization of such Conversational Implicatures, driven by a principle of EPISTEMIC TRANSPARENCY.

BIOGRAPHICAL SKETCH

Born in the industrial town of Ma'anshan, in Anhui, China, and growing up in Shanghai, Lingzi Zhuang spent his formative years as an undergraduate student at Columbia University in the City of New York, where, through great books and greater educators, he discovered his love for linguistics and for humanistic inquiry. After completing his B.A. *summa cum laude* in Linguistics with a concentration in Computer Science, during which time he worked a contributing researcher on the Gurung documentation project at the Endangered Language Alliance in New York City, Lingzi entered the Ph.D. program at Cornell University with a focus on semantics and pragmatics, while maintaining an areal-historical interest in Sino-Tibetan languages of the Himalayas and China. He has undertaken fieldwork on languages of Nepal and Tibet, both *in situ* and in urban fieldwork settings.

As of Fall 2022, Lingzi is Assistant Professor, Teaching Stream of Linguistics at the University of Toronto Mississauga, Canada.

To my parents and family who taught me first to speak;

To my teachers and mentors who taught me first to inquire;

And to the one Wonder, who taught me first to wonder.

"…μάλα γὰρ φιλοσόφου τοῦτο τὸ πάθος, **τὸ θαυμάζειν**: οὐ γὰρ ἄλλη ἀρχὴ φιλοσοφίας ἢ αὕτη."

Socrates (*Tht. 155d*)

ACKNOWLEDGEMENTS

Irene Motyl-Mudretzkyj, and to have collaborated with Zachary Wellstood, Danielle Ronkos, Ross Perlin and Chris Geissler.

It goes without saying that I owe this dissertation project and all the graduate training that led up to it to my advisors and mentors at Cornell. I am indebted to my committee members Sarah Murray, John Whitman, Mats Rooth and Scott AnderBois for their guidance at all stages and in all iterations of this dissertation project, for their insightful and patient comments on various parts and problems, and ultimately for their continued support and confidence in this effort to understand a concept that, as it turns out, spans different schools of linguistic research and at points even crosses disciplinary boundaries. Thanks are due to all those who have taught, advised, and inspired me to become a better scholar: to Sarah again for her initial openness to my proposal of the mirativity project, and for her excellent example-setting in the practical disciplines of task delineation and time management; to Scott again for his invaluable comments and mind-opening questions; to John again for being a Socratic teacher and an exemplary presence of practical wisdom and intellectual virtue; to Miloje Despić for his invigorating coaching in syntax and in career decisions; to Helena Aparicio, Jon Ander Mendia, John Bowers, Mats Rooth, Dorit Abusch, W. Starr, Carlotta Pavese, Michael Weiss, Abby Cohn, Draga Zec, Molly Diesing, Arc Kocurek and Sam Tilsen for enriching my training, whether through seminars, projects, reading groups or office hours, with the varied methods and directions that linguistic research can take. For their generous and very patient help with cross-linguistic data and judgments in this project, I am deeply obliged to my Shanghai friends Jiming Zhu, Wentao Zhang and Ariel Yingqi Tang, my Lhasa colleagues Gäsang Yanglha and Miao Jiang, friends Dänzin Sangmo, Dänzin Cêyang, Dänzin Rigqö, and Xêrab.

There are those *senpai*s and colleagues from whom one learns a great deal even in brief encounters, and without whose insights one's work would not be what it is. In this regard I count it a privilege to be able to thank, among undoubtedly many others: Natasha Korotkova, Regine Eckardt, Jessica Rett, Elsi Kaiser, Deniz Rudin, Lucas Champollion, Kai von Fintel and David Beaver for enlightening lectures and talks at various ESSLLIs, conferences and colloquia.

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CHAPTER 1

INTRODUCTION

1.1   Setting the scene

Imagine that you have just woken up in the morning, in your bedroom which has no windows. Perhaps you watched the weather forecast last night which said it was going to be sunny all day today; perhaps you always wake up with a default hope that it not be a rainy day, or perhaps weather is simply not something that preoccupies your mind first thing in the morning. At any rate, you walk outside, and see that, to your surprise, it is raining.

What might you say in such a context? Specifically, what sorts of linguistic devices might you use to convey that "surprise" element that you feel on your part? (1) shows a number of cross-linguistic possibilities. In English, one might say a declarative sentence marked with exclamative intonation (1a). In Lhasa Tibetan (1b), the sentence is obligatorily marked with a direct evidential, and might contain an interjection (*a.las*) that conveys the SPKR has just learned something new and noteworthy. In Turkish, a typical utterance in this context would contain the verbal suffix *-mIş*, which (among other things) is an indirect evidential ($\approx$ inferential or reportative, depending on context), even though in this context the SPKR perceives the rain directly.

(1) a.   It's raining**!**   English

    b.   **(a.las)**, char.pa btang-**gis**   (./!)   Lhasa Tibetan

          INTJ   rain   dispense-IMPFV.**DIR**

          '(**Oh/Ah,**) it's raining (**I see**).'

c.   yağmur yağ-ıyor-**muş**!   Turkish

       rain   rain-IMPFV-**INDIR**

      'It's raining (**I see, and I didn't expect that**)!'

Any number of the bolded elements can, and have, been called *mirative* markers. Put in the roughest way, "mirative contexts"—like the seeing-it-rain context above—contain an element of surprise on the part of the speaker at a particular moment, mirative markers (or simply "miratives") are linguistic element which encode or convey a "surprise" meaning component in some way. And "mirativity" refers to this range of surprise-related meaning. Indeed, the "mirativity" label itself invokes the Latin verb *mīrāre* 'to wonder, marvel at', suggesting surprise.

The idea that miratives, or mirativity in general, form a *category* that is meaningfully distinct in human language goes back primarily to DeLancey (1997, 2001), a series of two papers in which he makes a concerted case for mirativity to be an independent descriptive-typological category. DeLancey (1997) provides the following description:

> "*This category, sometimes called mirative or admirative, has not hitherto been generally recognized in the theoretical or typological literature. The fundamental function of the category is to* **mark sentences which report information which is new or surprising to the speaker**, *regardless of whether the information source is first- or second-hand.*"
>
>   (p.33, emphasis mine)

A certain, non-trivial amount of discussion and debate has since emerged in the descriptive-typological literature around this category, some skeptical of the accuracy or cross-linguistic generality of DeLancey's descriptive notion ("information which is new or surprising") for the category (Lazard, 1999; Friedman, 2012; Hill, 2012), others in support and oftentimes in empirical elaboration of it (Aikhenvald, 2004, 2012; Hengeveld and Olbertz, 2012; DeLancey, 2012; Mexas, 2016). Most widely accepted as the state-of-the-art empirical characterization is

Aikhenvald (2012), who, based on a sizeable cross-linguistic study, proposes five phenotypes of mirative meanings (2).

(2)   Aikhenvald's 5 phenotypes of mirative meaning

    (i)   Sudden discovery, sudden revelation or realization
    (ii)   Surprise
    (iii)   Unprepared mind
    (iv)   Counterexpectation
    (v)   New Information

Each type can be described with reference to (a) the speaker, (b) the audience (or addressee), or (c) by the main character.

In Aikhenvald's view, any meaning that falls within the range of these 5 phenotypes is an instance of mirativity (=mirative *meaning*). Miratives, on the other hand, are *grammaticalized* linguistic markers of mirativity. Thus, it is possible for markers of other categories, e.g. evidentials, or aspectual markers, to convey mirative meaning, without being "miratives" themselves, as they are not thought of as having *grammaticalized* mirativity as their primary meaning. Aikhenvald calls these "mirative *strategies*"—ways of marking mirativity that do not resort to grammaticalized miratives.

Whether by reference to this typological summary by Aikhenvald, or by reference to earlier notions by DeLancey, the concept of mirativity and of miratives as a descriptive-typological category is now a given. Many contemporary descriptive grammars of languages will invariably present some element or other in the language with a primary characterization as "mirative" markers. In some documentational practices, particularly of languages and linguistic areas with richer evidential-marking systems, mirativity is frequently invoked to describe any type of revelatory or realizational functions. It is not hard to see how "mirative" is a highly relevant and handy working label in linguistic fieldwork: elements that convey new informa-

ton, realization or surprise are commonly encountered in certain genres of speech that feature prominently in fieldwork techniques (narratives of personal experience, child-directed stories, situational elicitations involving new information), and, absent a comprehensive view of the system of tense-aspectual, evidential, modal and sentential mood marking, "mirative" is a natural descriptive term of choice. The use (and sometimes abuse) of this categorical label in descriptive linguistic work is here to stay. Thus, for linguists of any methodological persuasion, it is high time we came to a better, theoretical understanding of this domain of surprise-related meaning.

1.2 Why is mirativity a vague term?

There are two kinds of receptions of Aikhenvald's (2012) typology of mirativity. One takes it to be a succinct and perfectly adequate definition of this domain of meaning, and another takes it to be frustratingly vague and imprecise. These evaluations arise out of divergent methodological commitments to semantic analysis. If the criterion for an adequate analysis of linguistic meaning is a plain *description* of its *function* in communication, then Aikhenvald's typology may appear sufficient for the most part. If, on the other hand, the criterion for an adequate semantic analysis of an element is a characterization of its *compositional* meaning contribution, which must be able to *derive*, within some theoretical metalanguage of basic meaning units and operations, the correct composite meaning of *any* sentence containing the element from its parts, then a characterization couched in terms of plain communicative functions is clearly far from adequate.

For the most part up till now, the notion of mirativity has been held up to the former standard. However, it is time that our understanding of this domain of meaning and of the linguistic elements encoding such meaning be held up to the latter standard. The inadequacy of the former, functionalist standard most frequently manifests itself in the inherent vagueness of two

notions: "primary" and "grammaticalized." If semantics is synonymous with communicative function, on what grounds should an element which can consistently convey "realization" and "new information" not count as a "primary" mirative marker, or a "grammaticalized" mirative marker?

Ironically, and by no means a coincidence, the three introductory examples of mirative markers (1) adduced above have all been victims of this very inconsistency in the functionalist characterization of mirativity. Whereas exclamative intonation (in English and in most, if not all, other languages) is considered by Rett and Murray (2013) as a hallmark mirative marker because its semantic contribution is consistently, and exclusively, that of sudden revelation, new information and surprise, exclamative intonation is explicitly excluded by Aikhenvald as not part of grammar, along with interjections:

> *"Every language has a way of expressing... the mirative range of meanings. But this does not have to be encoded in grammar. There may be a verb 'to be surprised' (e.g. Tucano* mari) *'be surprised, admire'. Musqueam has a number of special exclamatory words... used to express surprise. Exclamative clauses usually have overtones of surprise and new and/or unexpected information (see Olbertz, 2009). Surprise may be indicated through interjections, as in English* wow! *or Tariana* kwe! *, or through special exclamatory intonation—as in English, or Musqueam."* (Aikhenvald, 2012: pp. 474–5)

The Lhasa Tibetan case (1b) and the Turkish case (1c) have seen polar opposite characterizations under the functional view of mirativity. Both Turkish *-mIş* and Lhasa Tibetan *ḥdug* can consistently encode mirative-range functions in Aikhenvaldian terms: Turkish *-mIş* encodes counterexpectation and surprise at new information presently realized, and Lhasa Tibetan *ḥdug* encodes new information acquired, in the present or past, through direct perception. However, both markers are (almost) always classified as "primary" evidentials. Moreover—and ironically—despite having mirative functions, the two markers are not accorded the same recognition as "mirative strategies": whereas in Aikhenvald (ibid.: §4.2) Turkish *-mIş* is cited

as a typical example of an indirect ("non-firsthand") evidential having "mirative overtones," the status of Lhasa Tibetan *ḥdug* is allegedly "controversial," the characterization of *ḥdug* as a mirative marker only to be retracted by DeLancey himself in a later (2018) study on Tibetic evidentiality, again on grounds of "primariness":

> *"Because the Direct forms assert that the speaker directly perceived the event, they generally occur only in contexts where that direct perception is the speaker's only warrant for the statement. Normally this will only be true of relatively recently acquired knowledge... In my earlier work I therefore treated these forms mirative, but this is misleading, as their basic meaning is unquestionably fundamentally evidential, not mirative (DeLancey 2012, Hill 2012)."* (pp. 22-3)

These contradictions illustrate the inadequacy of functionalist understandings of mirativity: communicative functions are not sufficiently basic semantic-analytical units, and relegating the need for semantic analysis to notions of "primarily encoding X function" or "grammaticalizing X function" misses the point. The ability of a linguistic element to fulfill certain communicative functions is ultimately an epiphenomenon of its underlying (lexical) semantic value, compositionally deriving the meaning of the whole sentence-level utterance, and interacting with the discourse context. To precisely understand and define mirativity, it is necessary to have a theory of just what the underlying semantic value of miratives is, and also of how it composes and what effect it imposes on the discourse context. This will be the methodological commitment of this dissertation.

1.3   ... So what is mirativity, really?

At a high level, I conceive of **mirativity** (=mirative *meaning*) as having a semantic core of attitude predication, as shown in (3a). Thus, building in a number of contextual parameters, a

mirative (=mirative element/marker) may be schematically construed in this vein as (3b): it encodes, in dynamic semantic terms, an update which contributes a mirative attitude with a certain individual and spatio-temporal anchoring.

(3) a.   Semantic core of mirativity (= mirative meaning):

      $\text{MIR}(\cdot)$

  b.   Schematic conception of a mirative element/marker:

      A mirative marker encodes an update U which contributes a mirative attitudinal meaning $\text{MIR}_a^{t,l}(c)$.

      where:

      MIR is a mirative attitude;

      c is the CONTENT of which MIR is predicated;

      a is the cognitive AGENT that holds $\text{MIR}(c)$, and

      t, l are the time and location at which a holds $\text{MIR}(c)$.

Formulated thus, this conception of a mirative marker schematizes two broad domains of empirical and theoretical inquiry: **definitional** issues, and **parametrical** issues. The former concerns the lexical part of this schematic representation, namely, the semantic value of the attitude predicate; the latter concerns the various parameters (c, a, t, l) that are specified in each instance of a mirative element. Under this division, each domain of issues can be further broken down into individual questions.

Definitional issues: what is the range of attitudinal semantic values that the predicate $\text{MIR}(\cdot)$ can take?

- **The mirative ATTITUDE question**: mirative meaning is essentially attitudinal. Notions of finding some content "new," "surprising," "counterexpectational" or "suddenly realized" to/by a cognitive agent all point to a set of *attitudes*—mental dispositions of cognition,

evaluation, emotional response, etc. that a person can have towards that content. Thus, the mirative attitude question is the definitional question for mirativity: knowing "what mirativity is" is ultimately knowing what range of *attitudes* count as mirative.

Parametrical issues: what is the identity of each *parameter* to the mirative predicate c, a, t and l?

- **The mirative CONTENT question** concerns the nature of c, the argument of the mirative attitude predicate: what sorts of content can mirative attitudes be directed towards? In particular, aside from single propositions, which is most commonly attested by cross-linguistic examples such as (1), can mirative attitudes be directed towards any other type of content? What would the interpretation of the attitude predicate be, and how is it derived?

- **The mirative AGENT[1] question** concerns a, the individual to whom the mirative attitude is anchored. We have already seen cases such as (1), in which the mirative agent in canonical, declarative-form sentences is the matrix SPKR. Can the mirative agent be shifted? What mechanisms and processes govern such shifts in anchoring?

- **The mirative TIME and *location* question** concerns t and l, the spatio-temporal locus at which the mirative-range attitude is held by the agent. By default, one thinks of SUR-PRISE as indexing the present or a very immediate past; the examples in (1) all instantiate present mirative time. However, are there mirative markers that permit, or indeed require, a different mirative time specification? Is mirative time always lexically specified, or can it be parametrized? What syntactic environment or semantic mechanism governs mirative time specifications?

- **The mirative UPDATE question** concerns the nature of the mirative update U, i.e. the way the mirative meaning changes the discourse context. Although this question does

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[1]I use the term "agent" in the sense of "cognitive agent"; this is to facilitate compatibility with the common terminology used in cognitive science research, which will be useful in articulating an interface definition of mirativity (§2-3). In the context of discussing linguistic meaning (mirative attitudes), the cognitive agent and the attitude holder refer to the same individual. Note that "agent" does not refer to the θ-role.

not strictly concern a single parameter, but rather the dynamic semantic identity of the mirative update, I include this question here because the ways in which different mirative attitudinal meaning change the discourse context do represent an area of variation that is of parametrical interest to semanticists.

Besides these two domains of inquiry into the synchronic identity of mirativity, a third, diachronic domain of inquiry concerning the common cross-linguistic connection between mirative meanings and other natural classes of meanings has been highly relevant throughout. Specifically, I formulate a question about the nature of various affinities between **evidential** and mirative meaning.

Diachronic issues: how do elements that encode mirative meanings arise diachronically?

- **The EVIDENTIAL-MIRATIVE AFFINITY question:** What is the nature of the semantic affinities widely observed between evidentiality and mirativity?

Taken together, these three domains of inquiry and six questions form the outline of what I see as the MIRATIVITY RESEARCH PROGRAM. This program is both empirical and theoretical in nature. Theoretically, a complete understanding of the nature of mirativity will necessarily consist in completely answering each of these six questions; each represents a relatively independent domain along which the semantics of a mirative marker may vary. On the other hand, for any study on particular instances of mirative markers, the descriptive or empirical generalization cannot be considered complete unless the properties in each of these six domains have been documented.

The multifacetedness of such a research program reflects the fact that mirativity, like evidentiality, is not a theoretical category, but a *phenomenal* natural class which may encompasses elements of different semantic status, as well as mechanisms and issues that criss-cross theoretical subfields (see a similar characterization of semantic research on evidentiality by Korotkova, 2016). In addition, such a research program is also necessarily interdisciplinary

and typological: interdisciplinary, because the upstream phenomenon that gives mirativity its shape—namely, SURPRISE—is not a linguistic phenomenon, but a cognitive one, and thus a theory of mirativity must be grounded in an understanding of the language-cogniton interface as it pertains to the nature of SURPRISE and its linguistic expression. Typological, in the sense that the research program on mirativity must be grounded in a (theoretically-guided) study of a wide range of cross-linguistic data, in order to achieve the broadest possible view of the landscape of possibilities.

1.4 Outline of this dissertation

Of course, a single, humble dissertation cannot purport to do even a fraction of the work that the full research program calls for. Nevertheless, with what is presented in this dissertation, I aim to lay down a theoretically well-formulated, and empirically suggestive, foundation, bridging from existing empirical insights in the mostly descriptive-typological work on mirativity, towards a terminologically precise mode of theoretical and cross-linguistic inquiry. To this end, I have focused my main efforts to three of the six questions, and one in each domain of inquiry: mirative attitude, mirative content, and evidential-mirative affinities. These questions are ones which I believe are more fundamental, and thus speak more directly to some of the most pressing unresolved issues and ambiguities in the current literature, and provide a starting point for future work. I organize the remaining chapters into three parts, each corresponding to one of the three domains of inquiry: definitional issues, parametrical issues, and diachronic issues. Within each part, the chapters generally proceed from providing an empirical/typological review of the current landscape, to investigating underlying theoretical or conceptual issues emerging from the empirical landscape.

Part I of the dissertation is dedicated to studying **definitional** issues surrounding mirativity, i.e. it is dedicated to answering the MIRATIVE ATTITUDE question.

- In Chapter 2, I review the current empirical and terminological landscape of mirativity, and identify two areas of variation that are important to semantics: attitudinal flavor, and indexicality. I argue that the empirical variation and terminological ambiguity in these domains reflect key conceptual shortfalls in defining what mirative meaning is.

- In Chapter 3, I articulate such a definition of mirative meaning. Arguing against mixing semantics and morphosyntactic status, I define mirativity as a range of attitudes, namely, those attitudes which characterize a SURPRISE-induced mental state. In building up this definition, I review the main findings of current cognitive-scientific research on the phenomenon of SURPRISE, and articulate an interface between SURPRISE on the one hand, and linguistic meaning on the other, mediated by two interdisciplinary notions: mental states, and attitudes. Based on the cognitive-scientific literature, I identify *novelty* and *counterexpectation* as the two core mirative attitudes.

- I conclude Part I with an Interlude where I advocate for a streamlined set of descriptive terminology for mirativity, reducing Aikhenvald's 5 phenotypes of mirativity (2) to just the two core mirative attitudes.

Part II of the dissertation is dedicated to studying **parametrical** issues surrounding mirativity. In particular, I focus in on the **mirative content** question, as it concerns arguably the most essential argument of mirative attitude predication.

- Chapter 4 provides an updated typology of mirative contents across langauges. Previous cross-linguistic work has brought to light two kinds of content that mirative attitudes can be directed towards: single propositions, and speech acts (AnderBois, 2018, to appear). With novel data from Shanghai Wu on the counterexpectational mirative marker *yikaon*, I show that a third type of mirative content is possible, namely, *sets* of propositions. Thus, I expand the typology of mirative contents to include a three-way distinction between single propositions, sets of propositions, and speech acts.

- Chapter 5 then provides a formal analysis of the semantics of *yikaon*, implemented in a

Farkas-Bruce-style framework of discourse contexts and updates. I specifically propose that SHW overtly spells out a union-over-alternative-set operator, which derives the attested mirative interpretations over sets of propositions. The SHW mirative has important implications for existing efforts (esp. Rett, 2021b) to build a cross-linguistic semantic theory of mirative meaning.

Finally, **Part III** of the dissertation focuses on **diachronic** issues surrounding mirativity, and specifically, on the EVIDENTIAL-MIRATIVE AFFINITY question.

- Chapter 6 aims to take comprehensive stock of the known empirical landscape and current theoretical playing field. I provide a comprehensive classification of evidential-mirative affinities into three main types: indirect, reportative, and inferential evidential-miratives, making further distinctions within the latter between "deferred realization" inferentials and non-temporal inferentials. I suggest that different types of affinities likely have very different theoretical profiles. I review three existing schools of theories on the evidential-mirative affinity question, showing the explanatory range of each school in light of this articulated typology.

- Chapter 7 reconsiders a particular assumption in existing theories that evidential-mirative affinities are due to synchronic mechanisms. Through a careful study of an evidential-mirative pair in Shanghai Wu (speech report parenthetical *yi kaon* and mirative *yikaon*), I argue that, at least for reportative evidential-miratives, the affinity between the evidential and the mirative counterparts can be diachronic. Specifically, I propose that reportatives have an inherent tendency to generate Conversational Implicatures, a tendency caused by what I call the EPISTEMIC TRANSPARENCY principle in discourse. Basically, there is a pressure for at-issue propositions addressing the QUD to be accepted under the same epistemic attitude as the attitude under which the speaker publicly presents herself as committing to. Reportative evidentials are thus exceptional, in that its conventionally-encoded meaning does not specify under what sort of attitude

the speaker publicly commits herself to the at-issue proposition, thus inviting Conversational Implicatures about SPKR attitude. Crucially, the reportative-to-mirative semantic change is one instance of a SPKR-attitude Conversational Implicature associated with the reportative marker undergoing reanalysis as the conventionally encoded meaning. I show that this reanalysis process is elegantly explained, not by notions of continuous functional shift (e.g. metaphorization or metonymy), as is often thought in the grammaticalization literature, but by a discrete process on the hearer's part of innovating a pragmatically transparent semantic value for the marker in question.

I conclude this dissertation in Chapter 8 by offer some prospects for future research on the remaining three questions, respectively about mirative agent, mirative time-location, and the structure of mirative updates.

Part I

Definitional issues:

the core and variability of mirative

meaning

WHY THE TERM REMAINS VAGUE:

EMPIRICAL VARIATION AND CONCEPTUAL SHORTFALLS IN STUDIES ON MIRATIVITY

2.1 Introduction

In this opening chapter, I perform a long-overdue task in the empirical efforts to apprehend mirativity: taking stock of the range of empirical variation, and critically addressing the terminological ambiguities that have accumulated across the literature. From the beginning, the identity and viability of mirativity as a categorical notion has been a controversial and ultimately fuzzy affair, subject to a recurrent terminological debate between proponents (DeLancey, 1997, 2001, 2012; Hengeveld and Olbertz, 2012; Aikhenvald, 2012; Mexas, 2016) and skeptics (Lazard, 1999; Hill, 2012; Friedman, 2012) in the descriptive/typological tradition, and causing a general air of definitional hesitancy in formal semantic work that engages with individual empirical instances of mirative elements (see e.g. Smirnova, 2013; Koev, 2017; Rett, 2021a, though see Rett and Murray, 2013; Rett, 2021b for efforts to theorize over the semantic identity of certain types of miratives). It seems clear that any systematic study on this domain of meaning must start with a review of just what kinds of meanings have come under this label, and where the domains of variation—which ususally translate to terminological ambiguity and ultimately reflect conceptual disagreement—lie. This is what I do in this chapter.

Specifically, I advance the following theses. First, mirativity exists (§2.2). It exists as a **natural class** with a distinct identity, insofar as linguists treat as real and substantial our intuition that the range of meanings that are directly tied to the phenomenologically distinct experience of SURPRISE has a distinct identity, which nevertheless has remained inarticulately defined. Second, with a critical reading of the descriptive/typological literature on mirativity, and in particular the "pivotal" empirical case studies that have featured in this literature, I

identify two key domains of empirical variation over the range of meanings that have received the "mirative" label: attitudinal flavor (§2.3), and indexicality (§2.4). In each case, I argue that variation in the empirical properties of different miratives not only translates to a point of terminological ambiguity, but reflects an area of conceptual ambivalence over what mirativity. These conceptual ambivalences, I conclude (§2.5), *are* the definitional questions that need to be answered for this natural class to come out of conceptual obscurity.

A distinction: cognitive experience vs. linguistic expression.　Before I begin, I highlight a conceptual and notational distinction which I maintain throughout this chapter: the distinction between cognitive experiences themselves, and linguistic expressions that convey or encode certain meaningful aspects of those cognitive experiences. The relevance of this distinction is particularly acute when the *metalinguistic*, theoretical term used to refer to the cognitive experience happens to be the same word as the *linguistic* word used in the to encode meanings associated with that cognitive experience.

Concretely in our case, SURPRISE the complex cogitive/psychophysical experience, is not the same as the meaning of the English word "surprise," nor its various derivational relatives (*x is surprised that* p, *p is surprising to* x, *Surprisingly, p*). When the same term is ambiguous, I use SMALL CAPS to signal the former, cognitive sense, and regular minuscule letters to signal the latter sense.

This distinction is important for an analytical reason as well. Cognitive experiences such as SURPRISE are complex "syndromes" (Reisenzein, 2000): they consist of various behavioral and mental responses at all levels, of which linguistic expression constitutes but a small part. When someone experiences SURPRISE, they generally undergo a combination mental (feelings, attitudes, thoughts), physical (e.g. increased heart rate, pupil dilation), and possibly macrolevel behavioral (from e.g. raising their eyebrows or uttering a light *oh*, to e.g. jerking a limb, jumping one step back, or uttering a loud *aaarrgh!*) responses. On the other hand, words such

as "surprise" as well as derived linguistic expressions such as *x is surprised that* p, *p is surprising to* x, *Surprisingly,* p denote meanings that, while certainly related, do not necessarily require that subject *actually* experience SURPRISE: *It is surprising to me that it's raining* can be true even if the SPKR did not experience any actual SURPRISE when discovering the weather. Maintaining this conceptual distinction between cognitive phenomena and linguistic expressions will prove crucial for our discussion[1].

2.2   Mirativity: an intuitive, yet inarticulate, natural class

There is an overarching intuition that mirativity is a real category with an intelligible identity: it refers to a certain range of meaning which forms a **natural class**, by virtue of being associated with a distinct cognitive experience, namely, SURPRISE. Insofar as we are justified in thinking of SURPRISE as a phenomenologically distinct cognitive experience, it is also viable to think of meanings that are associated with SURPRISE—finding something novel, noteworthy, unexpected, suddenly becoming aware of some fact, etc.—as also constituting a natural class. I regard this intuition as the foundational justification for treating mirativity as an empirical category that has a distinct and explicable definition to it.

However, we do not yet know what this definition is. Every reader of the twenty-odd years of descriptive and typological literature on mirativity has had to contend with rather liberal and impressionistic uses of the term: different authors use it to refer to linguistic elements whose meanings, while intuitively having something to do with SURPRISE, are often quite different from one case to the next. Such distinctions are usually not made explicit; even more

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[1]This caveat is particularly noteworthy when linguistic descriptions or analyses tend to conflate semantic properties of the English glosses with the semantic properties of the original mirative. As a case in point, while many miratives are obligatorily SURPRISE-indexical, English structures like *x is surprise that* p, *It is surprising that* p, *Surprisingly,* p, *To x's surprise,* p, etc., which are often used to gloss those miratives, are emphatically *not* SURPRISE-indexical: for instance, it is generally felt to be *not* felicitous to utter "Surprisingly, it's raining" at the moment of experiencing SURPRISE at the sight of heavy rain.

rarely is the precise shade of a mirative meaning diagnosed through controlled context felicity judgments. Though a handful of typological studies Aikhenvald, 2012; Mexas, 2016 have started the work of identifying the domains of meaning variation in a concrete and systematic way, many questions still remain.

Aikhenvald's (2012) typology, repeated here in (4), represents the most helpful and widely cited reference point so far. It is an attempt to put in one place the range of meanings that have come under this term over the years, and organize the meanings into clusters which are at least apparently distinct. I will call these apparent meaning type distinctions by Aikhenvald "phenotypes."

(4)   Aikhenvald's 5 phenotypes of mirative meaning   (repeated from §1, ex. 2)

    (i)   Sudden discovery, sudden revelation or realization

    (ii)   Surprise

    (iii)   Unprepared mind

    (iv)   Counterexpectation

    (v)   New Information

Each type can be described with reference to (a) the speaker, (b) the audience (or addressee), or (c) by the main character.

Such a set of meaning type distinctions is a step in the right direction towards defining mirative meaning. As I show in the rest of this section, some of the notions in (4) do provide the right conceptual categories with which we can discern the domains of empirical variation. In particular, Aikhenvald's five-point formulation makes explicit a primary distinction that teases apart two kinds of meanings: meanings that convey or index SURPRISE (the cognitive experience itself) on the one hand, and **attitudinal** meanings (such as discovery, realization, counterexpectation, etc.) which are congruent with, but not necessarily pinned to, an episode

of SURPRISE.

As I show in §2.3-§2.4, this distinction enables us to discern two domains in which mirative meaning varies: the flavor of mirative attitude, the presence vs. absence of indexicality, and what parameter is indexed.

2.3 The many flavors of mirative attitudes

The first domain of empirical variation concerns the attitudinal component of mirative meanings. *A priori*, attitudes are complex and multidimensional by nature: even those attitudes that can be linked to one distinct experience such as SURPRISE will vary in the many other possible valencies they might involve, depending on features of the SURPRISE-inducing circumstance as well as of the relevant beliefs and assumptions on the part of the cognitive agent (hereinafter "agent"). Thus, empirically, we expect mirative elements to encode attitudes that, while sharing a core, might vary in the precise flavor. The landscape of the descriptive usage of the term "mirative" has indeed borne out this expected variation in attitudinal flavor. It will do well for semanticists to recognize that any one "mirative" will likely not encode the same attitudinal flavor as the next.

2.3.1 An *a priori* illustration.

Recall the prototypical mirative context in §1: You wake up in a windowless bedroom, not knowing exactly whether it is raining, but having a certain set of (graded) prior beliefs which represent your background assumptions, expectations, convictions or wishes about the way the world is with respect to the weather at that moment. Then the weather as it actually is—rain—enters into your field of perception, presenting your mind with a signal of this external

circumstance, which gets interpreted as "it is raining," now a certain fact. What happens next in your mind?

There are many possibilities. Some of these subsequent states would not typically be characterized as surprise, but some certainly would be. If you had watched the weather forecast last night that said it would be sunny and warm all day today, boding well for a beautiful bike commute this morning, you might then experience a kind of surprise that is akin to a shock with disappointment. If you were a professional meteorologist and saw that your model predictions were completely off-track from how the weather actually turned out, you might experience a kind of surprise that is more akin to a revelation of inadequacy with stirred-up curiosity. Or if you were a gardener who has been worried about your parched lawn for two weeks during a drought that seemed unending, you might experience a kind of surprise that is akin to a discovery with exhiliaration and relief. There is a sense in which the cognitive agent in all of these cases is experiencing instances of the same thing called SURPRISE. But at the same time, there is a sense in which what is going on in their mind is rather very different: "shock with disappointment" is a different mental state from "revelation with stirred-up curiosity," which is further a different mental state from "discovery with exhiliaration and relief."

Such differences in the "flavor" of their SURPRISE experiences can have linguistic manifestations. There can be various expressions in language that may convey a sense of surprise, each with a distinct attitudinal "flavor profile": the disappointed bike commuter may utter (5a) but not really (5b) or (5c); the challenged meteorologist may rather utter (5b) but not really (5a) or (5c), and the concerned gardener, (5c) but not really (5a) or (5b). Regardless, there is a sense that each of the three agents could have uttered (5d).

(5) a. **Gosh,** it's raining!

b. **Huh**$_{\text{H-L\%}}$**,** it's raining!

c. **Hey,** it's raining!

d. **Wow,** it's raining!

We see that mirative attitudes that arise from even the same SURPRISE-inducing circumstance may come in diverse flavors. If we vary the circumstance itself, we expect even more variation in attitudinal flavor. If this is the case with mirative attitudes *in themselves*, there is no reason not to expect that linguistic elements that *encode* mirative attitudes will also vary in their precise attitudinal flavor. In (5), I use English "mirative-like" interjections—which are admittedly not full-on mirative markers, since some of them may have felicitous uses in non-mirative contexts—as a rough, *a priori* illustration of this predicted variation: the point is that there is nothing that prevents a language from lexicalizing one or the other of these mirative attitudes with rather complex flavors, such as exemplified by *gosh, huh*_{H-L%}, *hey* and *wow*.

2.3.2 Empirical demonstration: three mirative markers, three attitudinal profiles

The way "mirative" is used in the literature reflects this diversity of attitudinal flavor. To demonstrate this, I present three examples. All three have been called mirative markers, but one conveys novelty but not counterexpectation; one conveys counterexpectation but not novelty, and a third conveys both attitudes.

First, English *turn out*, described in Serrano-Losada (2017) as a mirative marker, encodes an attitude which necessarily entails novelty, but which does not necessarily entail other attitudes such as counterexpectation, dismay, disappointment or marvel. This is shown by the infelicity of a follow-up denying novelty (6a), but the felicity of follow-ups such as (6b-6e), each of which denies one of these non-novelty attitudes.

(6) Turns out that it's raining.   =SPKR has newly found out (at time t) that it's raining

   a. —# I knew it all along.   (novelty obligatory)

   b. —Exactly as I expected it to.   (no counterexpectation)

   c. —And I'm cool with that.   (no dismay)

   d. —And I'm quite glad that it is.   (no disappointment)

   e. —And that is completely unremarkable weather around this time of the year.   (no marvel)

Second, English exclamation intonation has also been argued by e.g. Rett and Murray (2013) and Rett and Sturman (2020) as contributing mirativity. But in this case, the attitude encoded is necessarily one of counterexpectation, but *not* necessarily one of strict novelty. This is shown by the infelicity of a follow-up denying counterexpectation (7a) but the felicity of one that denies novelty (7b). The latter sequence can be felicitously uttered e.g. in a context where the SPKR is a long-time fan of Shaq (a 7-foot-1-inch-tall basketball player), knows exactly how tall he is, but is standing in front of him for the first time, and is gaining a different (and likely more direct) kind of evidence for the same proposition.[2] The point is, as a mirative marker, English exclamation intonation has exactly the opposite attitudinal profile to that of *turn out*: the former encodes novelty but not counterexpectation, the latter encodes counterexpectation but not novelty.

(7) Shaq is tall!   =SPKR does not expect at time t that Shaq is tall to the degree d.

   a. —# I fully expected that he'd be *this* tall.[3]   (counterexpectation obligatory)

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[2]Thanks to W. Starr and Sarah Murray for pointing out this empirical pattern.
[3]There seems to be some variation among native speakers I have consulted over this judgment. For some, it is clear that what is being denied in this follow-up is the counterexpectational nature of the degree of tallness, and thus the infelicity judgment is transparent. Others who think that this follow-up might be felicitous point to an

b. —I knew that he is this tall (though).   (no novelty)

As a counterpoint to both, the Cantonese sentence-final mood particle *wo3* 喎 is also described in various works as a mirative marker (Luke, 1990; Matthews, 1998; Leung, 2010a, 2011; Tang, 2015). It is described as encoding an attitude which apparently entails both novelty and counterexpectation ("unexpectedness and noteworthiness" in Luke, 1990). A sentence like (8) is felicitous just in contexts in which the fact that "the weather is good" is at least both a novel and noteworthy fact, and an unexpected fact.

(8) gam1jat6 tin1hei3 hou2 hou2 **wo3**.

today   weather very good MIR

'The weather is very good today ([I find it/I assume you would find it][4]noteworthy and unexpected)'   (Leung, 2011: ex. 8, adapted)

The above three examples present a neat caricature of the diversity of attitudinal flavor across different instances of miratives. Note, however, that many miratives may have attitudinal profiles that, while distinct, have much subtler differences in flavor. It would thus appear essential that any descriptive study of mirative markers be maximally explicit about the precise attitudinal flavor it encodes. So far, however, this is not standard practice.

Two problems of terminological ambiguity thus ensue. One is that the same term ("mirative") may refer to rather very different attitude flavors across different instances, to the detriment of conceptual consistency: given how distinct the mirative attitude encoded by English

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intuition that what is counterexpectational in the exclaimed sentence may not be the degree *per se*, but a particular perceptual experience of that degree, viz. direct visual perception in close distance. For this segment of speakers, the larger point still stands; one would just need to construct a follow-up containing anaphoric reference to *that perceptual experience* of the degree of tallness (something like "# I fully expected that his degree of tallness would present to my senses in this way.")

[4]Cantonese *wo3* has the additional property that the holder of the mirative attitude can be either anchored to the SPKR or to the ADDR, thus giving rise to a 'SPKR finds' reading and a 'SPKR assumes ADDR would find' reading. While mirative agent is an important property in its own right, it is orthogonal to attitudinal flavor.

turn out is compared to that encoded by the English exclamation intonation. The second problem arises from the complex and multidimensional nature of attitudes. Two different miratives, both encoding attitudes that include a dimension of counterexpectation, may not line up in all the other semantic dimensions. As shown above, English *turn out* and Cantonese *wo3* differ at least in that the latter's attitude of "novelty" also has other non-trivially meaningful attitudinal dimensions of noteworthiness (roughly analogous to *x finds it worth mentioning/pointing out that p*) and mild curiosity (roughly analogous to *x finds it neat/interesting/intriguing that p*), whereas the former does not have either of these attitudinal dimensions.

2.3.3 Taking stock: an attitudinal core?

This picture of diversity of attitudinal flavors is of course not without a center. We undoubtedly have intuitions that certain attitudes are central to mirativity. The title of DeLancey's (1997) original article reads: *mirativity: the grammatical marking of **unexpected** information* (emphasis mine), and in several places throughout the same article, he describes this class of meaning in terms of "**new** information." In Aikhenvald's typology (4), it is attitudes of counterexpectation and novelty (her "new information") that are listed as distinct phenotypes. In the same (2012) typological survey, she uses phrases combining attitudes of counterexpectation, novelty, surprisingness and lack of full rational account in describing an overwhelming majority of the cross-linguistic instances of mirative markers: "new," "unexpected/counterexpectational," "surprising" and "unintegrated/unassimilated." It thus seems that some subset of these attitudes are core to an attitude being identified as mirative.

We must, however, observe that, up till now, we do not have a definition or theory of mirativity that allows us to determine with rigor exactly which of these attitudes do constitute this core, and why. This is a task I take up later in §3.4. It is only by an impressionistic understanding of the nature of SURPRISE that we end up associating these descriptive terms with

mirativity. I point this out because ambivalence at the conceptual level has practical conse-
quences, namely, ambivalence in terminology use. For instance, in the original (1997) article,
DeLancey describes this "mirative" category of meaning as defined by "new information" (i.e.
novelty) in a majority of instances in the body of that article, but refers in the title of that
same paper instead to "*unexpected* information." Clearly, finding a piece of information new is
a different attitude from finding it unexpected. Which attitude is supposed to define the term
mirative? There are as yet no answer to this question.

2.4   Indexicality of mirative meaning

The second domain of variation concerns what I call indexicality of mirative meaning. In many
instances, an element is identified as mirative because the SURPRISE-related meaning it en-
codes is indexed to the "here and now": in other words, these mirative elements are felicitous
just when the SPKR is experiencing an actual, *current* episode of SURPRISE or holding a current
SURPRISE-related attitude. In contrast, there are other mirative elements which, while encod-
ing SURPRISE-related meanings, either do not specify indexical reference—felicitous in both
concurrent and post-hoc contexts—or, in some cases, are even anti-indexical—compatible only
when used post-hoc, and not concurrently with SURPRISE. I illustrate both the indexical and
non-indexical types with literature examples below. Importantly, I argue that this variation in
indexicality reflects an ambivalent understanding at the interface level: while SURPRISE is nec-
essarily an episodic experience anchored to a certain first-person cognitive agent and a certain
"here" and "now" relative to that agent, linguists do not know, nor agree on, whether encoding
some or all of that indexicality is necessary for a meaning to count as mirative.

2.4.1 Indexical miratives

Despite the phenomenological connection between mirativity and SURPRISE, the fact that some miratives are felt to be strongly tied to **current** SURPRISE, and others not so, is only occasionally addressed in previous studies, and oftentimes the descriptive terms used to capture indexicality are vague and indirect.

One example of an indexical mirative is Turkish *-mIş*, which forms a prominent part of DeLancey's (1997; 2001) early promulgation of mirativity as a typological category. DeLancey's key data and descriptions are cited from an earlier, rather detailed descriptive study by Slobin and Aksu (1982). Slobin and Aksu correctly observe that Turkish *-mIş* syncretizes typical indirect evidential semantics (=compatible with inferential or reportative evidence, see §6) with a distinct, evidentially-neutral meaning which surfaces when the SPKR is presently surprised by some external information. (9) presents Slobin and Aksu's illustrative example.

(9)   Kemal gel-**miş**

    K.   come-INDIR/**MIR**

    'Kemal came (I infer/I hear/**!**)'

    a.   INFERENCE: [The SPKR sees Kemal's coat hanging in the front hall, but has not yet seen Kemal.]

    b.   HEARSAY: [The SPKR has been told that Kemal has arrived, but has not yet seen Kemal.]

    c.   SURPRISE: [The SPKR hears someone approach, opens the door, and sees Kemal—a totally unexpected visitor.]

Slobin and Aksu (ibid.) term the last use of the morpheme *-mIş* (9c) as "surprise." This turns out to be not an incidental choice of terminology: this last interpretation is typically felt to co-

occur with a current episode of SURPRISE[5] (Ótott-Kovács, p.c.; Simeonova, p.c., see Simeonova, 2015). Nevertheless, the way Slobin and Aksu (1982) try to charaterize this SURPRISE-indexing property of mirative *-mIş* descriptive is quite circuitous: they mention that *-mIş* indicates that the SPKR had "no mental preparation" for the information (*Kemal came*) at speech time, that the information is "[not] consonant with the current state of mind of the SPKR," and that "it is as if the SPKR were saying, 'I have just become aware of something of which I have no premonitory awareness.'" These notions of mental unpreparedness, suddenness and "just-now-ness" of the gaining of awareness all point to the same observation: that mirative *-mIş* must be used in a context involving speaker SURPRISE.

Another instance of SURPRISE-indexing mirative markers, in this case described more explicitly, are the exclamation intonation marker in English, and the Cheyenne mirative marker *-neho* (Rett and Murray, 2013). In this study, Rett and Murray clearly state that both markers are obligatorily used in the immediate moment of SURPRISE: English (10a) or Cheyenne (10b) would both be infelicitous if the SPKR had learned or become aware of the fact that *it's raining* more than moments before the utterance.

(10)   a.   [John and Sue watch Bill pull up in a new car.]

Sue: I thought that bill was still driving a Nissan.

John: I did, too.

Sue: # Bill has a new car! / # Wow, Bill has a new car!

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[5]There is new evidence which suggests that it is not the mirative interpretation of *-mIş per se* that obligatorily indexes SURPRISE, but the frequently co-occurring, but crucially dissociable, exclamation intonation marker: see my novel datapoint (32). A similar suggestion has been made tentatively by Simeonova (2015) about Turkish and Bulgarian miratives (both double as indirect evidentials), and more substantially by Salanova and Carol (2017) in a unified analysis of the inferential evidential and mirative interpretations of *-ra'e* in Paraguayan Guaraní (see §6 for a systematic treatment of the evidential-mirative connection). If this line of analysis is correct, it suggests that the SURPRISE-indexical property of exclamation intonation is a cross-linguistically instantiated feature, shared at least by English, Turkish, Bulgarian and Paraguayan Guaraní. Here, I merely represent Slobin and Aksu's original view.

b. [I learned that it is raining a long while ago, and was surprised then. Now I say:]

#É-hoo'-kóhó-**neho**!

3-rain-**MIR.SG.INAN**

Intended: 'It's raining (I didn't expect that # then)!'

(ex. 11b, adapted with context on p. 460)

In fact, this SURPRISE-indexing property, which happens to be shared by these two instances of mirative markers in English and Cheyenne, is considered by Rett and Murray to be a cross-linguistically general property of mirative meaning, and formalized in their proposal of a "recency restriction" supposedly applying to all evidential-miratives. Roughly, the recency restriction constrains the time of utterance of the mirative-marked sentence to a short period right after the SPKR has learned the new and counterexpectational fact p. In effect, Rett and Murray take SURPRISE indexation to be a typologically common fact which, in their view at the time, must reflect a semantic feature of miratives in general.

What is indexed? Furthermore, within miratives that are indexical, there is a further subpoint of variation, namely, what feature or meaningful dimension of SURPRISE is encoded indexically in the semantics of the mirative. The typical scenario is that an indexical mirative indexes a current episode of SURPRISE. However, it is possible that what an indexical mirative indexes is not an episode of SURPRISE *per se*, but certain analytical features of the current speech context, e.g. time.

The empirical manifestation of miratives that index SURPRISE is the intuition that such miratives can only be uttered felicitously right as the SPKR is experiencing the SURPRISE, but not after. English exclamation intonation is an instance of this, as already demonstrated by examples such as (10a)[6], as would be the evidential-miratives in Cheyenne and Turkish. A deeper

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[6]The one exception to this is what I call "**alloperformative**" uses of exclamations: a mother for whom Bill's owning a car is not a SURPRISE-inducing fact (currently, or ever), but who speaks to her child in a way that antic-

theoretical question is whether what I am calling SURPRISE-indexation relates to, or even is the same as, such mirative markers being *bona fide* expressives in the Kaplanian sense (Kaplan, 1989, 2004), that is, that the very utterance of these mirative elements **is** (or constitutes) the SURPRISE-related meaning they convey there and then[7]. While I do not address this theoretical question here, it is useful to note the conceptual connection.

On the other hand, there can be cases where an element which encodes a mirative (attitudinal) meaning may be indexical, but what it indexes is not SURPRISE. In his study of an "illocutionary mirative" marker *bakáan* in Yucatec Maya (see §4.2.2), AnderBois (2018) carefully shows that this marker encodes a mirative attitude ("coming-to-know/be aware") which obligatorily indexes current time (speech time) as well as current , but crucially need not index current SURPRISE. The former fact is diagnosed by the differential felicity of an utterance containing *bakáan* (11a) in contexts (11a-a) and (11a-b): the mirative is only felicitous when uttered right in the context when the SPKR encounters the stimulus (b), but not when the stimulus is removed from the utterance context (a). The latter fact—that what *bakáan* indexes is emphatically not SURPRISE—is diagnosed by the felicity of *bakáan* in a context where the stimulus in fact confirms the SPKR's expectation (11b).

(11) a. Yucatec Maya *bakáan* indexes current speech time

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ipates and even "imparts" SURPRISE on the part of the child by performing it linguistically "on their behalf," may felicitously utter *Wow, Bill has a car!* to the child. Such instances of course require a highly specific context, and need not concern us here.

[7] A related theoretical idea is that of "*m*-performativity," which is first formulated in Faller (2002: §6.2.2) for Quechua evidentials which display speech act-modifying properties. Faller calls this theoretical identity "*m*-performative," following Nuyts (2001: p. 39), but the core idea of utterance-as-constitutive-of-illocutionary-meaning is substantially comparable. AnderBois (2018), in accounting for the (temporal) indexical nature of illocutionary miratives in Yucatec Maya, invokes *m*-performativity. It seems to me that the empirical proximity of SURPRISE-indexing mirative markers, such as exclamation intonation, in relation to classic Kaplanian expressives such as *wow!*, *ouch!*, *oops!* and *alas*—all of which are arguably *exclaimed*—may indicate a closer theoretical affinity between the two, rather than to *m*-performatives.

Áak-o'ob-e' su'uk k-u jantik-o'ob, chen ba'ale' le áak-a' puut

turtle-PL-TOP grass IMP-A3 eat-PL just but DEF turtle-PROX papaya

bakáan k-u jantik.

MIR IMP-A3 eat

'Turtles eat grass, but this one eat papaya (apparently)!'

(i) # STIMULUS-REMOVED CONTEXT: [Turtles normally eat grass, but I have a pet turtle who, for some reason (which I have long noticed, but always considered surprising), always eats papaya instead of grass.]

(ii) ✓STIMULUS-CURRENT CONTEXT: [Turtles normally eat grass, but we see a turtle who for some reason is eating papaya instead of grass.]   (AnderBois, 2018: ex. 14, slightly adapted)

b.   Yucatec Maya *bakáan* does not index SURPRISE: felicitous in expectation-confirmed contexts

EXPECTATION-CONFIRMED CONTEXT: [I am supposed to meet my friend Juan, who is very punctual, at the library at 3pm. It is almost exactly 3pm and I suddenly see him walking up to the meeting spot and I say:]

Juan-e' j-k'uch **bakáan**.

J-TOP PFV-arrive MIR

'Oh, Juan has arrived (I presently realize, and ✓**it is as I always expected**).'

It is worth noting that temporal indexicality is often used as a diagnostic for SURPRISE-indexical miratives. Rett and Murray's examples (10) which diagnose English exclamation intonation and the Cheyenne evidential-mirative *neho* as SURPRISE-indexing miratives essentially attempt to remove utterances from the moment of SURPRISE. Another diagnostic strategy for temporal indexicality is temporal backshifting. For instance, the SURPRISE-indexing Turkish mirative *-mIş* displays temporal indexicality, since it is infelicitous if the reference/topic time

is overtly shifted away from the immediate present, e.g. by an overt temporal clause, as shown in (12).

(12) [Yesterday evening there was a party, and Kemal told everybody that he wouldn't be able to make it at all. When the party was starting, however, the doorbell rang, and it was Kemal, which surprised everybody. Today you're telling the story of what happened then:]

Parti başla-r   başla-maz   Kemal gel-miş.
   party start-AOR start-NEG.AOR K.   come-MIR

Intended: 'The moment the party started, (to my surprise # **then**) Kemal arrived.'

However, it is important to recognize that SURPRISE indexicality and temporal indexicality are not equivalent: indexation of current SURPRISE necessarily entails indexation of current time, but not vice versa.

2.4.2 Non-indexical miratives.

In a countervening set of instances, the term "mirative" is applied to elements which convey attitudes broadly consistent with the discovery of new, external and unexpected information, but which do not necessarily index them to the here and now, or, further, reference a current episode of SURPRISE. Often, the meaning contribution of these mirative elements are described as marking that some information is "new (novelty/newness)," "unexpected (counterexpectation/unexpectedness)," "not yet integrated (lack of fully rationalized understanding)," or "surprising (a mixture of the foregoing attitudes)." Note that the common English word "surprising" is not the same as SURPRISE: "surprising" merely encodes a certain attitude.

As early as in his original article, DeLancey (1997) does not seem to consider mirativity as necessarily SURPRISE-indexical: among his datapoints in support of his "mirative" category, we

find a few instances which encode a "surprised-at" flavor of attitude, but which do not require that the cognitive agent in question be experiencing SURPRISE. In his Lhasa Tibetan (Sino-Tibetan, China, India & Nepal) data (13), for instance, the direct perception evidential marker *ḥdug*, which DeLancey thinks of as a mirative, does not require that the SPKR experience any overt SURPRISE; it conveys just that the information in the prejacent is, or was, acquired by the SPKR at some point in time, i.e. that the information is new to the SPKR at some point. This time point can be in the immediate present, as shown by (13a), or in the past, as shown by (13b).

(13)   a.   [I reach for my pocket, and find out that there is some money in there, which I didn't know before.]

nga-r dngul   tog.tsam ḥdug.

I-LOC   money some   exist.DIR/MIR

'I have some money (I presently realize).'   (DeLancey, 1997: ex. 33, adapted)

       b.   [A day later, I recount the experience of finding out that I had money in my pocket to a friend.]

de.dus   nga-r dngul   tog.tsam ḥdug.

at.that.time I-LOC money some   exist.DIR/MIR

'At that time I had some money (I realized then).'

Therefore, DeLancey is careful in that original paper to refer to mirativity in most instances in terms of "new information" and "new knowledge." We see through this instance that mirative indexical meaning contributions are independent from mirative attitudinal meaning contributions: for Lhasa Tibetan *ḥdug*, SURPRISE indexicality is not obligatory as it is for English exclamation intonation. Nor is temporal indexicality, as shown by the felicity of both (13a) and (13b). In fact, in this case, first-person indexicality is also not obligatory: in (13), the holder of the mirative attitude is the SPKR, but in (14) below, it is shifted to someone other than the SPKR through Interrogative Flip.

(14) nga-r dngul ḥdug -gas?

     I-LOC money some exist.DIR/MIR

     'Do I have money (according to what you realize by looking [presently/previously])?'

2.4.3 Beginnings of recognition.

The typological literature documents many instances of non-indexical miratives. DeLancey (1997) also cites Sunwar (isolate, Nepal), which has mirativity marking on verbs. Though it is formally syncretic with indirect evidentiality, in which respect it is similar to Turkish, the Sunwar mirative appears to conveys an attitude of novelty but without indexing current SURPRISE, as shown by the PST-tense example (15a). In varieties of Quechua, Adelaar (2013) records that the mirative marker *naq~ñaq* also conveys an attitude of novelty and/or counterexpectation, but notably without SURPRISE indexation, which "stands out as an objective and non-emotional type of communication, in which a sensation of surprise has acquired an objective character without necessarily affecting the speaker any longer" (p. 107). One example (Paracaos Quechua), shown in (15b), transparently illustrates this: the mirative marker *-ñaq* is notably compatible with a temporal clause which shifts the reference/topic time to the past.

(15) Non-indexical miratives across languages

    a. kyarša 'saî-šo **'baa**-tə.   (Sunwar)

        goat   kill-NMZ exist.**MIR**-3SG.PST

        'He was killing a goat (e.g. when I discovered him) [≈ as I saw and found out **then**].'

                                        (DeLancey, 1997: ex. 29, adapted)

b. altu-ĉaw   ka-yka-nqa-y-kama-m   intrega-rqa-ma:-**ñaq**

highlands-LOC be-PROG-NMZ-1A/S-DLMT-CERT give.away-PERV-1O/IO-3A/S.**MIR**

   mamá-y   (Paracaos Quechua)

   mother-1POSS

‘While I was staying in the highlands, my mother had given me away [in marriage]

(as I found out **then**).’   (Adelaar, 2013: ex. 4, adapted)

There are some signs in descriptive or typological works that indexicality, in particular, indexicality of SURPRISE, is a point of variation across instances of miratives. As mentioned above, Aikhenvald (2012) implicitly recognizes this distinction between SURPRISE proper and SURPRISE-related attitudinal meanings by listing "surprise" as a separate phenotype from attitudes such as novelty or counterexpectation in her typology (4). Her intention, though not stated, can be discerned: she intends for her "surprise" phenotype to be reserved for miratives that index SURPRISE. Al intention is made manifest by her examples from Galo (Sino-Tibetan, Northeastern India), a language which has both a mirative marker that indexes current SURPRISE, and mirative markers markers which convey a mirative attitude without a necessarily concomitant SURPRISE.

Galo, documented extensively by Post (2007), has one SURPRISE-indexing mirative marker *la(a)ka* (16a), which Post describes as conveying "the SPKR is *reacting in astonishment* and disapproval *at an event unfolding as he speaks*" (emphasis mine). The language also has a novelty-attitudinal mirative *ɲi* (16c) which "marks that the information is *previously unknown...* and/or *unexpected* and which has *just been discovered*" (ibid.: p. 646, emphasis original). Furthermore, it also has a counterexpectation-attitudinal mirative marker *o* which "marks information as counter to, contrary to, the opposite of, or otherwise inconsistent with a standing expectation."

(16) a. azèn=gə jesì tɨɨ-dùu **la(a)ka**

    friend=GEN urine imbibe-IMPFV **MIR**$_{SURPRISE}$

    '(The pig) is drinking his friend's urine, of all things (I am surprised)!'

<div align="right">(ex. 748, adapted)</div>

  b. əgə̀ mə́ə-nam=əə caina aràa tolò ee=**ɲi**

    ANAP.IND think-NMZ:RLS=TOP China(<Eng) inside DST.LOC.UP COP.PFV-**MIR**$_{DISC}$

    'So this, if you think about it, must have taken place up in China (*lit.* was up in China, I realized)."

<div align="right">(ex. 779, adapted)</div>

  c. okkə́ə, homen=əə, homên=əəm dà káa-pàa-máa, allə̀=əəm

    SCNJ tiger=TOP tiger=ACC CNTR look-ATTN-NEG footprint=ACC

    ɲûm=**ɲo**

    DLMT-**MIR**$_{CEXP}$

    'We didn't see the tiger in the end, though, just his footprints (contrary to what we anticipated).'

<div align="right">(ex. 763, adapted)</div>

Importantly, Post documents a distinction between the first (16a) and the latter two markers (16b-16c) which is precisely one of indexicality. In his description, the novelty mirative *ɲi* and counterexpectation mirative *ɲo may*, but need not, index SURPRISE: they do so just in case they are used "in immediate reaction to some concurrent state of affairs"(Post, 2007: p. 639)—in other words, in contexts which there is SURPRISE—but they can crucially also be used in non-SURPRISE contexts, such as retrospective contexts as exemplified in (16b) and (16c).

However, although authors such as Aikhenvald and Post have, through empirical studies, arrived at some form of empirical recognition of the indexicality distinction, this has not translated into a consensus view either of the definition, or of the terminological conventions, for mirativity. Under Aikhenvald, both (16a) and (16b-16c) would be characterized as mirative markers, though they would have to be described as instantiating different phenotypes. How-

ever, Post's view—as far as his terminological choice shows—is different. He chooses to reserve the term "mirative" for the SURPRISE-indexing marker *la(a)ka*, preferring to label the attitudinal markers by their attitude flavor—"discovery" for *ɲi* and "counterexpectational" for *ɲo*. In a particularly telling move, Post describes latter two attitudinal markers as having "mirative overtones" when they are used in SURPRISE-containing contexts, i.e. contexts in which the SPKR does in fact experience SURPRISE and utters—felicitously—a sentence marked with novelty or counterexpectation attitudes. This is a clear indication that Post presumes a different concept of what mirativity is: namely, that it must be SURPRISE-indexing.

2.4.4   Taking stock: ambivalence in the interface

We have thus seen that the term "mirative" has been applied to elements which vary in whether their mirative meaning is indexical. Terminologically, the consequence of this variation is once again ambiguity: absent explicit description, the reader does not know whether a putative mirative element encodes an indexical or non-indexical mirative meaning.

However, I argue that this state of affairs ultimately reflects a missing piece in our current understanding at the interface level, viz. between cognition and linguistic semantics. The reason, I claim, why indexicality emerges as a relevant linguistic property at all from the so-far intuition-driven use of the term "mirative" has to do with a feature of SURPRISE, the cognitive experience that underlies this class of linguistic meaning. This feature is namely that SURPRISE is a **private** and **episodic** experience. By private, I mean that SURPRISE is an experience which happens exclusively *to some individual*, and that individual has privileged access to what it is like to undergo this experience. By episodic, I mean that SURPRISE is a dynamic experience that happens *in time*: it has an onset and an endpoint; it represents a *change* from a certain mental (perhaps even physical) state to another, and thus feelings, emotions, thoughts, beliefs, etc. at different points during and after that dynamic process may not be constant.

Linguists who study mirativity thus need to understand explicitly how SURPRISE, a cognitive phenomenon, **interface**s with those types of linguistic meaning that encode or express aspects of this cognitive phenomenon, which we have been calling "mirativity" by intuition only. The variation over indexicality of mirative meaning accumulated over time is a symptom of the lack of such an understanding of the interface.

2.5   Conclusion: what are the conceptual shortfalls?

In this chapter, I have reviewed two main sources of the long-standing terminological impressionism over mirativity: the first over the many flavors of mirative attitudes, and the second over whether mirative meaning is indexical. In the latter domain of indexicality, I have specifically highlighted a further parameter of variation, namely, the semantic identity of the meaning that is indexed. Importantly, I have argued that each case of empirical variation points not merely to a conventional matter of terminological choice, but to a deeper conceptual issue about mirativity itself: we do not know what attitudes definitively count as mirative, and what the variably-indexical properties of different miratives point to, ultimately because we do not yet have an explicit theory of mirativity as a category defined at the cognition-meaning interface. A theory which makes intelligible the interface connections between SURPRISE and mirativity is what will eventually "define" mirativity clearly, and serve as the conceptual basis for well-motivated terminological choices. This is the work which I take up in the next chapter.

3.1   Introduction

Having reviewed major areas of empirical variation over instances of mirativity in the litera-ture, and identified the underlying conceptual shortfalls, we are now ready to take on the def-initional question: what does—and does not—define mirativity as a natural class of meaning. This chapter provides a systematic answer to this question, grounded in the interdisciplinary understanding of the nature of SURPRISE both in itself, i.e. as a cognitive/psycho-physical experience, and, in particular, in the interface between cognitive experiences and linguistic expression.

Specifically, I advance three views.

First, the definition of mirativity (=mirative meaning) and miratives (=linguistic elements encoding mirative meaning) should not implicate morphosyntactic status, which is the main issue over which unspoken, and ultimately orthogonal, assumptions have caused much of the controversy in the typological literature (§3.2).

Rather, mirativity is a range of **meaning**: specifically, it is **a range of attitudes** (§3.3). This range must be defined in reference to the cognitive phenomenon that gives shape to this class. Utilizing two interdisciplinary theoretical concepts—*mental states* and *attitudes*, I articulate an interface definition of mirative meaning as **attitudes which characterize a surprise-induced mental state**.

Third, I argue, in particular, that the attitudes of NOVELTY and COUNTEREXPECTATION are **core** mirative attitudes, because they occupy a core definitive role in identifying mirative atti-

tudes. This point crucially—and necessarily—derives support from interdisciplinary evidence: research in cognitive science on the phenomenon of SURPRISE converges on the conclusion that it is certainly NOVEL stimuli, and possibly COUNTEREXPECTATIONAL stimuli, that are the *cause* of SURPRISE. Thus, any linguistic expression that encode SURPRISE-related meanings will minimally instantiate these same attitudes.

With this articulated definition of mirativity, I conclude this chapter with a critical reassessment of Aikhenvald-style descriptive terminology for mirativity. In particular, I show that, with some interpretive work, Aikhenvald's terms for five phenotypes of mirative meaning can indeed be reduced, in a constructive and clarifying way, to the two core mirative attitudes.

3.2 Mirativity is not defined by morphosyntactic status

A major implicit assumption in the early, grammaticalization theory-oriented research program on mirativity causes a sustained dispute over what makes a linguistic element a mirative, and therefore, of how to define the notional category of mirativity. This is the assumption that identifying an element as a "mirative," or a language as marking "mirativity," involves not only a semantic criterion but also considerations of the morphosyntactic status of the element in question.

This is essentially a *semantic* criterion for mirativity, one which I will develop in §3.3 as the *definitive* criterion for this range of meaning. However, early typological research, which aimed to posit such a categorical notion, assumes that what merits the status of a "dedicated" or "primary" category must *not only* involve an identifiable natural class of meaning, but also a certain morphosyntactic status that is often described as "grammaticalized" or "part of grammar."

It is this latter part that has opened up this line of work to recurrent disputes over the categorical validity. The reason is that there is no universal standard for how to determine that

mirativity has definitively been "grammaticalized" across languages that have very different morphosyntactic systems. I focus here on two instances of this issue: disputes over degree of grammaticalization/lexicality, and disputes over individual morpheme vs. paradigmatic semantics. I show that it is these two disagreements over standards of sufficient grammaticalization that have each underlied a significant amount of the "mirativity debate" in the typological literature. Ultimately, neither these nor any other considerations of morphosyntactic status should be intertwined into a properly semantic definition of mirativity.

3.2.1 Disputes over degree of grammaticalization/lexicality

Inherent in the functional and grammaticalization-based view of syntax and syntactic categories is the assumption that syntactic (or, more theory-neutrally, grammatical categories) categories are the regularized expression of particular functions or meanings: all starts when certain identifiable meaningful functions get encoded in lexical items, and when a function is sufficiently useful and occurs regularly and frequently enough, its form may develop more structurally restricted, essentially *bound*, morphosyntactic properties, then a grammatical category emerges, and this pathway of a diachronically regularized form-function mapping is a sufficient account of that grammatical category. This is the methodological orientation which explicitly characterizes DeLancey's typological work. In his own words:

> *"Grammaticalization theory traces all structure back—diachronically as well as logically— to simple combinations of nouns and verbs... Using any lexicon, we can effectively describe a person who yells or is yelling by simply placing side by side a word which means ʻpersonʼ and one which means ʻyellʼ. We see grammar arising as soon as we can detect a fixed, recurrent construction, like VERB-person, which speakers can pull ʻoff the shelfʼ to refer to an agent or actor associated with a particular action. At the far end of the grammaticalization process, we may end up with a semantically light, phonologically reduced, probably*

morphologized affix which attaches to verbs to derive agent nominalizations, or perhaps simply nominalizations (see below).

This is the origin of all grammatical categories, including ʿmajorʾ lexical categories like adposition and adjective as well as smaller categories such as nominalizer. All such categories arise through the same processes[...] All categories arise through grammaticalization." DeLancey ([2011]: §1)

Thus, a corollary of this methodology is that the primary task of syntactic/semantic research is to identify, in cross-linguistic data, recurrent, regularized functions through *grammaticalized* forms, that is, *with a recognizably structurally bound morphosyntactic status*, because grammaticalization is the way to establish, and sufficiently account for, a cross-linguistically general "typological category." This is the motivating principle behind the early typological work on mirativity and mirative markers. This implies, in turn, that for an element to be properly recognized as an instantiation of a cross-linguistic category (such as *mirative*) it must display *some* degree of grammaticalization—in particular, some sort of bound *morphosyntactic* status—in addition to encoding a mirative semantic value.

This view that it takes not just mirative meaning, but also some bound morphosyntactic status, for an element to qualify as a "proper" mirative marker, is embodied most explicitly in Aikhenvald ([2012]: §5). Although Aikhenvald's 5-phenotypes of mirativity are all descriptions of *semantic* values, she specifically excludes, as part of a final methodological statement, *lexical* elements and *clause-level* constructions, which encode precisely those meanings, from being described as miratives:

"Every language has a way of expressing sudden discovery, unexpected information, and concomitant surprise—that is, the mirative range of meanings. But this does not have to be encoded in grammar. There may be a verb 'to be surprised' (e.g. Tucano mari 'be surprised, admire'). Musqueam has a number of special exclamatory words Suttles ([2004]: pp. 468–

470) used to express surprise. Exclamative clauses usually have overtones of surprise and new and/or unexpected information (see Olbertz, 2009). Surprise may be indicated through interjections, as in English wow! or Tariana kwe!, or through special exclamatory intonation—as in English, or Musquam... It would not be appropriate to extend mirative, or the grammatical category of 'expectation of knowledge,' to lexical means."   (pp. 474-5)

Aikhenvald's rationale for excluding these types of markers from being labeled as "mirative" derives precisely from the methodological assumptions of the functionalist, grammaticalization-theory oriented view of "categories" sketched above: categorical labels such as *mirative* are to be treated as instantiating a *hybrid* of both semantic and morphosyntactic criteria. Only elements that both encode the meaning and meets a certain prototypical threshold for morphosyntactic boundedness should be accorded this label.

However, I argue that this hybrid approach is inherently untenable. The issue lies in the fact that what constitutes a "sufficient" degree of grammaticalization, in terms of morphosyntactic boundedness, is necessarily left open to interpretation for each individual language with a different typological profile. Aikhenvald's own examples of miratives, as well as DeLancey's, have tended to favor single bound morphemes (or periphrastic verb structures at most, as in the case of Kham [Tibeto-Burman, Nepal, Watters (2009)]) that are members of larger morphosyntactic paradigms: verb suffixes, clitics and "particles" are featured most prominently. However, not only is this criterion for degree of grammaticalization hardly a well-defined one, it is also an arbitrary one: there is no inherent reason, other than a stipulated typological preference for agglutinative or fusional inflectional morphology, why a regular intonational marker such as the exclamation intonation in English, or a regular clause-level structure such as *wh*-exclamatives, should be considered less "grammaticalized" than a regular verb suffix. On the other hand, what Aikhenvald considers to be purely "lexical" means of encoding mirative meaning—attitude adverbs such as *surprisingly*, or utterance-initial interjections such as *wow*,—exhibits features that must undoubtedly be considered *grammatical*. For instance, the

positioning of a clause-level attitude adverb *surprisingly* in a larger sentence, viz. one with a subordinate conditional clause, is not gratuitous: different positions evoke different semantic scope interpretations.

(17) a. **Surprisingly,** if the former president gets sued, he can still run for president.

  b. If, **surprisingly**, the former president gets sued, he can still run for president.

  c. If the former president gets sued, he can still run for president, **surprisingly**.

<div align="right">(modelled after Rett, 2021a: exs. 25-27)</div>

In (17a) and (17c), it is the entire implication that the SPKR finds surprising (the fact that a sued former president can still run for president), while in (17b), it is only the embedded conditional clause (the hypothetical scenario in which the former president is sued), that the SPKR finds surprising. Rett (ibid.) shows that this property is in fact true for a certain class of adverbs, which includes *surprisingly*, but not for other classes. The point, however, is this: there is no *inherent* reason to consider regular properties such as this property about mirative adverbs such as *surprisingly* "not sufficiently grammaticalized" as to justify those adverbs being debarred from the mirative label. For this reason, I do not consider degree of grammaticalization a necessary, or indeed, relevant, factor in defining what mirativity or miratives are.

3.2.2 Disputes over individual morpheme vs. paradigmatic semantics

A significant amount of early debate over the viability of the mirative typological category revolves around *paradigmatic* relationships that a mirative element stands to other morphemes. The shape of the concern is the following: if an alleged mirative element is a member of a larger paradigm that has a different semantic identity (such as evidentiality, aspect, etc.), then there would be cause to think that the element in question must also be characterized as an expo-

nent of that other semantic identity, rather than as a mirative. In other words, the semantic characterization of an individual morphemes should agree with the semantic characterization of the paradigm.

This assumption is what undergirds many skeptical views of the mirative typological category. Counterarguments generated in this vein seek to cast doubt on DeLancey's (1997; 2001; 2012) proposal to treat mirativity as a cross-linguistic typological category on its own, by showing that one or another of his "original" instances of miratives *could* be semantically recharacterized as something else *if* one takes the semantic values of their paradigm-mates into consideration, and therefore *should* be recharacterized.

Turkish and Tibetan are the two instances which illustrate this line of (counter-)argumentation in highest relief, being two relatively well-documented languages and drawing attention from multiple sides. On Turkish *-mIş*, several authors draw on the fact that it, as a member of the perfective part of the verbal inflectional paradigm, stands in paradigmatic opposition to *-dI*, and they advocate for different characterizations for *-mIş* depending on their characterization of the division of labor between it and *-dI*. Lazard (1999) considers this division to go along the lines of "p is asserted as fact and fully committed to by the SPKR, without specifying that it is based on external evidence" (*-dI*) versus "p is presented by the SPKR as something 'mediated by ([type]-unspecified) reference to [external] evidence' "; she therefore advocates for characterizing *-mIş* as a "mediative" marker, and for a cross-linguistic category called "mediativity" in general. Johanson (2000) characterizes *-mIş* as encoding "a narrated event E^n is not stated directly, but indirectly: by reference to its reception by a conscious subject P... whether the reception is realized through hearsay, logical conclusion or direct perception," as opposed to *-dI*, which states the narrated event E^n "directly," without reference to externally-received evidence. Thus, her characterization of choice for *-mIş* is as an "indirective" marker. Hill (2012) reckons that all the instances of *-mIş* are instances involving "events to which the SPKR was not a direct or fully conscious participant," following a characterization by Slobin and

Aksu, 1982) which is developed also on comparison with the paradigmatically complementary *-dI*.

On Tibetan, DeLancey's proposal that the contrast in the verbal inflectional paradigm between *yin/yod* and *ḥdug* as one of non-mirativity and mirativity is countered by authors who argue for the conventional characterization: *yin/yod* and *ḥdug* encode egophoric and direct perceptual evidence, respectively (see e.g. Garrett (2001) and Tournadre (2014)), and both form, in turn, part of a larger verbal paradigm where all distinctions encoded in the same slot is evidential in nature. (Hill, 2012), a systematic rejection of DeLancey's "mirative" characterization of *ḥdug*, takes this very fact as a starting point towards showing that analyzing *ḥdug* as "primarily" a direct evidential, better captures what he calls the "*Gesamtbedeutung*" of this element than analyzing it as primarily a mirative marker, a point which is eventually accepted by DeLancey (2018), cited in §1.2.

Arguments for or against a "mirative" characterization of an element from its paradigmatic membership have at least one point of merit: they provide useful descriptions of the semantic identity of the paradigm as a whole, and offer intuitions about where the boundaries are among different forms in that paradigm. Since forms in the same paradigm collectively span over and exhaustively divide up a certain region in the semantic space, finding out a "primary" semantic characterization of that region of semantic space and mapping out the place that a particular element in that paradigm occupies within that space do contribute to understanding the semantic value of the element in question.

However, the issue that often limits this line of work is the assumption that the semantic value of a particular paradigmatic element must only have one "primary" characterization which must match that of the paradigm as a whole, and may not instantiate other natural classes of meaning. However, whether the semantic space occupied by an entire paradigm is characterized by natural class X can be orthogonal to whether the semantic value of a *particular* element in that paradigm might also instantiate natural class Y, in addition to a certan value

of natural class X. To put it concretely in the case of the debate over "primary characteriza-tion" of Turkish *-mIş* and Tibetan *ḥdug:* identifying that the paradigm as a whole spans over a region in the semantic space coresponding to "evidence type" (Tibetan) or "reception of exter-nal evidence" (Turkish) should be orthogonal to determining whether the semantic value of *-mIş* or *ḥdug*—which are *individual* members of the paradigm—encodes meaning that may also be projected along a different dimension, for instance, mirativity. In fact, because a direct ev-idential such as Tibetan *ḥdug* encodes that the evidence holder has acquired direct perceptual evidence which leads to knowledge of the main proposition at a certain point in time, past or present, that the information in the main proposition is new knowledge to the evidence holder at a certain point is doubtlessly a part of *ḥdug*'s semantic value. Similarly, in Turkish, we can identify that it *is* part of the meaning of *-mIş* that the evidence holder, at some point, has gone from being unaware of the information in the main proposition to being aware of it, whether through inference, direct perception, or a report. As long as meanings such as "coming to know p at a certain time t" and "coming to be aware of p at a certain time t" are to be reckoned as *mirative* meanings, there is no problem in characterizing Tibetan *ḥdug* or Turkish *-mIş* as mira-tive markers; the fact that the same semantic value may also be evidential in nature is simply orthogonal.

Thus, I suggest that arguments over whether mirative ought to be the "primary characteri-zation" for particular elements, or more generally, debates over whether "mirativity" ought to be accorded the status of being a "independent" category to be used for this kind of "primary" characterization, ultimately falls victim to a false assumption. Paradigmatic membership is a type of *morphosyntactic* connection between linguistic elements, and should not be taken as a yardstick for analyzing the semantics of *one* linguistic element that happens to stand in a paradigm, and, much less, for defining a natural class of meaning in itself.

3.2.3 Interim summary I

In the foregoing paragraphs, I have presented a methodological critique underlying the apparently still unresolved dispute over the category of mirativity in the typological literature. I have shown that the problem ultimately lies with intertwining semantics and an inherently inconsistent morphosyntactic criterion, in defining what is fundamentally a natural class of *meaning*. As long as one continues to insist on morphosyntactic "grammaticalizednesss" in determining whether an element that is mirative, whether the concern is over bound vs. free morpheme status, or paradigmatic semantic identity, the potential for dispute will continue to exist.

The clear alternative, then, is to dissociate the category of mirativity from morphosyntax, and return to the basic intuition: mirativity is a category—a natural class—of meaning, which corresponds to the distinct phenomenon of SURPRISE. How can this intuition be spelled out into an unambiguous semantic definition? I turn to carry out this work in the next section.

3.3 Mirativity is a range of attitudes

I propose that mirativity is defined as a range of *attitudes*. This range of attitudes is determined by a criterion ultimately rooted in cognitive science and the philosophy of mind: an attitude is mirative just in case it can characterize or express a SURPRISE-induced mental state. I will call this range of attitudes MIRATIVE ATTITUDEs. Therefore, while mirativity is indeed connected with the experience of SURPRISE, this connection is ultimately extra-linguistic, mediated, at two intermediate conceptual levels, by mental states and by attitudes: SURPRISE, a phenomenologically distinct cognitive experience, induces certain mental states, which in turn can be characterized by a certain range of attitudes, which may eventually be conventionalized in certain linguistic forms. I show that this articulated definition of mirativity provides

the conceptual wherewithal to clear up the three ambiguities surrounding the term *mirativity* discussed in §2, and to restate outstanding research questions on mirativity in terms of empirical or theoretical character, rather than as points of contention over terminology as they often have been.

3.3.1 Attitudes and mental states as interface concepts

Attitudes and mental states are notions whose reference is substantially similar across semantics, philosophy of mind and psychology, disciplines which study phenomena of the mind. AT-TITUDEs broadly subsume experiences such as believing, knowing, hoping, expecting, finding good/bad/disappointing/shocking, etc. Definitionally, one can think of attitudes as a set of (any) relations which the mind can bear towards some object of thought (typically a proposition), along some dimension of cognition or judgment[1].

In the study of the human mind, of which attitudes constitute a significant part (Kim, 2010), scholars conventionally use the term MENTAL STATEs to refer to what cognitive agent's mind is like—what properties it *instantiates*—at given points in time. Mental phenomena are usually analyzed in terms of these temporally-delimited snippets of the mind. Thus, an attitude can be analyzed as (an expression of) certain dimensions of the mental state which the agent is construed to be in, when her mind instantiates the property of bearing the particular sort(s) of attitude(s) to particular objects of thought. For instance, an agent who believes that it is raining, may be said to be in a mental state which instantiates the property of bearing the relation of *belief* to the object of thought, in this case a proposition "*it is raining*." Another agent who did not expect the fact that the weather forecast last night was accurate, may be said to

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[1]This represents a well-known, broad definition for ATTITUDEs in behavioral and social psychology given by McGuire (1985), cited in Banaji and Heiphetz (2015). Coming from a more experiment-based orientation, McGuire's definition places more weight on attitudes as responses (implying more active than stative) and as judgments (implying more evaluative than cognitive), but it is apt to expand this definition to include the state-like nature of many attitudes, especially those which are expressable in linguistic terms, e.g. by attitude reports, and thus studied as linguistic phenomena.

be in a mental state which instantiates the property of bearing the relation of *not expecting* (counterexpectation) to the proposition "*the weather forecast last night was accurate.*"

The notion of a mental state "instantiating a property" of an attitude is a deliberate choice of words. Mental states are *attitudinally multidimensional*, that is, a mental state is capable of instantiating many properties, i.e. it is possible for one mental state to be characterized by a multitude of different attitudes at the same time. This is not hard to understand: the mind is a complex theoretical construct, and a wide range of phenomena are identified as ocurring within it. Evidently, the occurrence and persistence of different mental phenomena are not mutually exclusive, as for instance a cognitive agent x can simultaneously have a direct visual perception that *it's raining*, and have a belief that *it's raining*, and be of a certain emotion, such as marvel or dismay or disappointment, towards that same fact. Therefore, mental states are *multidimensional*, in the sense that they can, and typically do, simultaneously instantiate multiple properties that pertain to different types of phenomena. In particular, mental states are *attitudinally* multidimensional, in that they can simultaneously instantiate multiple attitudes, and towards the same object of thought. In the above instance, x's mental state, which is one that instantiates the attitude of belief towards the proposition "it is raining," is also one that instantiates the attitude of marvel/dismay/disappointment towards the same proposition. For ease of discussion, I will use the phrasing "a mental state m *instantiates* attitudes $a_1, ..., a_n$" and "attitudes $a_1, ..., a_n$ *characterize/express* mental state m" synonymously. Thus, in the same instane above, x's mental state is characterized by "belief that it is raining" and "marvel/dismay/disappointment that it is raining" simultaneously.

So far we have been speaking of ATTITUDES as a cognitive-scientific construct, specifically, a class of characterizing properties of mental states. ATTITUDES can be expressed (encoded) by linguistic means. Important to recognize is the fact that there is a *diversity of linguistic species* of attitude expressions: linguistic exponents of attitudes at large come in a wide range of strategies, morphosyntactic statuses and semantic species. Take the same agent above as an example:

as expression of her attitude of belief at the proposition "it is raining," she may choose to utter any one of (18); as expression of her attitude of marvel/dismay/disappointment at the same proposition, she may choose to utter any one of (19).

(18) SPKR's attitude: belief that *it is raining*

    a. I believe (it to be the case) that it's raining.

    b. It's undoubtedly raining.

    c. It's raining.

(19) SPKR's attitude: marvel/dismay/disappointment that *it is raining*

    a. I find it marvellous/disturbing/disappointing that it's raining.

    b. Amazingly/Disturbingly/Disappointingly, it's raining.

    c. Wow/gosh/aw, man, it's raining!

All of these utterances contain some linguistic element which conventionally encodes the attitudes in question. Embedding under attitude predicates (18a), (19a) overtly encode these attitudes in the truth-conditional semantics. Sentential adverbs (18b), (19b) encode these attitudes as SPKR-oriented, non-truth-conditional content (Ifantidou-Trouki, 1993; Simons et al., 2010; Rett, 2016, 2021b). A plain assertion of a proposition p (18) carries with it the constitutive normative condition that the SPKR presents herself as believing that proposition (Williamson, 2000). Finally, interjections convey attitudes as Kaplanian expressives: by uttering *wow/gosh/aw, man*, the SPKR thereby presents herself as being in the state of holding the respective attitudes.

With these preliminaries, I now turn to define mirative attitudes.

3.3.2 Mirative attitudes characterize SURPRISE-induced mental states

Apart from certain physiological responses, SURPRISE is by and large a mental phenomenon: in surprise, the agent encounters some external circumstance—perhaps something new, unexpected, noteworthy, shocking, etc.—and, accordingly, she enters into a new kind of mental state which instantiates certain attitudes that she did not have prior to the moment of surprise—a revision of beliefs, a resetting of expectations, or possibly an evaluation of the triggering external circumstance, or an emotionally-marked response to it—or a complex attitude which combines any number of these dimensions. Thus, this mental component of SURPRISE can be modeled in terms of mental states, specifically, as the establishment ("entering-in") of a particular natural class of mental states which I will call SURPRISE-induced mental states.

I define a mirative attitude as in (20), and, accordingly, the semantic category of mirativity as in (20a) and the notion of a linguistic mirative (marker) as in (20b).

(20) Definition of mirative attitudes: *first pass, revised in* (21)

A **mirative attitude** is an attitude which characterizes a SURPRISE-induced mental state.

    a.   **Mirativity** refers to the domain of meaning that consists of the class of mirative attitudes.

    b.   A **mirative** is a linguistic element which encodes or conveys mirativity, regardless of its linguistic species.

The core feature of this set of definitions is the recognition that the criteria for what is and is not mirativity is ultimately extralinguistic: they must come from a theoretical understanding of the nature of SURPRISE in general, and of the correlation between SURPRISE-induced mental states and certain attitudes in particular. These are questions in the domain of psychology/cognitive science. It is in this larger, interdisciplinary sense that mirativity *is* defined

"in terms of" SURPRISE: the former is a domain of linguistic meaning that consists of a class of attitudes, which is a class that corresponds to a specific kind of cognitive experience that naturally occurs in humans.

Specifically, let us see how this set of definitions reshapes the empirical coverage of the notion of mirativity in linguistics, and clears up the two main sources of variation and terminological ambiguity introduced in §2.

Diversity of mirative attitudinal flavors. Because mental states are attitudinally multidimensional, SURPRISE-induced mental states may be characterizable by attitudes that have complex dimensions. This is not hard to understand: there is practically infinite possibilities in the flavors and intensities of the attitudes which may characterize the immediate SURPRISE-induced mental state the agent is in, depending on factors ranging from the agent's intellectual and temperamental disposition, to which aspects of her prior mental state come into confrontation with the surprise-triggering contextual information. Consider again the same agent x in the rain-discovery context. x could be a science nerd who tends to get excited whenever well-informed, authoritative scientific opinions are challenged by fact. In this case, at the moment of surprise, x's memory of last night's weather forecast and her confidence that weather forecasts are scientifically sophisticated come into conflict with the external circumstance that it is raining, which could very likely induce a mental state that at once instantiates both an attitude of counterexpectation, and another of curiosity, and perhaps a third one of marvel. In a different scenario, x could be a white-collar office worker who every day desires to have a stress-free commute and to keep her business outfit in perfect condition. In this case, it would be these persistent desires of hers, plus possibly her occurrent wish that the weather *that* morning be good, that come into conflict with the external circumstance. This would likely induce a slightly different mental state, one which instantiates counterexpectation, but also dismay.

Consequently, it is expected that instances of linguistic elements which conventionally en-

code SURPRISE-related attitudes (i.e. miratives) across languages will display a complex range of attitudinal flavors which, even if identical in some significant dimension, may very well differ in other dimensions. This thus explains on a conceptual level why it is entirely expected that instances of mirative markers across language may conventionalize the same attitude along some SURPRISE-related attitudinal dimension, while differing signiticantly in other atttitudinal dimensions (whether SURPRISE-related or not), as is the case with English *turn out* and Cantonese *wo3*, and with the co-existence of the SURPRISE-indexing marker *la(a)ka*, the "novelty" marker *ɲi* and the "counterexpectation" marker *ɲo* in Galo.

Variation in indexicality. Moreover, we can also comfortably re-state the problem of ambiguity over indexicality we see with the impressionistic use of the term "mirative." Since mirativity is a range of attitudinal meanings, an element can be identified as a mirative as long as it encodes in *some* way a mirative attitude. Whether or not the SURPRISE episode that induces the mental state which that mirative attitude charaterizes is concurrent, or proximal, or distant, to that attitude is an important, yet non-definitional, question.

3.4   The core mirative attitudes: counterexpectation and novelty

As discussed in §2.3, one of the empirical starting points for the complexity of linguistic mirativity is the diversity of attitudinal flavors attested by mirative markers across languages. By defining mirativity, a category of linguistic meaning, in terms of the upstream cognitive mechanisms that generate this range of linguistic meaning—namely, as attitudes that characterize SURPRISE-induced mental states, we have articulated a conceptually principled way to make sense of this diversity of attitudinal flavors: SURPRISE-induced mental states are attitudinally multidimensional, and consequently, different linguistic exponents that characterize SURPRISE-induced mental states are also expected to vary in the attitudinal dimensions and

values that they have come to conventionally encode.

However, is there any unifying theme beyond this diversity of mirative attitudes? What attitudinal dimension(s) definitively makes a (complex) attitude mirative or not? This is the central question for this section. Indeed, the literature already offers some strong intuitions: any reader of descriptions or typological studies on mirativity will no doubt find two words being among the most frequently used in describing the meaning contribution of mirative markers: "new" and "unexpected." But are attitudes of novelty and counterexpectation merely empirically common, or are they in some theoretical sense more fundamental—as against any of the other descriptive terms in Aikhenvald's typology—to the nature of SURPRISE, and therefore of mirativity?

The answer to this question necessarily lies in the interface between cognitive science and linguistics: we are essentially asking what linguistically-encoded attitude(s) necessarily and characteristically occur in SURPRISE. Therefore, I answer this question in two steps.

First, following Reisenzein et al. (2019), I review a line of research in cognitive science on the *cause* of the phenomenon of SURPRISE which directly sheds light on this question. Essentially, there is concerted evidence that COUNTEREXPECTATIONal experiences cause SURPRISE. There are also attempts to to distinguish the role of NOVELTY, a closely related and often constitutive type of experience, from that of COUNTEREXPECTATION in causing SURPRISE, but the evidence for an independent causal role of NOVELTY is not conclusive.

Second, I consider the interface of these findings with linguistic attitudes. I suggest that, on the one hand, the long-standing practical intuition that the (linguistically-encoded) attitude of counterexpectation is central to mirativity is substantiated, since what causes SURPRISE is necessarily co-present in SURPRISE (and the mental states immediately induced). On the other hand, the (linguistically-encoded) attitudes that are often labeled as newness or novelty of information, is not straightforwardly identifiable with the NOVELTY condition commonly inves-

tigated in cognitive scientific research.

3.4.1 COUNTEREXPECTATION causes SURPRISE

In psychological/cognitive scientific research, the qualitative hypothesis that COUNTEREXPEC-TATIONal experiences cause SURPRISE is extremely well-substantiated: this hypothesis is essentially treated as a background assumption for a majority of experimental methods used to induce SURPRISE (Reisenzein et al., 2019: §3.1.1), and the continued success of such methods at inducing SURPRISE responses based on manipulating COUNTEREXPECTATION constitutes recurring empirical verification that this hypothesis is correct.

The most widely-used experimental paradigm in this vein is the *repetition-change paradigm*: participants are first presented with a series of "habituation" trials involving repetitions of the same baseline condition, such as a particular color scheme of the stimulus, e.g. black letters on white background, repeating 29 times (Meyer et al., 1991). The recurrence of the same baseline condition is meant to entrain the participants to form a certain stable expectation about the relevant features of the next trial. Then, during the "surprise" trial, a different, never-before-seen and thus counterexpectational condition is presented, e.g. white letters on black background (ibid.). Such repetition-change paradigms have been shown to reliably induce SURPRISE, as measured both by spontaneous behavioral patterns [e.g. interruption of/interference with a parallel task (Horstmann, 2006), attentional shift (Horstmann and Herwig, 2015, 2016), etc.] and by subjective, reflective reports by participants of SURPRISE experiences. Other, more contextually-enriched approaches to experimentally manipulate COUNTEREXPECTATION have produced similar success in SURPRISE induction; such methods range from fully verbal (description of unexpected lottery outcome, Juergensen et al., 2014), to fully physical and situational (exposure to a novel, strange room outside of the experiment location, Schützwohl and Reisenzein, 2012).

Furthermore, the causal link between COUNTEREXPECTATION and SURPRISE has also been substantiated quantitatively: the *degree* of COUNTEREXPECTATION of a circumstance or condition for an individual is positively correlated with the *degree* of SURPRISE of that individual in response to the same circumstance/condition. Such a positive correlation has been repeatedly observed, even with different empirical measures and indices of those degrees. For instance, within studies conducted using the repetition-change paradigm, Reisenzein et al. (2019) summarize the following manipulations on the degree of COUNTEREXPECTATION which exhibit a correlating effect on the degree of SURPRISE (both in terms of spontaneous behavioral patterns and in terms of reflective self-reports): number of "habituation" trials prior to the "surprise" trial, variability within the "habituation trials" (Schützwohl, 1998), number of discrepant components of the stimulus in the "surprise" trial, amount of verbal information describing upcoming changes to the stimulus (Niepel, 2001; Schützwohl and Reisenzein, 1999), etc. Similar quantitative correlations between COUNTEREXPECTATION and SURPRISE have been observed with other experimental methods and measures.

Because COUNTEREXPECTATION causes SURPRISE, it is always co-present in SURPRISE. Whenever an agent x experience SURPRISE about some circumstance, x experiences, as part of the same episode, COUNTEREXPECTATION towards the same circumstance. Thus, it is true that COUNTEREXPECTATION characterizes any SURPRISE-induced mental state. Therefore, COUNTEREXPECTATION forms the attitudinal core of SURPRISE.

3.4.2 NOVELTY does not independently cause SURPRISE

Some alternative proposals claim that NOVELTY has an independent role to play in causing SURPRISE, either instead of, or in addition to, COUNTEREXPECTATION. Compared with the strength and variety of evidence for the causal association of COUNTEREXPECTATION with SURPRISE, evidence for the same kind of association of NOVELTY with SURPRISE is less abundant and ulti-

mately not conclusive.

Reisenzein et al. (2019) point out that a majority of studies in favor of NOVELTY in fact do not make a clear enough conceptual distinction between it and COUNTEREXPECTATION; thus, their results are unable to distinguish between the effects of one versus the other. Note that NOVELTY in this strand of literature generally refers to circumstances which have not been previously seen or experienced (in *some* frame of reference of time and similarity). Thus, in typical cases, circumstances which are counterexpectational are also novel (and *vice versa*); the discerning case would have to be novel circumstances which are either (i) expected, or (ii) neither expected nor unexpected. If one could demonstrate a SURPRISE-inducing effect by (ii), then it would show that NOVELTY is sufficient in causing SURPRISE. If one could do so by (i), then it would show that NOVELTY is both sufficient and necessary in causing SURPRISE.

Empirical evidence for (ii) is lacking, because it is practically impossible to design experimentally-viable stimuli which are novel but expected. This is particularly true given that the temporal frame of reference afforded by an online experimental setting is typically very short; therefore, if one needs to habituate a participant to expect a certain stimulus, it becomes difficult to create enough space between habituation and target trial such that the occurrence of the same stimulus becomes novel again.

On the other hand, there is some weak empirical evidence against (i). In a very interesting study, not on SURPRISE but on distraction/attention shift (which can be constitutive of the syndromal experience of SURPRISE but certainly not equated with it), Vachon et al. (2012) show that participants does *not* suffer a distraction-based poorer performance at a main task when experiencing the sudden *onset* of an audial distraction (a NOVEL circumstance), but *does* suffer a poorer performance when the audial distraction unexpectedly *changes* in voice quality, from female to male voice (a COUNTEREXPECTATIONal circumstance). If we interpret attention shift as broadly congruous with SURPRISE, then this finding suggests that NOVELTY alone is unable to cause SURPRISE.

3.4.3   The SURPRISE-mirativity interface

How should linguists interpret these findings in cognitive science for our search for an attitudinal core for mirativity? Despite superficial terminological identity between these studies and linguistic studies on mirativity (both talk about *counterexpectation* and *novelty*), I argue that only the notion of COUNTEREXPECTATION translates commensurately to the (linguistically-encoded) *attitude* of counterexpectation, whereas NOVELTY does not straightforwardly translate to the *attitude* of novelty. I argue that there are grounds to identify both the attitude of counterexpectation and the attitude of novelty as core attitudes of mirativity, though the two are distinct and stand in a one-way implication relation: holding an attitude of counterexpectation presupposes holding an attitude of novelty, but not vice versa.

Commensurability of concepts.   First, as a conceptual notion and as instantiated in the experimental conditions, the notion of COUNTEREXPECTATION in cognitive scientific research is substantially commensurate with the attitude of counterexpectation commonly discussed in linguistics (exemplified by English attitude predicates such as *did not expect*). In any experimental manipulation which induces a COUNTEREXPECTATION circumstance by first calibrating the agent's expectations through direct perceptual exposure to repetitive stimuli, and then violating that expectation through the same mode of perceptual exposure, it is felicitous to describe that experience of COUNTEREXPECTATION in terms of the corresponding linguistic attitude of counterexpectation towards some discernible propositional content corresponding precisely to what is COUNTEREXPECTATIONal about the "surprise" stimulus. For instance, for the experiment participant in the moment of seeing the "surprise" stimulus with a COUNTEREXPECTATIONal color scheme, it would be entirely felicitous and consistent with our intuitive analysis of her SURPRISE reaction, to express her mental state as "I did not expect [that the color scheme of the letters and the background would flip]." Thus, we may justifiably interpret the line of research which shows that COUNTEREXPECTATION (in a general cognitive-scientific sense) causes

SURPRISE as grounds for considering counterexpectation (the linguistically-encoded attitude) as the core attitude of (one type of) mirativity.

By contrast, there are substantial differences between the notion of NOVELTY in the cognitive research reviewed above the attitudinal notion of novelty ("new information") in the sense commonly used in the mirativity context. NOVELTY in cognitive science is usually investigated as the "previously-unencounteredness" of a stimulus; the feature in focus is typically the degree of (dis)similarity between the NOVEL stimulus and pre-existing, retrievable memories or patterns on the part of the participant (Vachon et al., 2012: §3.2; Barto et al., 2013: §3). The more dissimilar the stimulus is with respect to some (contextually-relevant) set of memorized and retrieved patterns, the more NOVEL it is.

Novelty in the context of mirativity is different. It describes a specific kind of attitude, namely, that of coming to *knowledge* (or sometimes *awareness*), typically directed towards propositions. These are attitudes exemplified by English attitude predicates such as *realize*, *find out* (for *coming to knowledge*), *notice*, *become aware* (for *coming to awareness*) etc. Propositional attitudes that index knowledge in the theoretical sense of justified (true) belief are conventionally termed *cognitive* attitudes (see e.g. Anand and Hacquard, 2013). These attitudes and their contents arguably do not straightforwardly map onto the NOVELTY feature of the stimuli in the cognitive-scientific experimental manipulations: in Vachon et al.'s (2012) study, for instance, NOVELTY is embodied by the first onset of an unfamiliar human voice over the headphones which have been given to the participant as part of the experimental setup (the participant having been instructed to "ignore any sounds presented over the headphones," thus making the audio onset event expected when it occurs). While the event of "a new voice starting to speak over the headphones" is NOVEL in the sense of being never before encountered by the same participant in the same setting (within a reasonable span of memory recall), it is hard to say that the participant has acquired knowledge or awareness of any proposition in that moment—outside of the cognitively trivial acquisition of knowledge of what is currently going on,

as perceived directly by the senses ("I realize that a human sound is playing over the headphones")[2]. Thus, NOVELTY in these cognitive-scientific studies are not directly commensurate with attitudes of novelty in the context of mirativity.

Thus, I do not presently rule out the possibility that attitudes of novelty can very well characterize SURPRISE-induced mental states. That is to say, because the sense of "novelty" in such studies as Vachon et al. (2012) is substantially different from in linguistic studies on mirativity, the evidence that Vachon et al. show in support of NOVELTY not causing SURPRISE does *not* constitute grounds for linguists to rule out novelty attitudes as a core mirative attitude.

Novel information is a prerequisite to counterexpectation. Furthermore, I argue that, in the linguistic, attitudinal sense of novelty, holding it is in fact a prerequisite to holding an attitude of counterexpectation.

The argument is rather simple. Counterexpectational attitudes, such as encoded in the predicate *did not expect*, are factive: saying *I didn't expect that it's raining* carries the inference that *it is raining* and that *I know [at speech time t_S] that it is raining*. On the other hand, facts that are not unexpected (at some point in time) are not known at that point in time. Thus, the SPKR, in asserting that she *didn't expect [at a prior time $t_{\neg E}\langle t_S]$ that it's raining*, indicates that she did not know that it's raining at $t_{\neg E}$. Therefore, it follows that there is a point t between $t_{\neg E}$ and t_S at which the SPKR comes to know that it's raining.

In practice, as long as $t_{\neg E}$ is reasonably close to t_S, the content of the asserted counterexpectational attitude will generally be the same as the content of the novelty attitude, i.e. holding the latter is prerequisite to holding the former, in the *same* cognitive event consisting of first coming to know some proposition p and immediately becoming conscious that it vio-

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[2]One might say that the participant in that moment may have come to know propositions such as "it is possible for a human sound to be played over the headphones during this experiment," but given that such general information about the experiment would have already been provided at the pre-experiment briefing, the timing would not be correct.

lates one's expectations. This is indeed the case when a mirative context is involved, where the SPKR would not be expecting that it's raining until just the moment of learning the novel fact—and becoming conscious that she did not expect it.

Thus, a counterexpectational attitude by nature implies a novelty attitude (but not *vice versa*). In fact, the novelty attitude—that of coming to know something—is a necessary condition for the triggering of the counterexpectational attitude. Note that it is not a sufficient condition: the thing that the agent comes to know may be expected, unexpected, or neither.

Given this one-way causal implication, we arrive at a layered classification of these two attitudes as core mirative attitudes. First, counterexpectational attitudes are core to mirativity because they characterize SURPRISE-induced mental states, as SURPRISE is *caused* by COUNTEREXPECTATION. Second, because counterexpectational attitudes are necessarily triggered by novelty attitudes (namely, towards the fact or circumstance that violates the agent's expectation), novelty attitudes also necessarily characterize SURPRISE-induced mental states, albeit only the dimension involving the agent's recognition of the novel circumstance, and not any of her subsequent evaluative judgments of, or emotive response to, that novel circumstance.

3.5   Conclusion: out of many, two

We have pinpointed novelty and counterexpectation as the two core attitudes that underlie mirativity. This was achieved via a two-step interdisciplinary consideration: first, by identifying COUNTEREXPECTATION as the underlying process that causes SURPRISE, and, second, by articulating the interface of COUNTEREXPECTATION with linguistically-encoded attitudes of counterexpectation and novelty, namely, how these two attitudes necessarily characterize the mental states that are induced through this cognitive process.

Although the conclusion may appear to be consistent with linguists' descriptive intuition

all along, this theoretical discussion is not much ado about nothing. In developing an unambiguous definition of mirativity (the linguistic meaning category), the ultimate reference point is always SURPRISE (the cognitive experience), and SURPRISE only, as that is the one cognitive experience which defines this natural class of linguistic meaning. Thus, the fundamental conceptual task is to articulate this cognitive-linguistic interface between SURPRISE and mirativity. Given our definition of mirativity as a range of attitudes, then, this section's task has been to explicate just what these attitudes must minimally entail, in order to be mirative attitude proper.

Against diversity of attitudinal dimensions and flavors that the mirative label has been impressionistically applied to, we now have a definitive criteria: an attitude is a mirative attitude just in case it is either (i) a novelty attitude, or (ii) a counterexpectational attitude (which implies a novelty attitude that is logically and temporally prior). Thus, as a final version, I augment the definition of mirative attitudes (20) as follows:

(21)   Definition of mirative attitudes: *final*

A **mirative attitude** is an attitude which characterizes a SURPRISE-induced mental state, i.e. an attitude which contains a dimension of either novelty or counterexpectation.

What have we achieved?   Consider again the schematic representation of mirativity and mirative elements (22), repeated from §1.3.

(22)   a.   Semantic core of mirativity (= mirative meaning):

$\text{MIR}(\cdot)$

b.   Schematic conception of a mirative element/marker:

A mirative marker encodes an update U which contributes a mirative attitudinal meaning $\text{MIR}_a^{t,l}(c)$

where:

MIR is a mirative attitude;

c is the CONTENT of which MIR is predicated;

a is the cognitive AGENT that holds MIR(c), and

t, l are the time and location at which a holds MIR(c).

What we have achieved in this chapter is a definitional account of the range of semantic values that the attitude predicate MIR$(\cdot)$ can take. We have thus addressed the lexical side of the mirativity research program. This allows us the freedom to turn away from the question over lexical semantic value ("what is mirativity"), towards addressing questions that concern the *parameters* of the mirative predicate MIR$(\cdot)$: mirative content, mirative agent, and mirative time and location. Studying these questions call for a more theoretically-informed approach, as these questions centrally concern the identity, properties and limits of mechanisms that are able to set these semantic parameters. However, it does not mean that understanding these questions about mirative parameters are any less important for descriptive studies: for an adequate and comprehensive description of a mirative element, the identity and properties of its mirative parameters (c, a, t, l, etc.) are just as important information as its mirative attitudinal flavor. After an interlude where I propose a streamlined descriptive terminology for mirativity, in Part II of this dissertation, I demonstrate this parameters-focused side of the mirative research program with a study on the cross-linguistic identities of mirative CONTENT c.

INTERLUDE A

HOW TO TALK ABOUT MIRATIVITY: A STREAMLINED TERMINOLOGY

With a clear definition of mirativity rooted in a theoretical understanding of SURPRISE, both in cognitive-scientific terms and in its interface with linguistically-encoded attitudes, we are in a strong position to revisit the problem of terminological impressionism.

I propose two sets of streamlined terminology. First, I argue that Aikhenvald's 5 phenotypes of mirativity, repeated below in (23), reduce precisely to the two core mirative attitudes—novelty and counterexpectation. The other three phenotypes—*sudden discovery/realization/revelation*, *unprepared mind* and *surprise*—are reducible because they either involve an attitude which can be identified with one of these two definitive cores (plus additional attitudinal dimensions), or involve a specific kind of mirative content.

(23)   Aikhenvald's 5 phenotypes of mirative meaning   (repeated from §1, ex. 2)

      (i)   Sudden discovery, sudden revelation or realization

      (ii)   Surprise

      (iii)   Unprepared mind

      (iv)   Counterexpectation

      (v)   New Information

Each type can be described with reference to (a) the speaker, (b) the audience (or addressee), or (c) by the main character.

Second, I make a primary distinction between *cognitive* and *evaluative/emotive* mirative attitudes, based on a number of important differences in their empirical properties that are likely to be theoretically significant. Referentially, cognitive mirative attitudes precisely cover "mere" novelty attitudes, while evaluative-emotive attitudes encompass everything else, including mirative attitudes with counterexpectation as their definitive attitudinal dimension.

A.1 Reducing Aikhenvald's 5 phenotypes

I first reconsider Aikhenvald's typology of mirativity. Since novelty and counterexpectation are the two irreducible core mirative attitudes, two of her 5 phenotypes should be maintained: "new information" and "counterexpectation." For consistency, I continue to use "novelty," keeping terminological clarity that these are descriptive notions of core mirative attitude flavors.

The remaining 3 phenotypes—sudden discovery/realization/revelation, unprepared mind, and surprise—are the focus of our attention: at their root, these terms are terms of art or impression at best, not intended to be clear and distinct subtypes either from novelty and counterexpectation or from each other. With our more robust definition of mirativity and core mirative attitudes, I argue that we can recast the intended reference of these terms.

A.1.1 Sudden discovery/realization/revelation: novelty attitude with indexicality

This group of terms consists of two parts: an attitudinal description ("discovery/realization/revelation"), and the modifier "sudden" which has to do with the temporal character of the attitude. I discuss each in turn.

"Discovery" and "realization" are simply descriptive terms for the attitude of "coming to know," i.e. what I have been calling novelty attitudes. In particular, these two are propositional attitudes: their content is propositions. This property is confirmable by examining the corresponding English attitude predicates *discover* and *realize*.

The interpretation of "discovery" and "realization" as propositional attitude predicates with the flavor of novelty accords with the actual usage of these terms in the descrip-

tive/typological literature. One frequently-cited example of a mirative that is described as marking "sudden discovery" is the suffix *-na~-ña* in various Quechua varieties. Adelaar (1977: p. 96) describes it for the Tarma Quechua variety that it "refers to events that have been going on unnotices and which are "suddenly discovered" by the speaker or by another person playing a central role in the narrative" (emphasis mine), and Adelaar (2013: §1) states that "a straightforward English translation for this Quechuan tense category could be introduced by the phrase *it turned out that*." Glosses to her examples such as (24) demonstrate the fact that this "sudden discovery" mirative indeed marks a novelty attitude.

(24)   Tarma Quechua "sudden discovery" mirative = novelty

yarga-ra-:ri-**na**-:   masya:du karu-ta-m.
go.upward-PFV-PL-**MIR**-1A/S too.much far-ACC-CERT
'We realized that we had climbed too far.'   (ibid.: ex. 3)

"Revelation" is decidedly a vaguer attitude: unlike discovery and realization, there is not a frequently used attitude predicate corresponding to "revelation" with which we can directly collect empirical intuitions about the attitude and its content. However, I suggest that there are essentially two uses of this term in the literature, both of which boil down to the same class of novelty attitudes, differing only in the type of content. In its first use, "revelation" is basically synonymous with "discovery" and "realization," describing a novelty attitude directed towards a proposition. The one instance in Aikhenvald (2012) where "revelation" is used in an example is in fact when she cites Adelaar on the same novelty attitude marker *-na~-ña* in Tarma Quechua.

The other use of the term "revelation" is by AnderBois (2018, to appear), who describes a different kind of mirative, one which he terms "illocutionary mirative." This type of miratives, found in Yucatec Maya (Mayan, Southeastern Mexico) and Tagalog (Austronesian, the Phillipines), differs in that it encodes a mirative attitude "not in fact about propositional content per se, but rather... about the appropriateness/utility of the illocutionary update the speaker per-

forms" (2018). (25) illustrates this type of mirative in Yucatec Maya: the English gloss "Oh, yeah, I meant to tell you" renders the fact that it is the appropriateness of, and thus the intention to commit, the illocutionary act that the SPKR is realizing.

(25) Yucatec Maya "revelation" illocutionary mirative

[I forgot that I had wanted to tell you that Maruch had gone to the cafeteria, but had not forgotten the fact that he had. Having just realized that I wanted to tell you, I say:]

Jo'oljeak-e'	k'uch	**bakáan**	Maruch	cafeteria.
yesterday-TOP	arrive.PFV	**MIR**	M.	cafeteria

'Oh (yeah), I mean to tell you, yesterday Maruch went to the cafeteria.'   (ibid.: ex. 34b)

I study parametrical variation in mirative content in detail in §4. For the current discussion, however, suffice it to note that even though this type of miratives is distinguished by its content, namely, the illocutionary act, the *attitudinal flavor* remains of the novelty kind: the attitude that the SPKR in (25) stands in relation to "the appropriateness of such-and-such a speech act at this moment in the discourse" is one of coming to know/coming to awareness[3]. Thus, this second sense of "revelation" also refers to a novelty attitude.

What does the "sudden" in "sudden discovery/realization/revelation" mean? One natural interpretation is that suddenness relates to the indexical nature of mirative meaning. As discussed in §2.4, the particular semantic component that is indexed may well vary from case to case: it is conceivable that some "suddenness" miratives requires current SURPRISE, while oth-

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[3]I am intentionally being imprecise here about whether it is coming-to-knowledge or coming-to-awareness that is at play here. There is one question of whether "the appropriateness/utility of the illocutionary act," as in AnderBois' words, could in fact simply be propositional (in the form of the proposition "such-and-such a speech act is appropriate for me to commit at this moment in the discourse"), in which case the novelty attitude towards it could simply be "coming to know," identical to the propositional cases above. There is a separate question here of whether it is coming-to-know the appropriateness of a speech act, or rather coming-to-(reflective)-awareness of one's *intention* to commit a speech act (which one presently realizes is appropriate), that is being encoded by the illocutionary mirative marker. The former is, as said, amenable to a coming-to-know analysis, while the latter is perhaps only amenable to a coming-to-awareness analysis, as its content is an intention. Regardless, since I treat both the coming-to-know attitude and the coming-to-awareness attitude as instances of the same species of novelty mirative attitudes, this issue does not affect terminological integrity here.

ers may minimally require that the attitude predicate be temporally indexed to speech time. Determining the particular nature of indexicality in each instance is an empirical task.

I discuss a second possible sense of "suddenness" in the next section on "unprepared mind" (§A.1.2).

A.1.2   Unprepared mind: mirative attitude towards indexical-containing content

The term "unprepared mind" is quite elusive. In its literal sense it suggests a COUNTEREX-PECTATIONal reaction to some circumstance, but the specific connotation is that of a mental state characterized by a lack of anticipation, conscious or sub-conscious, for that circumstance to strike at that particular moment. In this lack-of-present-anticipation sense, "unprepared mind" is often discussed by Aikhenvald (2012, 2004) in conjunction with phrases such as "lack of awareness," "lack of control," "surprise" and "sudden discovery." One could also say that there is another sense of "suddenness" that connotes the same lack of mental anticipation at the time of encounter with the SURPRISE-triggering circumstance. This is the sense that users of these terms regularly allude to.

Empirically, however, there is no mirative marker to my knowledge that has an exclusively "unprepared mind" semantics. None of Aikhenvald's collection of examples is described as marking "unprepared mind" first and foremost: every instance of her mention of this term co-occurs with at least one other descriptive term (the most frequent collocations being with "surprise," "surprising" and "new information"). Thus, *unprepared mind* has remained in relative obscurity compared to other mirative subtypes by Aikhenvald: indeed, AnderBois (2018: fn. 9) is forced to leave it out of the contextual felicity diagnostics he develops for different mirative attitude flavors, citing lack of terminological clarity.

I show that there is at least one sense in which "unprepared mind" has a distinct semantic reality. In this case, the key meaning component is whether a relevant *online* expectation is met or violated. I propose a novel set of diagnostic contexts, which distinguishes online from offline expectations, and thereby is able to control for both independently. Ultimately, I argue that "unprepared mind" is simply a special case of a counterexpectational mirative attitude with a particular kind of mirative content, namely, a proposition containing the temporal indexical (formally represented as NOW).

(26), first developed in Zhuang (n.d.), illustrates the diagnostic contexts for this sense of "unprepared mind." The basic idea is to isolate and separately control for two variables: mind-preparedness, and met vs. violated offline expectation. Thus, we have a set of 4 contexts, each with a different combination of values from {PREPARED MIND, UNPREPARED MIND} ×{OFFLINE EXPECTATION MET, OFFLINE EXPECTATION VIOLATED}.

(26)   **Setting**: Your high school runs on a regular schedule, according to which the last class period always ends at 4pm. Now you are sitting in the last period, and, just as you do on any school day, you expect that this period will end at 4pm.

    a.   PREPARED MIND, OFFLINE EXPECTATION MET: You find the class extremely boring and keep expecting it to end, so that you could finally go home (though you did not look at your watch during this time). The bell rings just as you instantly take a glance at your watch, which says it is 4pm.

    b.   UNPREPARED MIND, OFFLINE EXPECTATION MET: The class is extremely engaging, and you have been concentrating on it every single moment (listening to the lecture, engaging with the material, participating in the activities, etc.). The bell rings just as you instantly take a glance at your watch, which says it is 4pm.

    c.   PREPARED MIND, OFFLINE EXPECTATION VIOLATED: You find the class extremely bor-

ing and keep wondering if the end is near so that you could finally go home (though you did not look at your watch during this time). The bell rings just as you instantly take a glance at your watch, which says it is 3:50pm. (Unbeknownst to you, the school officials had just decided to cut the last period short by 10 mins due to a last-minute decision by a high-ranking official to visit the school.)

d. UNPREPARED MIND, OFFLINE EXPECTATION VIOLATED: The class is extremely engaging, and you have been concentrating on it every single moment (listening to the lecture, engaging with the material, participating in the activities, etc.). The bell rings just as you instantly take a glance at your watch, which says it is 3:50pm. (Unbeknownst to you, the school officials had just decided to cut the last period short by 10 mins due to a last-minute decision by a high-ranking official to visit the school.)

The crucial distinction that this set of contexts makes is that between *online* expectations—those about what happens in the here and now—and *offline* expectations—those which are temporally non-immediate because they are about states of affairs further removed from the here and now. Online expectations are generated only about affairs and circumstances which are ongoing and to which the agent is attentive, whereas offline expectations may be about anything else.

I argue that mind-preparedness is essentially the presence vs. absence of relevant *online* expectations—those about when class should end—at the moment the novel circumstance (bell ringing) occurs. In the "prepared mind" contexts (26a) and (26c), the agent is in a state of constantly generating *online* expectations: at each and every passing moment, she is expecting that "class ends NOW," waiting for the external circumstance to occur that can validate that expectation as true. Thus, the moment the novel circumstance occurs, it is this online expectaton that is the relevant expectation being evaluated. By contrast, in the "unprepared mind" contexts (26b) and (26d), the agent is not generating any such online expectations, as her mind is

preoccupied with an unrelated set of circumstances, and therefore would be generating online expectations not relevant to when the class should end. This set of contexts, I argue, instantiate the familiar scenes in which a person may be described as having a "prepared mind" vs. an "unprepared mind" with respect to an emergent novel circumstance.

By contrast, the offline-expectations variable explicitly manipulates whether any non-online, temporally stable expectation about class ending is met [(26a) and (26b)] or violated [26c and 26d]. The setup of the contexts is such that the agent has a persistent *offline* expectation about when class should end, namely, "class ends at 4pm." This expectation is based on the agent's long-standing background knowledge about the regular school schedule. Note crucially that offline expectations do *not* contain indexicals such as NOW: they are not time-locked to each passing moment in time that the agent experiences.

By separately controlling for online expectations, which I argue underlies what the mind is "prepared" for, and offline expectations, we are thus able to distinguish miratives which only mark "unprepared mind"—that is, a counterexpectational attitude towards an online expectation—from miratives which mark counterexpectation in general, regardless of the online-offline distinction. The predicted felicity judgment pattern for each type is as in (27): general counterexpectation mirative markers would be felicitous in three of the four contexts (26b), (26c), (26d)—i.e. whenever *any* expectation, online or offline, is violated, whereas dedicated "unprepared mind" miratives would be felicitous only in two of the four contexts (26b) and (26d)—i.e. only when an online expectation is violated.

(27)   a.   Predicted felicity pattern: general counterexpectation miratives

	MET-EXPECTATION	COUNTEREXPECTATION
PREPARED MIND	# (26a)	✓ (26a)
UNPREPARED MIND	✓ (26d)	✓ (26d)

   b.   Predicted felicity pattern: dedicated "unprepared mind" miratives

	MET-EXPECTATION	COUNTEREXPECTATION
PREPARED MIND	# (26a)	# (26a)
UNPREPARED MIND	✓ (26d)	✓ (26d)

Using this diagnostic, a number of known counterexpectational miratives can be shown to be general counterexpectation miratives: Shanghai Wu *yikaon* and Turkish *-mIş*, both markers of counterexpectational attitudes, show felicity pattern (27a).

(28) a. ghokhu   lah yikaon.   Shanghai Wu

下課   了 渠講。

class.dismissed PF   MIR

'Class is over (I did not expect class to be over).'   # (26a), ✓ (26c), ✓ (26b), ✓ (26d)

    b. ders bit-miş!   Turkish

class end-MIR

'Class is over (I did not expect class to be over)!'   # (26a), ✓ (26c), ✓ (26b), ✓ (26d)

A theoretically important observation is that mirative attitudes, such as counterexpectation, are sensitive to the Kaplanian (1989) character-content distinction their attitude content. An agent who, at 4pm, did not expect "class ends NOW," may nevertheless well expect "class ends at 4pm"; the reverse is also true. Even though the two propositions happen to evaluate to the same Kaplanian content at 4pm, their Kaplanian characters are different—holding the same attitude towards one, or the other, of the two propositions clearly does not come from the same mental state on the part of the agent. This accords well with intuition: the diligent student who is attentive to the class and not to the mere passage of time (and thus the one with an "unprepared mind" towards class ending), and who thus expects "class ends at 4pm" based on her knowledge of the usual schedule, is expecting something different from the idle student

who is only expecting that "class ends NOW" at each passing moment, including at 4pm.

In fact, the character-content distinction can be empirically diagnosed. In Shanghai Wu, it is felicitous, indeed "to the point," to follow up the mirative-marked utterance "class is over-*yikaon*" (28a), uttered right at the strike of four, with (29), which expresses exactly the different expectations over the online and offline propositions.

(29) Follow-up to (28a) in the UNPREPARED MIND, OFFLINE EXPECTATION MET context (26b):

✓	...	Jizeh	ngo	shiautah	zy	4	tietson	ghokho;		ngo	pahku	zy
	……	其實	我	曉得	是	4	點鐘	下課；		我	不過	是
		in.fact	I	know	VERUM		o'clock	class.dismissed		I	merely	VERUM

mmeh	shiantau	zieu	zy	yieze.
嘸沒	想到	就	是	現在。
NEG	expect	exactly	CP	now

'... In fact I know class ends at 4 o'clock, but I just didn't expect that to be now.'

Thus, I define UNPREPARED MIND as a special case of COUNTEREXPECTATION:

(30) UNPREPARED MIND: An agent x has an unprepared mind with respect to a proposition p at time t iff p is COUNTEREXPECTATIONal to x at t and p contains a temporal indexical.

A.1.3   Surprise: … what about it?

I have advocated for the use of the term SURPRISE to refer specifically to the cognitive experience. This practice is already in place to a large extent in Aikhenvald (2012): in multiple places, Aikhenvald calls "speaker's surprise" as a "reaction" or "emotional reaction" to some information or circumstance, indirectly suggesting that she is referring to an experience of SURPRISE *per se.* In other places, the phrases "concomitant surprise" or "ensuing surprise" are often

used on top of describing attitudinal meanings such as "new information" and "counterexpec-tation," suggesting that she recognizes that SURPRISE is a higher-order phenomenon caused by NOVEL and COUNTEREXPECTATIONal stimuli, and distinct from attitudinal meanings. What remains to be said is simply that this terminological distinction should be explicitly followed.

A point where there may be some remnant ambiguity is with the English words "surprising" and "surprised." I take these words to denote an attitude without clear reference to an episode of cognitive SURPRISE. This can be seen e.g. in Aikhenvald (2012), where "surprising" is often used in phrases such as "information that is (new/unexpected) and/or surprising to x," where it is conjoined with other attitude predicates. Interestingly, a recent

However, the precise mirative flavor of "surprising" is in fact not immediately clear:

By now I hope to have made a clear enough distinction between SURPRISE and mediated by at least two intermediate conceptual layers (mental states and attitudes).

"Surprise" is typically used to indicate that the semantics of the mirative indexes (in some way) an episode of actual, cognitive SURPRISE. While this usage not always strictly followed in every descriptive or typological work,

On the other hand, "surprising" is often used in descriptions of mirative attitude flavors. This sense is essentially paraphrasable in the more canonical attitude predicate embedding formula as "x finds it surprising that p." Thus, when dealing with this usage, the task would again be to further specify the attitudinal flavor: is p surprising because it encodes novelty, or counterexpectation, as its core mirative attitude? Are there any other attitudinal dimen-sions (exasperation, curiosity, shock/"taking-aback," distaste, resentment, etc.) besides the core mirative dimension? These are the two questions to answer in order to have a complete and unambiguous descriptive profile of the attitudinal flavor of any mirative marker.

A.2 Cognitive vs. evaluative/emotive mirative attitudes: a potentially significant classification

Finally, I advocate for a terminological distinction between *cognitive* mirative attitudes and *evaluative/emotive* mirative attitudes. I make this distinction because cognitive and evaluative/emotive mirative attitudes differ in a number of empirical properties that, as we shall see, are potentially theoretically significant.

I use the terms "cognitive," "evaluative" and "emotive" for attitudes in their naturally-classifying senses frequently employed in the literature on the classification of attitude predicates (e.g. Anand and Hacquard, 2013). Cognitive attitudes are those which have to do with *knowledge* of their content. Examples include *know, discover, realize, find.out, understand*, etc. Evaluative attitudes are those which denote the agent's judgment or evaluation of the content of the attitude, while emotive attitudes are those which denote some type of emotion or emotional feeling that the agent has towards the content of the attitude. Therefore, cognitive *mirative* attitudes are those which denote the agent's *acquisition* of knowledge of the content at a certain time t, while evaluative/emotive *mirative* attitudes are those which denote the agent's evaluation of or emotion towards the content at the time of acquiring knowledge of that content c. Thus, for instance, miratives encoding a "mere" novelty attitude, such as English *turn out* and Quechua *-na~ña*, are cognitive miratives, whereas those encoding a counterexpectational attitude, such as English exclamation intonation, or those encoding a multidimensional mirative attitude, such as Cantonese *wo3*, are evaluative/emotive miratives.

This distinction is a useful one, because it reflects a natural-class division among mirative attitudes. Because cognitive mirative attitudes are about knowledge, they tend to manifest properties that are shared with the evidential domain, in ways that evaluative/emotive mirative attitudes do not. Specifically, I demonstrate one important tendency: Interrogative Flip behavior. Whereas evaluative/emotive miratives typically do not flip their mirative attitude

holder to the addressee in questions (if they can occur with canonical interrogatives at all), cognitive mirative attitudes can.

Consider the Quechuan mirative *-na~-ña*, illustrated in a declarative sentence by (31a) (repeated from 24). Recall that it marks a "mere" novelty attitude, i.e. a cognitive mirative attitude, without evaluative or emotive content: Adelaar (2013) emphasizes that this mirative "is mainly used in objective, non-emotional statements" (p.1). Crucially, this cognitive mirative displays Interrogative Flip in (canonical) interrogatives: as shown in (31b), *-ña* marks that the SPKR assumes the **ADDR** has discovered the information being sought, i.e. that the **ADDR** is the holder of a cognitive mirative attitude towards a proposition which answers the SPKR's question.

(31) a. yarga-ra-:ri-**na**-:   masya:du karu-ta-m.   Tarma Quechua

        go.upward-PFV-PL-**MIR**-1A/S too.much far-ACC-CERT

        'We realized that we had climbed too far.'   (ibid.: ex. 3)

    b. Quechuan cognitive mirative displays Interrogative Flip

        wikuña aská-s   ka-rqu-**ña**-q   o ichá-lá-s?   Paracaos Quechua

        vicuña many-Q be-PFV-**3A/S.MIR** or few-DIM-POLAR

        'Were there many vicuñas or just a few (according to what **you** found/realized)?'

                                    (ibid.: ex. 12, adapted)

In Turkish, the indirect evidential/mirative suffix *-mIş* in fact attests a cognitve mirative attitude interpretation in interrogatives. This is shown in (32): again, the SPKR, in asking the question marked with mirative *-mIş*, conveys that she assumes that the ADDR has just come to know a proposition which answers her question.

with the mirative attitude holder *flipped* to the ADDR. Incidentally,

(32) [Merve and Aslı go to a restaurant, Aslı orders a steak. Aslı takes a bite, and Merve asks:]

      Biftek nasıl-∅-mış?   Turkish

      soup how-COP-MIR.3SG?

      'How is the steak (according to what you presently find out)?'   (Ótott-Kovács, p.c.)

To my knowledge, such an interpretation has never been expressly discussed in the literature, which has only studied this mirative in declaratives—the co-presence of exclamation intonation together with the mirative suffix *-mIş* is extremely common, if not strictly obligatory (Ótott-Kovács, p.c.). Though the Turkish mirative is conventionally taken to be a counterexpectational mirative that indexes an immediate episode of SURPRISE, it is possible that counterexpectation and SURPRISE indexation are in fact contributed by exclamation intonation, rather than the mirative marker *-mIş* itself, which may simply encode a cognitive mirative attitude of "coming to know" the prejacent proposition.[4] If this is the correct analysis, then Turkish *-mIş* is clearly another case of a cognitive mirative displaying Interrogative Flip in canonical questions.

This Flipping capacity of cognitive miratives in canonical interrogatives stand in contrast to evaluative/emotive miratives. The latter often do not permit usage in interrogatives altogether: English exclamation intonation and Cantonese *wo3*, for instance, do not occur in questions. When evaluative/emotive miratives do occur in questions, however, the tendency is for the attitude to remain SPKR-oriented even in questions. The Shanghai Wu counterexpecta-

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[4]There are already analyses in this direction: Simeonova (2015) makes a convincing case for separating the counterexpectational mirative attitude meaning from Turkish *-mIş*, and for attributing it to an independent operator, which she represents with the exclamation operator "!" (though she stops just short of identifying it with the actual exclamation intonation). A more recent analysis of Turkish-style hybrid indirect evidential/mirative markers offered by Salanova and Carol (2017) explicitly proposes (i) a unified semantics subsuming the "indirect evidential" and "mirative" interpretations: the SPKR acquires sufficient evidence for p; (ii) a separate operator for the counterexpectational mirative attitude. If the unified semantics in (i) is indeed correct for Turkish *-mIş* across both its "indirect evidential" and "mirative" interpretations, then *-mIş* essentially *is* a marker of a cognitive mirative attitude: "acquiring sufficient evidence for p" means "coming to know p" (or, if the evidence is reportative, "coming to be aware of p"). The particularities of the Turkish case, as well as the distinction between "coming to know" and "coming to be aware of," must be left for a separate research project.

tional mirative *yikaon* is a case in point: while it can occur in interrogatives, such as (33), its interpretation is that the SPKR holds the counterexpectational attitude, and not that the SPKR assumes the ADDR holds it.

(33) Shanghai Wu evaluative/emotive mirative *yikaon* does not Flip in canonical questions:

non	chih	samehzy	l	-a	**yikaon**?!
儂	喫	啥物事	了	-啊〈啦〉	渠講?!
2SG	eat	what	PF	Q	**MIR**

'What have you eaten (**I** didn't expect you to have eaten any of the foods you're allergic to / # **I assume that you** didn't expect yourself to have eaten any of the foods you're allergic to)?'

Ultimately, my terminological proposal aims to facilitate work on a natural-class distinction that is potentially theoretically important. The conceptual classification of cognitive vs. evaluative/emotive mirative attitudes, manifested in empirical phenomena such as Interrogative Flip, is evidently tied to deeper differences between the two types of attitudes at the level of pragmatic orientation. It is cognitive attitudes (knowledge, belief, etc.) that normatively constitute assertions (Williamson, 2000) and—arguably—orient discourse aimed at increasing shared (publicly-committed) information (Stalnaker, 1996). Whereas assertions act towards this goal by proposing to share information that the SPKR presents herself as *believing* (a cognitive attitude), canonical questions do so by requesting information from the ADDR on the assumption that the ADDR has information which she holds a cognitive attitude to that addresses the question. Thus, it is potentially not a coincidence that it is cognitive mirative attitudes, and not evaluative/emotive mirative attitudes, that tend more strongly to participate in canonical Interrogative Flip. More empirical data and theoretically-informed analyses are needed to substantiate this intuition.

Part II

Parametrical issues:

mirative content and beyond

SURPRISED BY WHAT?

A THREE-WAY TYPOLOGY OF MIRATIVE CONTENT

4.1 Introduction: the MIRATIVE CONTENT question

In this part of the dissertation, I turn from the question of (lexical) mirative meaning to the question of mirative **parameters**. Recalling our high-level formulation of mirative elements (34), a mirative predicate involves at least three sets of parameters: content c, cognitive agent (=attitude holder) a, and spatio-temporal locations t and l.

(34) Schematic conception of a mirative element/marker: (repeated from §1, ex. 3b)

A mirative marker encodes an update U which contributes a mirative attitudinal meaning $\text{MIR}_a^{t,l}(c)$

where:

MIR is a mirative attitude;

c is the CONTENT of which MIR is predicated;

a is the cognitive AGENT that holds $\text{MIR}(c)$, and

t, l are the time and location at which a holds $\text{MIR}(c)$.

Theoretically, any one of these parameters merits an independent systematic inquiry; in §7.5 I offer an overview of some research prospects pertaining to each parameter. In this current study, however, I provide as an illustrative instance of this research trajectory an detailed investigation of the mirative **content** parameter c.

Mirative content is arguably the most central parameter since it is the "core" argument of the mirative attitude predicate, specifying what the mirative attitude is **directed towards**

(or, equivalently, "range over," or "is associated with"). In plainer words, when the SPKR uses a mirative in an utterance, what is the thing that they are holding a mirative attitude **about**?

To date, the majority of work on mirative elements assumes that mirative contents are (ontologically) single propositions, and (representationally) are always encoded in the form of the prejacent to the mirative element. This assumption accords with canonical intuitions: mirative attitudes appear to be just one type of propositional attitudes. However, recent cross-linguistic work by AnderBois (2018, to appear) opens up questions about this domain of variation: in it, AnderBois convincingly documents a second type of mirative content, namely, speech acts. This chapter is thus motivated by a semantic-typological question: what sorts of things can be the content of mirative meaning?

I formulate this as the MIRATIVE CONTENT question, consisting of two sub-questions:

(35)   The MIRATIVE CONTENT QUESTION

   a.   ONTOLOGY: What species of content can mirative attitudes be directed towards?

   b.   REPRESENTATION: How are these mirative contents encoded or derived in the semantics?

This chapter is structured as follows. First, in §4.2, I situate the current state of research on the MIRATIVE CONTENT question with a comprehensive review of the two types of mirative contents investigated so far: (single) propositional (§4.2.1) and illocutionary (§4.2.2). I then present (§4.3) a novel case study of the mirative marker *yikaon* in Shanghai Wu (Sinitic, China), specifically showing that it shows a distinct pattern of distribution and interpretation with *wh*-questions and certain canonical polar questions, which must be analyzed as directing a counterexpectational mirative attitude towards a *set* of propositions. Thus, I expand the typology of mirative contents into a two-by-two matrix of factors {ontological status, direct representation} instantiated by three types: single propositions (+propositional, +directly rep-

resented), propositions derived from set (+propositional, -directly represented), and speech acts (-propositional, ±directly represented).

4.2   Two mirative contents: proposition vs. illocution

In this section, I review the state-of-the-art in the literature on the MIRATIVE CONTENT question: a two-way distinction between *propositional* and *illocutionary* content for mirative attitude markers, only recently brought to light by a series of work by AnderBois. There has been a default assumption that mirative attitudes have single *proposition*s as their arguments. This assumption runs through the majority of work on mirative markers and is unchallenged by most available empirical data, until AnderBois' identification of a new type of miratives marking an attitude not towards a proposition, but to the entire speech act that is the prejacent. I will introduce each type in turn, adopting as terms of art AnderBois' notions of PROPOSITIONAL MIRATIVE and ILLOCUTIONARY MIRATIVE, referring respectively to "markers that encode a mirative-range attitude towards a proposition/a speech act."

4.2.1   Propositional miratives

The question of what constitutes the content of mirative attitudes took time to take shape. To the original proponents of the typological category, it is intuitive that mirative meaning most readily occurs in declarative utterances, and that a mirative attitude is most naturally directed towards a single proposition: if miratives mark that some information is "new or unexpected" to the SPKR, then it is most natural for such information to be a single fact about the real world as it novelly or unexpectedly presents itself to the SPKR—and thus, for the SPKR's mirative-marked linguistic expression of this information to be declarative. DeLancey's (1997; 2001) seminal papers, for instance, contain no discussion of mirativity in non-declaratives as

a typological possibility; nor do we find any data in the antecedent descriptive studies (Slobin and Aksu, 1982; Akatsuka, 1985) which have strongly informed DeLancey's proposal. In fact, in DeLancey's original characterization of the mirative typological attitude, we find frequent reference to "statements" involving a single "proposition" which is the content of the mirative attitude:

> "The operational definition of the category is that it marks both **statements** based on inference and **statements** based on direct experience for which the speaker had no psychological preparation, and in some languages hearsay data as well. What these apparently disparate data sources have in common... is that **the proposition** is one which is new to the speaker, not yet intergrated into his overall picture of the world."
>
> (DeLancey, 1997: pp. 35–6, emphasis mine)

This default assumption runs through most work in descriptive-typological and the formal semantic literature. One main reason is the absence of empirical data that suggest otherwise: in many documented cases, the mirative marker in question appears in declarative utterances only, whether as part of its character or due to some circumstantial constraint. In Cheyenne, for example, the mirative marker *neho~hoo'o* is syncretized with the "narrative" evidential. Rett and Murray (2013) have shown that, whereas either version can occur in a declarative sentence, as in (36a-36b), in an interrogative sentence it is only the narrative evidential which occurs, under an Interrogative-Flip interpretation (37a). The mirative interpretation, whether Interrogative-Flipped (*given ADDR's surprise*) or not (*given SPKR's surprise*), is simply not available: Rett and Murray have explicitly tested these interpretations with (37b).

(36)   Cheyenne *neho/hoo'o* in declarative sentences

a. ✓ Evidential:

É-x-hoo'-kóhó-**neho**.

3-REM.PST-rain-**NAR.SG.INAN**

'It rained long ago (it is told).' (ex. 11a)

b. ✓ Mirative:

É-hoo'-kóhó-**neho**!

3-rain-**MIR.SG.INAN**

'It's raining (I didn't expect that)!' (ex. 11b)

(37) Cheyenne *neho/hoo'o* in interrogative sentences

a. ✓ Evidential:

Mó=é-x-ho'táhevá-**hoo'o**   Aénohe?

Y/N=3-REM.PST-win-**NAR.SG.INAN** Hawk

'Did Hawk win (given the stories you heard)?' (ex. 20)

b. # Mirative:

Mó=é-x-ho'táhevá-**hoo'o**   Aénohe?

Y/N=3-rain-**MIR.SG.INAN** Hawk

Intended: 'Did Hawk win (given your surprise about it)?'

Intended: 'Did Hawk really win?!(=given my surprise about it)' (ex. 21)

In most other cases, existing literature does not provide negative or positive data on whether a mirative marker can occur outside of declaratives. For examples, Turkish *-mIş* and Bulgarian *-l* have been well-studied as typologically similar instances of syncretized mirative-indirect evidential markers. The mirative is distinct from the indirect evidential in conveying SPKR counterexpectation and dropping the evidence-type restriction. This is shown by (38):

the mirative is compatible with both indirect and direct evidence.

(38) Mirative setting

Prior expectation: SPKR thought that Kemal/Ivan is of little means.

✓DIR context: SPKR sees a lot of money in Kemal/Ivan's pocket.

✓INFR context: SPKR notices that Kemal/Ivan is buying expensive items.

✓REP context: someone tells SPKR that Kemal/Ivan has money.

a. Kemal pul   var   **-mış**!   Turkish

    K.   money exist **-MIR**

    'Kemal has money (it turns out)!'

b. Ivan ima   **-l**   pari!   Bulgarian

    I.   have.PRES **-MIR** money

    'Ivan has money (it turns out)!'   (Simeonova, 2015: exs. 5-7, adapted)

In cases like Turkish and Bulgarian, no data has been reported on the mirative interpretation outside of declarative utterances; only the evidential interpretation has been studied in interrogatives. Thus, theoretical accounts of mirative meaning based on these case studies restrict their explanatory range to miratives in declaratives. One consequence is that all such accounts are accounts PROPOSITIONAL mirative content, and that this propositional content is always identified with the proposition denoted by the prejacent.

4.2.2 Illocutionary miratives: attitude towards speech acts

Recent work by AnderBois (2018, to appear) is the first to have called into question the long-standing assumption that MIRATIVE CONTENT is a single prejacent proposition. Specifically, this line of work documents and conclusively demonstrates a new type of mirative marker,

which encode an attitude towards the speech act committed by its prejacent. The upshot is a two-way typology of MIRATIVE CONTENTS: propositions, and illocutions.

AnderBois discovers that markers such as Yucatec Maya *bakáan* and Tagalog *pala* can encode a novelty mirative attitude towards the prejacent when occurring in declarative utterances, thus apparently fitting the classic profile of miratives (=propositional miratives). An example is shown in (39) for Yucatec Maya: the mirative marker *bakáan* in this context encodes the SPKR has just realized that the prejacent proposition is true.

(39) [I forgot that my friend Maruch had gone to the cafeteria, and have just realized it:]

Jo'oljeak-e'   k'uch   **bakáan** Maruch cafeteria.   Yucatec Maya
yesterday-TOP arrive.PFV **MIR**   M.   cafeteria
'Oh (yeah), yesterday Maruch went to the cafeteria (**I presently realize**).'   (ex. 23=34a)

However, a second set of behavior of this type of mirative markers clearly deviates from that of propositional miratives: these markers occur not only in declarative utterances, but also in non-declarative ones, both interrogative and imperative. In each and every case, there is an attitude-towards-speech-act reading of the mirative that is clearly distinct from the attitude-towards-proposition reading. This is illustrated in (40-42). In each example, the interpretation of *bakáan* paraphrases to *Oh, I (presently) realize I want to say/ask/command...*

(40) [I forgot that I had wanted to tell you that Maruch had gone to the cafeteria, but had not forgotten the fact that he had. Having just realized that I wanted to tell you, I say:]

Jo'oljeak-e'   k'uch   **bakáan** Maruch cafeteria.
yesterday-TOP arrive.PFV **MIR**   M.   cafeteria
'Oh (yeah), yesterday Maruch went to the cafeteria (**I presently realize I want to tell you**).'   (ex. 34b)

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(41) a. [You told me something earlier about work, but I got distracted and forgot. Having just realized that I still want to ask, I say:]

Ba'ax t-a   wa'alaj **bakáan**?

what PFV-A2 say   **MIR**

'Oh (yeah), what did you say (**I presently realize I want to ask**)?'   (ex. 31)

b. [I had asked you for money previously but we got interrupted and so you didn't give me any. Having just realized I still want to ask, I say:]

Je'   **bakáan** a   majantik ten taak'in-e'?

ASSUR **MIR**   A2 lend   me money-TOP

'Oh, (yeah), can you loan me money (**I presently realize I want to ask?**)'

(ex. 32, adapted)

(42) [A mother is in the kitchen cooking and remembers that there are no beans in the house because she forgot to tell her son to go buy some and says:]

Xeen a   maan   **bakáan** bu'ul te'   tiiyeenda-o'!

go.IMP A2 buy.SUBJ **MIR**   beans there store-DISTAL

'Oh (yeah), go buy some beans (**I presently realize I want to ask you**).'   (ex. 27)

Characteristically, for *bakáan*, the content of the mirative attitude that it encodes is not a single proposition but the entire speech act. This is most transparent in the interrogative (41) and the imperative (42) sentences: in these cases, *bakáan* evokes a reading whereby the SPKR presently realizes that she wants ask or command, a reading which is clearly not evoked by propositional miratives, as there is no propositional prejacent. But most tellingly, in declaratives, two distinct readings are evoked: one that is attitude-towards-proposition, as in (39), which is apparently the same as a propositional mirative meaning, but also another reading which is attitude-towards-speech-act (40). The latter has clearly distinct felicity conditions: the context in (40) explicitly specifies that the SPKR holds no mirative attitude towards the fac-

tual information encoded by the prejacent preposition. It is thus clear that *bakáan*'s argument is the speech act.

Ultimately, AnderBois' analysis unifies both interpretations under one attitude-towards-speech-act (=illocutionary mirative) semantics. I refer interested readers to his (2018) work for the detailed account. The main insight, however, is that the mirative attitude encoded by *bakáan* ranges over **the entire speech act**, whether declarative, interrogative or imperative. It is just that among these three speech act types, declaratives are special in that it consists of two moves, one concerns the SPKR's **own** epistemic commitment (public belief) over the prejacent p, and the other concerns the **communal act** of proposing to add this information to the Common Ground involving all discourse participants. Having the mirative attitude range over the former content yields the attitude-over-proposition interpretation of illocutionary miratives, whereas having the mirative attitude range over the latter yields the attitude-over-speech-act interpretation.

4.2.3   Interim summary: two mirative contents

Thus, existing literature points to two types of mirative contents (ontologically speaking): single propositions, and speech acts. AnderBois (ibid.) therefore presents a two-way typology (43), making a primary distinction between "propositional miratives" and what he terms "illocutionary miratives".[1] Illocutionary miratives are directed towards the speech act: it is not restricted to declarative utterances, and generates attitude-towards-speech-act readings across the board. On the other hand, propositional miratives have single propositions as their mirative content, and therefore (as far as existing work shows) select just declarative utterances and generate just attitude-towards-proposition readings.

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[1]There is a third category of "UNKNOWN" mirative content, though it is apparently intended as a placeholder for intonational mirative markers and mirative interjections with a mirative content specified as "[UNKNOWN]." Therefore, I leave it out of my presentation of AnderBois' typology.

(43) Two-way typology of mirative contents   (AnderBois, 2018: ex. 70, modified)

	illocutionary miratives	propositional miratives
Mirative attitude	novelty	novelty / counterexpectation
Mirative content	**speech act**	**(single) proposition**
Examples	Yucatec Maya *bakáan*, Tagalog *pala*	Guaraní *ra'e*, Turkish *-mIş*, Bulgarian *-l*

4.3 Shanghai Wu *yikaon* in questions: propositional mirative with a non-propositional prejacent

In Shanghai Wu, the so-called "sentence-final particle" *yikaon* 渠講 is a mirative marker that encodes counterexpectation. In declaratives, this counterexpectational mirative attitude is directed towards the prejacent proposition, as is typical for propositional miratives. This is shown in (44).

(44) [After a 5am-5pm writing spree, I walk out of my windowless cubicle expecting the weather to still be nice as it was when I went in this morning. Seeing that it is pouring, I say:]

lahlah loh yu **yikaon**.

辣辣　落　雨　渠講。

PROG fall rain **MIR**

'Gosh, it's raining (**I had not expected it to be raining**).'

It is worth stating at the outset that there are in fact two sentence-final particles with the identical written form in the Chinese script (渠講) but different prosodic and syntactic properties and, importantly, different semantic values: *p-yikaon* (single prosodic word, no preceding pause, no internal syntactic structure) is a counterexpectational mirative marker, which we

will focus on in the current study. On the other hand, *p, yi kaon* (two prosodic words, with a preceding pause and internal syntactic structure) is a speech report parenthetical, closely translated by the English equivalent *p, s/he says* (*yi* '3SG,' *kaon* 'say'). I will present a detailed case for why these two ought to be treated as synchronically distinct elements, and how their homography and near-homophony reflects a diachronic reanalysis of an erstwhile speech report parenthetical meaning into a mirative attitudinal meaning, with attendant reductions in phonological and syntactic structure. This part of the study will concern just the first, mirative element *yikaon*.

The key data that will concern us is the distribution and interpretation of *yikaon* in non-declaratives. While incompatible with imperatives, *yikaon* does occur in questions. Specifically, it is compatible with *wh*-questions generally, but only with a certain type of (unbiased) polar questions. In each case, the available interpretation of the mirative question can be descriptively generalized as one where the SPKR's expectation is violated by any of the contextually anticipated alternative answers of the question.

Importantly, this interpretation evoked by *yikaon* in interrogatives is a different kind from that of illocutionary miratives. Its MIRATIVE CONTENT is definitively not the speech act, but rather some piece of informative content in the prejacent that seems propositional.

Therefore, concerning the mirative content for *yikaon*-like cases, we must ask both *what* the mirative content is, and also *how* it is associated with, or derived from, the prejacent of the mirative marker.

4.3.1 Background on Shanghai Wu

The Wu languages (Wúyǔ 吳語 or more commonly stylized as *Wú Fāngyán* 吳方言 'Wu dialects') are a subgroup of Sinitic (Chinese) languages spoken in the coastal eastern provinces of Zhe-

jiang, southern Jiangsu, the municipality of Shanghai, and in smaller pockets in neighboring areas in Anhui, Jiangxi and Fujian. Like all other regional Chinese varieties, Wu varieties are considered by native speakers and local academics as dialects of a broadly-construed "Chinese" language, mediated by a common script, formal vocabulary stock, literary tradition and ethnic identification (Zhu, n.d.), though linguistically they are distinguished by shared historical sound changes that lead to divergent modern phonological systems, as well as grammatical and lexical features, all of which contribute to a low level of mutual intelligibility with modern standard Mandarin. Internally, Wu varieties are diverse: conventional classification methodology, based on a combination of sound change-based subgrouping criteria and areal feature-based similarity, classifies Wu into ~6 clusters (*piàn* 片), with mutual intelligibility across clusters ranging between just 10% and 45% (Zhang 张, 2015).

The current study focuses on Shanghai Wu, a variety of Northern Wu (=*Tàihú* cluster 太湖片) spoken in the city proper of Shanghai by an estimated 14 million people (Chen, 2008), though by now virtually all speakers are bilingual and increasingly dominant in standard Mandarin, and thus the number is likely declining. Although the most conspicuous variety throughout the Northern Wu-speaking region, Shanghai Wu is for all practical purposes a colloquial language whose usage is largely confined to household and informal settings, with education, media and formal occasions being mandatorily conducted in standard Mandarin. Nevertheless, the feature studied here, namely, the mirative marker *yikaon*, is in active and vibrant use, and appears to be a recent innovative feature. For one thing, in none of the immediately surrounding Northern Wu varieties to my knowledge do cognates of sentence-final *yikaon* attest the distinctly mirative meaning that is found in Shanghai Wu (see §7 for a detailed study of the diachrony of this mirative element). Moreover, my impression is that *yikaon* is used at such high frequency in the variety of Shanghai Wu spoken by the contemporary younger urban generation, that a certain amount of metalinguistic awareness has developed around this feature being distinct to the language.

Like all Chinese varieties, Shanghai Wu is SVO, AN, pre- and post-positional (Chao, 1965: pp. 620–7, Paul, 2014: §4), though with all Wu varieties it shares a stronger tendency towards SOV word order than Mandarin, particularly in perfective constructions (45c) and in questions [examples (47b), (48c-48d) and (49) below]. While the syntactic mechanism of this preposing of the object in Wu languages is a topic of debate (Mulder and Sybesma, 1992; Liu 刘, 2001, 2015; Tang 邓, 2006; Ding 丁, 2017; Sybesma, 2021), it is sufficient to recognize that, unlike in standard Mandarin, preposed objects in SHW are very often information-structurally unmarked, and thus do not introduce semantic confounds such as secondary topicalization. As a Sinitic variety, SHW has an analytical morphosyntactic profile: it does not overtly inflect for person, number or tense, though it marks a variety of verbal aspect, which factors into the determinatino of temporal interpretation together with lexical aspect (Aktionsart) and any overt temporal adverbials (Lin, 2003). (45) gives four illustrative examples of plain declaratives: aspectually unmarked (45a), progressive (45b) marked by *lahlah* 辣辣, perfective (45c) marked by the verbal suffix *lah* 了 (with object preposing), and perfect (45d) marked by the sentence-final perfect/change-of-state marker *lah* 了, distinct from the perfective verbal suffix *lah* 了.

(45) a. ngo tsu kōnkhu.

我　做　功課。

1SG do   homework

'I do homework / I will do homowork / I am doing homework.'

b. ngo **lahlah** tsu kōnkhu.

我　辣辣　　做　功課。

1SG **PROG**   do   homework

'I am doing homework.'

c. ngo kōnkhu   tsu -**lah**.

我　功課　　　做　了。

1SG homework do -**PFV**

'I did homework.'

d. ngo tsu (+hau)   kōnkhu   **lah**.

我　做　(+ 好)　　　功課　　　了。

1SG do +COMPLETE homework **PF**

'I have finished my homework.'

To avoid a lengthy digression into aspectual marking and temporal interpretation in SHW and in Chinese in general (for which see Lin, 2003), suffice it for us to observe that, in the absence of overt temporal adverbials, aspectually unmarked or progressive events (45a-45b) are interpreted by default as taking place in the present or future, whereas perfective and perfect events (45c-45d) are interpretated by default as having taken place in the past. Temporal and aspectual interpretations do not interact with mirativity. In subsequent SHW examples, I will simply treat these tense-aspectual structures and their default interpretations as given, without further analysis.

Like other Northern Wu varieties and to a rather larger extent than standard Mandarin, SHW has a sizable set of sentence-final particles (SFPs), also conventionally termed "discourse particles" or MOOD PARTICLES[2] (*yǔqìcí* 語氣詞 'mood markers' / *jùmò yǔqìcí* 句末語氣詞 'sentence-final mood markers') in Chinese linguistics. These are typically mono- or disyllabic, lexically toneless morphemes that come at the right periphery of the root clause that mark a variety of sentential moods, including sentential force and subjective meaning domains such as epistemic or evaluative/emotive attitudinal meaning and evidentiality. For Shanghai Wu,

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[2]Some authors opt to use the term MODAL PARTICLES to mean MOOD PARTICLES, ostensibly because "modal" is the adjective form of "(sentential) mood." I do not adopt this term in order to avoid potential confusion with modality.

Qian 钱's (1997) list of SFPs stands at 56[3] .

To this class of SFPs belong the elements that we will be concerned with in this study: interrogative mood markers—in particular *va* and *a*, which are employed to form canonical and biased questions in SHW—as well as the mirative marker *yikaon*. I will introduce each in turn.

4.3.2 Canonical questions in SHW: mood markers *va* and *a*

I use the term CANONICAL QUESTIONS, or questions with canonical interrogative force, to refer to those questions (or grammaticalized question formation strategies) that fulfill just the (canonical) speech act of questioning (Dayal, 2016: §1, ex. 7): a SPKR who is ignorant about the truth about proposition p, who wants to know the truth about p, eliciting information from an ADDR whom she assumes to know the truth about p. NON-CANONICAL QUESTIONS, on the other hand, may be manifold in their properties: they might convey a SPKR bias on some of the alternatives (biased questions), or they might have an illocutionary purpose other than to elicit information about a certain p on the SPKR's part (ibid.: §9). In English, for example, canonical questions (46) are formed by inverting the auxiliary with the subject, fronting the *wh*-word, if there is one, and applying a rising intonation.

(46) a. Did John arrive ↗?

   b. When did John arrive ↗?

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[3]Two remarks about such numbers are in order. First, the common practice in the descriptive grammatical tradition in modern Chinese linguistics is to list all SFPs and their discourse functions, without providing further analyses of either form or meaning. Many such particles are in fact amenable to compositional analyses, a fact that will become relevant in my analysis of the polar interrogative marker *va*. Second, Qian 钱's (1997) list does not include mirative *yikaon*, even though the latter is no doubt a sentence-final mood particle by both formal (toneless, rigidly right-peripheral) and semantic (marking a SPKR-oriented subjective attitude) criteria and have been identified as such in previous descriptive studies (Han and Shi, 2014). Traditional lists of SFPs often underrepresent markers that still have transparent etymologies in substantive word classes (*yikaon* < *yi* '3sg' *kaon* 'say'), in part because the Chinese writing system does not distinguish between etymological and grammaticalized forms, potentially leading to inaccurate analyses. (See §7 for empirical arguments that mirative *yikaon* is synchronically a distinct element from the speech report parenthetical *yi kaon* 's/he says'.)

In SHW, canonical questions are routinely formed by adding interrogative mood SFPs. The most general-purpose strategy to form canonical *wh*-questions is by adding the mood marker *a* to a sentence containing an (in situ) *wh*-word. This is shown in (47a). (47b) shows an object-preposed variant of (47a), which is common and has the same interpretation.

(47)　[I do not know your daily routine, and I want to know how you manage your homework. I ask you:]

a.　non　sazenkuaon　tsu　kōnkhu　　**a**?
　　農　啥辰光　　　做　功課　　　啊？
　　2SG　when　　　　do　homework　Q
　　'When do/will you do homework?'

b.　non　kōnkhu　sazenkuaon　tsu　　　　**a**?
　　農　功課　　啥辰光　　　做　　　　啊？
　　2SG　when　do　　　　　　homework　Q
　　'When do/will you do homework?'

On the other hand, to form canonical polar questions, the most regular and unmarked strategy is by adding the marker *va* 哦 to a sentence in positive declarative form (Qian 钱, 1997; Shi 石, 2007). (48) shows canonical polar questions corresponding to the declaratives in (45a-45d). Polar questions formed with *va* carry no SPKR bias towards either alternative.

(48) a. [Being on a two-week exchange program at our school, you are told you are welcome to but not required to complete daily homework assignments. I am your local host student and I want to know whether you are going to do the assignments. I ask you:]

non kōnkhu tsu **va**?

儂　功課　　做　哦？

2SG homework do **POLAR.Q**

'Do you/will you do homework?'

b. [I see you hunched over your desk, and I want to know exactly what you are doing. I ask you:]

non lahlah tsu kōnkhu **va**?

儂　辣辣　做　功課　　哦？

2SG PROG do homework **POLAR.Q**

'Are you doing homework?'

c. [I see you playing video games, and I want to know whether you have earned the privilege. I ask you:]

non kōnkhu tsu -lah **va**?

儂　功課　　做　了　哦？

2SG homework do -PFV **POLAR.Q**

'Did you do your homework?'

d. [Same context as (48c):]

non kōnkhu tsu (+hau) lah **va**?

儂　功課　　做　(+ 好)　　了　哦?

1SG homework do +COMPLETE PF **POLAR.Q**

'Have you finished your homework?'

Two comments are in order. First, SHW has two other structures for canonical question

formation: an *ah*-V 阿-V structure and a "V-not-V" (V-*veh*-V V 弗 V) structure. However, the use of these structures is restricted to certain types of verbs and syntactic structures, and is sociolinguistically marked. Qian 钱 (1997: pp. 294–5) remarks that these two structures are contact-induced borrowings from neighboring Ningbo Wu and Suzhou Wu respectively, which plausibly explains both the paradigmatic restriction and sociolinguistic markedness. Second, SHW also has many other mood particles that can be used to form canonical questions (see ibid.: pp. 214–236). All of these particles, however, contribute additional semantic content outside of canonical interrogative mood, and therefore place additional restrictions on contextual felicity. I provide just one example here: the compound mood particle *veh-la~va-la*, which contains the *va* 'POLAR.Q' introduced above, marks polar interrogative mood *and* an intensified desire to learn the truth on the SPKR's part. Thus, although it is used highly frequently because the SPKR is often strongly interested in learning the answer to her question, as the example context in (49a) indicates, *veh-la* is infelicitous in "disinterested questioner"-type contexts where *va* is still felicitous. This is shown in (49b).

(49) a. [INTERESTED QUESTIONER: I am a parent who is very involved in my children's everyday academic performance. Today I come home and see my son playing video games with a leisurely look on his face. Feeling slightly worried that he may not have earned his right to play, I ask him:]

non kōnkhu tsu (+hau) lah ✓**va** / ✓**veh-la?**
儂 功課 做 (+ 好) 了 ✓ 哦 / ✓ 弗啦？
1SG do +COMPLETE homework PF **POLAR.Q** **POLAR.Q-INTENS**
'Have you finished your homework?'

b. [DISINTERESTED QUESTIONER: I am a sitter for an elementary schoolchild. As part of my job, at the end of our session every day, I have to make sure he has finished all his routine school tasks, something I have to know but am not personally invested in. I ask him: *have you reviewed your texts today? Have you taken notes?...*]

... non kōnkhu   tsu (+hau)   lah ✓**va**   / #**veh-la**?

... 儂   功課   做 (+ 好)   了 ✓ 哦   / # 弗啦？

1SG homework do +COMPLETE PF **POLAR.Q**   **POLAR.Q-INTENS**

'Have you finished your homework?'

We will therefore restrict our empirical range of canonical questions to those formed with *va* and *a*, in order to avoid any unnecessary confounding factors in felicity judgments, and to ensure maximal generality of theoretical conclusions.

4.3.3 *Yikaon*: a mirative marker of counterexpectation

With this background we can now turn to investigate the empirical behavior mirative marker *yikaon*. Our investigation proceeds in two steps: we will first establish that *yikaon* encodes an attitude of counterexpectation at some newly-learned information on the part of the SPKR. This will be achieved with our diagnostic toolbox: context-based felicity judgments, and attitude congruency tests. We will then lay out the key data of *yikaon* in interrogative utterances.

I show that SHW *yikaon* (primarily) encodes counterexpectation as its mirative attitude. To do this, we minimally test that *yikaon* is felicitous whenever some new information runs against the agent's expectations, and that it is infelicitous whenever such new information does not run against the agent's expectations.

In EXPECTATION VIOLATED contexts, it is always felicitous to utter a declarative sentence

describing the expectation-violating new information, marked by *yikaon.*

(50)   *Yikaon* in EXPECTATION VIOLATED contexts

a.   [Repeated from (44)] [After a 5am-5pm writing spree, I walk out of my windowless
cubicle expecting the weather to still be nice as it was when I went in this morning.
Seeing that it is pouring, I say:]

lahlah loh yu   **yikaon.**

辣辣　落　雨　渠講。

PROG   fall rain **MIR**

'Gosh, it's raining (I had not expected it to be raining).'

b.   [Xiaozhang is the math genius in my class and always beats everyone else in exams.
Final grades are posted today, and you and I go to the bulletin board to check. Seeing
that Xiaozhang failed, I say to you:]

Shiautsan khau   -lah tsah vehjihkah   **yikaon.**

小張　　　考　　　　了　隻　弗及格　　　渠講。

Xiaozhang take.exam PFV   CL   failing.grade **MIR**

'Gosh, Xiaozhang got an F (I had not expected him to get an F).'

The usage of *yikaon* in declarative utterances to convey SPKR's counterexpectation is highly
typical and very frequent in real-life occurrences of the language. (51) show two naturally-
occurring examples, one from a spoken source and one from a written source. In both cases,
the contexts are ones in which a new piece of information clearly comes in violation of the
SPKR's expectations.

(51) a. [In a Shanghai Wu-dubbed spoof of the "DMV scene" from the movie Zootopia:

After an excruciatingly long stay at the Department of Mammal Vehicles staffed by sloths, Judy Hopps (rabbit) and Nick Wilde (fox) finally get their business done and are walking out. Thinking that she still has time to nail a few more things before dark, Judy says to Nick:]

ghausau	ghausau,	ngo	yatau	tsȳzhie	'ihdin	'iau	gaudin...
豪趣	豪趣	我	夜到	之前	一定	要	搞定
quickly	quickly	1SG	evening	before	absolutely	have.to	nail.down

(Door opens; sees outside) mahtshah'uhah lah **yikaon**!

墨黷烏黑　　　了　渠講！

completely.dark PF **MIR**

'Quickly, quickly, before the evening I still absolutely have to nail down... (Door opens, sees outside) It's gotten completely dark (I did not expect it to have already gotten dark)!'   Spoken example[4]

b. [Title of a post in a local Shanghai life-themed online forum, with the body of the post being a screenshot of an announcement that a local musicianship tutoring service (*Haitun Music* 海豚音樂), which had still been actively recruiting new members less than two weeks ago, has suddenly ceased all operations:]

Heden.'īnyah	taubi	-lah	**yikaon**.
海豚音樂	倒閉	了	渠講。
Haitun.Music	close.down	-PFV	**MIR**

'Haitun Music has closed down (I did not expect it to close down).'   Web example[5]

By contrast, if we minimally change the contexts in (50) such that the SPKR's expectations are not violated, then *yikaon* becomes infelicitous. Specifically, there are two type of non-

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[4] https://www.bilibili.com/video/BV1Xs411Q77m
[5] https://wap.libaclub.com/t_13_11021986_1.htm

violation contexts: ones where the SPKR's expectation is met by the new information, and ones where the SPKR does not have any significant prior expectation regarding the new information. As (52-53) show, *yikaon* cannot be used in either of these contexts.

(52)   *Yikaon* is infelicitous in EXPECTATION MET contexts:

   a.   [After a 5am-5pm writing spree in my windowless cubicle, I finally checked my phone for the first time, and saw the weather widget say that it is pouring outside, which I believe. I walk out and see that it is indeed pouring. I say:]

   lahlah loh yu   # **yikaon**.

   辣辣   落 雨   # 渠講。

   PROG   fall rain   **MIR**

   'It's raining (# I had not expected it to be raining).'

   b.   [Xiaozhang struggles with math so much that he is notorious for never scoring a passing grade in exams throughout the year. Final grades are posted today, and you and I go to the bulletin board to check. Seeing that Xiaozhang failed, I say to you:]

   Shiautsan khau   -lah tsah vehjihkah   # **yikaon**.

   小張   考   了   隻   弗及格   # 渠講。

   Xiaozhang take.exam PFV CL   failing.grade   **MIR**

   'Xiaozhang got an F (# I had not expected him to get an F).'

(53)   *Yikaon* is infelicitous in NO EXPECTATION contexts:

a. [After a 5am-5pm writing spree in my windowless cubicle, I walk out to take a break (without any expectation about what the weather would be like after 12 hours.) Seeing that it is pouring. I say:]

lahlah loh yu　# **yikaon**.

辣辣　落　雨　# 渠講。

PROG　fall　rain　**MIR**

'It's raining (# I had not expected it to be raining).'

b. [Xiaozhang is a student in my year, but I don't know anything about his academic performance. Final grades for math are posted today, and you and I go to the bulletin board to check. Seeing that Xiaozhang failed, I say to you:]

Shiautsan khau　-lah tsah vehjihkah　# **yikaon**.

小張　　考　　了　隻　弗及格　　# 渠講。

Xiaozhang take.exam PFV CL　failing.grade　**MIR**

'Xiaozhang got an F (# I had not expected him to get an F).'

These results of context-based felicity judgments (50-53) can be further corroborated with attitude congruency tests. First, mirative declarative sentences with *yikaon* can be followed up by any utterance that affirms that the SPKR has just learned (come to know) the new piece of information, or that that new information goes against her prior expectations (54). On the other hand, follow-ups that explicitly deny either of these points lead to a meaning conflict (55).

(54) Follow-ups **affirming** novelty or counterexpectation are felicitous with *yikaon*:

lahlah loh yu　**yikaon**. ...

辣辣　落　雨　渠講。　......

PROG　fall　rain　**MIR**

'It's raining (I had not expected it to be raining). ...'

a. ✓... ngo kāonkaon ze shiauteh / fahciuih / khoetau.

...... 我 剛剛 才 曉得 / 發覺 / 看到。

1SG just.now EXCL know / realize / see

'... and I didn't know/realize/see until just now (lit. only now do I know/realize/see).'

b. ✓... ngo woezhi mmeh shiantau / liautau wetah loh yu.

...... 我 完全 嘸沒 想到 / 料到 會得 落 雨。

1SG completely NEG think.of expect would fall rain

'... and I completely didn't realize/expect that it would rain.'

(55) Follow-ups **denying** novelty or counterexpectation are infelicitous with *yikaon*:

lahlah loh yu **yikaon**. ...

辣辣 落 雨 渠講。 ......

PROG fall rain MIR

'It's raining (I had not expected it to be raining). ...'

a. #... (pahku) ngo lautsau zhieu shiauteh / fahciuih / khoetau geh.tsaon

...... (不過) 我 老早 就 曉得 / 發覺 / 看到 羵.椿

but 1SG while.ago INCL know realize see this

zythi lah.

事體 了。

matter PF

'... (but) I had known/realized/seen this fact from a while ago.'

b. #... (pahku) ngo lautsau zhieu shiantau / liautau wetah loh yu lah.

...... (不過) 我 老早 就 想到 / 料到 會得 落 雨 了。

but 1SG while.ago INCL think.of expect would fall rain PF

'... (but) I had realized/expected for a while that it would rain.'

Specifically, the infelicity resulting from denying the mirative meaning in (55) is Moore's-paradoxical (Murray, 2010; Rett and Murray, 2013). The sense is that the SPKR is denying a state of mind (namely, of having learned the prejacent and not having expected it) which she has just now expressed by using *yikaon*, i.e. denying a sincerity condition. A native speaker comment suggests the same: "[Denying *It is raining-yikaon* with (55)] sounds like the person is confused about how she feels about the fact that it's raining... Or perhaps she was only *posing* as being surprised in the first place when she said the *yikaon* sentence." The Moore's-paradoxical nature of this infelicity will become important later in the semantic analysis of *yikaon* as illocutionary. Here, the fact that novelty- and COUNTEREXPECTATION-denying follow-ups trigger this type of contradiction to the meaning of *yikaon* diagnoses COUNTEREXPECTATION as the mirative attitude.

Thus, we have seen that *yikaon* occurs in declaratives to mark a counterexpectational mirative attitude. The mirative content of *yikaon* appears to be straightforwardly the prejacent proposition: in each case, the prejacent propositon must be something which the SPKR has presently realized and which goes against the SPKR's prior expectations.

4.3.4 *Yikaon* in questions

The key novel pattern shown by *yikaon* is its occurrence and interpretation in questions: while *yikaon* is not an illocutionary mirative, it surprisingly does occur in questions, and the interpretation it evokes are of a different kind from that evoked by illocutionary miratives. Rather than the attitude-towards-speech act reading, it evokes an attitude-towards-proposition reading, where the proposition is tied to the **informative content** of the interrogative prejacent. This semantic compatibility with non-declaratives is a pattern not so far attested for *propositional* miratives.

I demonstrate *yikaon* in *wh*-questions and in polar questions in turn.

***wh*-questions.**   With *wh*-questions, *yikaon* is generally compatible. (56) shows two examples of mirative *wh*-questions, one with the *wh*-word in argument position (56a) and one with the *wh*-word in a non-argument position (56b).

(56)   a.   [You are severely allergic to {shrimps, shellfish, peanuts}, and are typically careful with what you eat, a fact which only I know. You are having lunch with a group of friends, when you suddenly go into anaphylactic shock, and none of your friends has a clue what is happening. I walk in and see you. Shocked, I ask you:]

non chih samehzy l   -a   **yikaon**?!

儂　　喫　　啥物事　　了 -啊〈啦〉渠講 ?!

2SG eat   what   PF   Q   **MIR**

'What have you eaten (**I didn't expect you to have eaten any of the foods you're allergic to**?'

b.   [My son typically does very well in math. You are my son's math teacher this semester, and you call me to tell me that he has accrued enough failed quizzes to get a failing final grade. Shocked, I ask you:]

ahlah nyitsy khau   lah ci.thaon   vehjihkah   l   -a   **yikaon**?!

阿拉　兒子　考　　　　了　幾趟　　　　　　弗及格　　　了 -啊〈啦〉渠講

1PL   son   take.test PFV how.many.times failing.grade PF Q   **MIR**

'How many times has my son gotten F's (**I didn't expect him to have gotten any**)?!'

In both examples, it is clear from the context that the SPKR has presently learned some new information about the world *yikaon* a counterexpectational attitude on the part of the SPKR is expressed. These elements are in line with the mirative attitude of *yikaon* as diagnosed from declarative examples. The interesting question is CONTENT. As the English translations in (56) suggest, in *wh*-interrogatives, the mirative attitude is directed towards *any of the (contextually-anticipated) alternative answers* to the question. In the first example, the sense is that the SPKR has her expectation violated by the newly-known fact that the ADDR has eaten *some*thing, or

anything at all, on the his list of known allergens. In the second example, it is that the SPKR, a father, has his expectation violated by the newly-known fact that his son has accrued *some* non-zero number, or any non-zero number at all, of failing grades.

The use of *yikaon* in *wh*-interrogatives is not restricted by the position of the *wh*-word. It is possible, for instance, to have subject (57a) and indirect object (57b) *wh*-questions, in addition to the direct object question (56a), as well as a variety of adjunct *wh*-questions such as temporal (58a), manner (58b) and reason (58c).

(57) a. [I am a school teacher. Today I used my wallet (with money) in class as a prop. During recess I step out briefly; when I come back, my wallet is empty. Shocked, I ask the students:]

sanyin	'nē	ngo-gheh	tshauphiau	thēu	-thah	l	-a	**yikaon**?!
啥人	擎	我-箇	鈔票	偷	-脫	了	-啊〈啦〉	
who	OBJ.RAISE	1SG-GEN	money	steal	-RES	PF	Q	**MIR**

'Who has stolen my money (I didn't expect anyone of you to have done so)?!'

b. [I have a beautiful collection of aircraft models, which my parents have repeated wanted to give away as gifts to a few of my greedy little cousins, but which I have defended as my personal treasure. Coming home from university for the summer, I see that all the models are gone. Shocked, I ask my parents:]

na	'nē	ngo-gheh	ghaonmo	ze	son	pah	sanyin	l	-a
倻	擎	我-箇	航模	儕	送	畀	啥人	了	-啊〈啦〉
2PL	OBJ.RAISE	1SG-GEN	aircraft.model	all	give.away	to	who	PF	Q

yikaon?!
渠講 ?!
MIR

'Whom have you given my aircraft models to (I didn't expect you to have given them to anyone)?!'

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(58) a. [I know that you moved to Europe permanently many years ago. Today I happen to run into you on the streets of Shanghai. Shocked, I ask you:]

non sazenkuaon wele gheh a **yikaon**?!

儂　啥辰光　　回來　　箇　　啊 渠講 ?!

2SG when come.back VERUM Q **MIR**

'When was it that you came back (I didn't expect that you would come back at any point around this time)?!'

b. [I have an expensive but very, very sturdy German knife. You were using it to chop meat this morning and somehow managed to break the blade. Finding out and shocked, I ask you:]

non zy nanen 'nē geh-po tāu tsē+wa -thah gheh a **yikaon**?!

儂　是　哪能　掰 瓣-把 刀　斬 + 壞　　-脫　箇　　啊 渠講 ?!

2SG COP how OBJ this-CL knife cut+broken -RES VERUM Q **MIR**

'How was it that you broke this knife by cutting (I didn't expect there to be any way for you to break this knife by cutting)?!'

c. [I came top in the school-wide English speech contest. Now the coach is posting its team pick for the district-level contest, and I see that I am not on it. Shocked, I ask the coach:]

wesa 'nē ngo thih+tshahchi l -a **yikaon**?!

為啥　掰　我　踢 + 出去　　了 -啊 渠講 ?!

why OBJ 1SG kick+go.out PF Q **MIR**

'Why have they kicked me out (I didn't expect myself to be kicked out for any reason)?!'

d. [I did as good a job as anyone could on a work project. Today I get called into my boss' office, and he berates me on my incompetence on this project. Shocked that a highly reasonable man like him would do such a thing, I ask him:]

ngo	'iau	tsu+lah	nanen	hau	non	ze	wetah	moe'i	a
我	要	做 + 得	哪能	好	儂	才	會得	滿意	啊
1SG	have.to	do+DEG.COMP	how	good	2SG	EXCL	would	be.satisfied	Q

yikaon?!

渠講 ?!

MIR

'How well do I have to do for you to be satisfied (I didn't expect you to have any excessively high bar for this tough a job)?!'

It must be said that in all of the examples above, the mirative *wh*-questions have canonical interrogative force: in each context, the question the SPKR asks obliges the ADDR to answer, and the SPKR in each context is ignorant about the fact of the matter and is seeking to obtain information on it.

In using *yikaon*, the content of SPKR's counterexpectational attitude is some informative aspect of all of the contextually-anticipated alternatives. One intuitive solution is to identify this mirative content as the *existential presupposition* of the *wh*-question. This idea could potentially hold for examples such as the stolen wallet example (57a): it could be reasonable to think that in such an example the SPKR's expectation is violated by the fact that there *exists* an individual (any individual in the world not necessarily tied to the context) that stole the SPKR's money. However, this view is not tenable in light of the range of data attested.

Consider the allergy example (56a), for instance: the (semantic) presupposition of the *wh*-question *what did ADDR eat* is the proposition that *there exists something* (anything) *that the ADDR ate.* Although this presupposition is indeed triggered in the SPKR's asking the question, it is not

the fact that the ADDR has eaten *something* that has violated the SPKR's expectations. Rather, it is the fact that the ADDR has eaten one of the few food items that she is allergic to (something that the SPKR does not expect her to do) that is the content of the SPKR's counterexpectational attitude. Note also that this latter information is not in the Common Ground: in the context of (56a), the SPKR is the only discourse participant who knows anything about allergy being the ADDR's medical condition; the others can well be completely clueless.

In general, we observe that the identity of *yikaon*'s mirative content—this informative aspect of the set of alternatives—is not entirely semantically deterministic. Rather, contextual factors modulate which formal alternatives in fact play into the calculation of the counter-expecatational attitude. It is not the case that the SPKR in the "broken knife" example (58b) reckons that there exists absolutely no manner in the world to break his knife, just none that is expected under the ordinary kitchen-use scenario the ADDR is in. More obviously, the "mistreated employee" example (58d) involves a violated expectation of degree, and degrees are always context-dependent: the nature of the particular job the SPKR had completed, her own set of assumptions about what degree of goodness is reasonable to expect for this particular job, her own objective assessment and/or trepidation about the evaluation process, etc., all play into the determination of the setting of the threshold on "the reasonably expected degree of goodness" of her performance on the boss' part, and thus the set of excessively high degrees which violate her expectation.

Thus, we conclude descriptively that the mirative attitude of *yikaon* in *wh*-questions is directed towards the (contextually determined) informative aspect of the *set* of alternatives, which are propositions, that is associated with the interrogative prejacent.

Canonical polar questions.   Unlike in *wh*-questions, in canonical polar questions the distribution of *yikaon* is highly restricted, and predictably so. The two alternatives of a polar question, namely, p and $\neg p$, normally exhaustively divide the universe of all possible worlds, and

it is a psychological impossibility that the set of all possible worlds (or equivalently, a tautological proposition) to violate an agent's expectations: as discussed in §3, for a proposition to trigger an evaluative/emotive mirative attitude such as COUNTEREXPECTATION, it must at least be non-trivially informative. (59) show one infelicitous example of a mirative canonical polar question. Note that the nonsensical mirative meaning component *I didn't expect either that you have eaten or that you haven't eaten* reflects the said psychological impossibility.

(59) non   ve   chih lah va   **#yikaon**?
　　 儂   飯   喫   了   哦   # 渠講？
　　 2SG meal eat   PFV POLAR.Q **MIR**

　　'Have you eaten (# **I didn't expect either that you have or that you haven't**)?'

However, it is possible for a polar question to be informative. One straightforward possibility is for the interrogative to contain a presuppositional material. Since presuppositions project out of questions and can be accommodated if informative (see e.g. van der Sandt, 1992; Geurts, 1999; Beaver, 2001), if the information that they contain are what triggers COUNTEREXPECTATION for a SPKR, she would be able in principle to ask a mirative question containing a trigger for that particular presupposition.

In practice such use scenarios are not common, for at least two reasons. First, most semantic presuppositions, such as the existential presupposition of definites, are too commonplace to trigger mirative attitudes. [In fact Stalnaker's (1975) original assumption is that presuppositions are supposed to be informationally trivial.] Second, and more importantly, it is often pragmatically odd to present the most relevant new information as a presupposition (much less a presupposition in a question) to be accommodated by the ADDR, without first establishing it in the Common Ground in the more straightforward way, i.e. by asserting it and having it accepted. If I, who have always regarded my friend John as a non-smoker had just found out that he had stopped smoking, it would be pragmatically odd to utter *Gosh, John **stopped** smok-*

ing!. Instead, it would be a much more straightforward move to first utter *Gosh, John had been smoking!*, since the latter is the part of the newly discovered information that has more directly triggered my counterexpectation.

With these caveats in mind, I present a set of (admittedly highly specialized) contexts that overcomes these caveats and successfully elicit a mirative polar question. These are contexts in which the SPKR finds out some counterexpectational new information, but is driven to ask a mirative polar question about a downstream matter that presupposes that new, contextually-established information, knowing that the ADDR already knows this presupposed information, and that the ADDR will comprehend the heightened relevance of that downstream matter. Two examples are shown in (60).

(60) a. [Your classmate and intimate friend Xiaozhang typically does very well in math. At your school, all final exam grades are publicly posted, and students who fail are required to take a make-up exam the day after grades are posted. If they fail again, then they would have to repeat the year, which would be detrimental to them socially. Today, three days after grades were posted, you meet Xiaozhang at school, and, standing in front of the school bulletin board, you catch sight of his failing score. Shocked and very worried that you two might be separated, you ask:]

(iau.shi.o,	kehmeh)	non	yieze	pukhau	thōnku	lah	va	**yikaon**?!
(要死嚜，	辯麼)	儂	現在	補考	通過	了	哦	渠講?!
gosh	so	2SG	now	make.up.exam	pass	PF	POLAR	Q

'(Gosh,) so have you now passed the make-up exam (**I didn't expect it either way—I didn't expect you to have taken a make-up in the first place**)?!'

b. CONTEXT: You are chatting on the phone with your friend Xiaozhang, who is driving. Suddenly you hear loud crashing and yells. Moments later, Xiao-Zhang gets back one the line and tells you she just had an accident, has injuries but feels okay. You do not know if she would need to go to the hospital for further treatment, but that is your

first concern in that moment. Shocked, you ask:

('iaushi.o, kehmeh) non 'iau son 'i'ioe va **yikaon**?!

(要死噢， 辯麼) 儂 要 送 醫院 哦 渠講 ?!

 gosh   so   2SG need send hospital PFV POLAR

'Gosh, so do you need to be hospitalized (**I didn't it either way—I had expected that you would not be in a medical emergency in the first place**)?!'

In (60a), the context is set up such that the SPKR, in her surprise, is driven by a pressing concern for her and the ADDR's future social life, so that the issue of whether the ADDR had *passed* the make-up exam immediately becomes the more directly relevant issue to interrogate, rather than the issue of whether the ADDR had *taken* a make-up exam in the first place, which is already amply clear to both the ADDR and presently also to the SPKR, and therefore amenable to being backgrounded. Thus, the sense conveyed by *yikaon* in the polar question is that the SPKR is shocked by the newly-known fact that Xiaozhang had to take a make-up exam in the first place, since she had always thought the latter to be good at math. Equivalently, the SPKR expresses by *yikaon* that she would be surprised by either the affirmative (*Xiaozhang passed the make-up exam*) or the negative (*Xiaozhang did not pass the make-up exam*) alternative. Similarly, in (60b), what is new and counterexpectational to the SPKR is the fact that the ADDR is in a medical emergency (with unclear severity), but this fact is already amply clear in the discourse context; the SPKR's pressing concern is rather whether the ADDR needs hospital care.

Some might understand *pass the make-up exam* to lexically presuppose *took the make-up exam*, and therefore conclude that the presence of a semantic ("hard") presupposition trigger in a mirative canonical polar question to be obligatory. This view is problematic. Phrases such as *pass the make-up exam*, and also *wh*-phrases in questions, are *soft* presupposition triggers in the sense of Abusch (2002, 2010): their ability to trigger presuppositional material is not absolute but context-dependent and thus defeasible. Abusch (2010) specifically frames this context-dependency in terms of *entailment by the common ground*, following Stalnaker (1974): it is in cases

where the common ground entails (or can easily be construed to entail) the intuited presuppositional material that the latter (soft presuppopsitions) actually occurs—and is then able to display comparable projection/plugging behavior to that of hard (semantic) presuppositions.

This is in fact what we see in examples (60a-60b). The two contexts are such that they guarantee the soft presupposition is already entailed by the common ground by the time the mirative question is uttered. The subtlety is that in these contexts, this common ground entailment is not effected by the run-of-the-mill mechanism of overt assertion-acceptance, for the specific reasons governing the pragmatic non-oddity of mirative questions discussed above. One can independently show that the relevant soft presupposition of phrases like *pass the make-up exam* and *need to be hospitalized* are easily cancelled. This is shown by (61) for *pass the make-up exam* and (62) for *need to be hospitalized*.

(61) a. Shiau.Tsan mmeh   thōnku pukhau   ia...
          小張   嘸沒   通過   補考   呀。......
          Xiaozhang   NEG.PFV pass   make-up.exam   ASSERT
          'Xiaozhang didn't pass the make-up. ...'

      b. ... yi   geh.thaon kēnpen mmeh   tshōeka pukhau.   / yi   di'ih.thaon
          ...... 渠   辯.趟   根本   嘸沒   參加   補考。   / 渠   第一.趟
                 3SG this.time at.all   NEG.PFV take   make-up.exam 3SG first.time
             zhieu jihkah lah.
             就   及格   了。
             INCL   pass   PFV
          '... He didn't even take the make-up exam this time. / He passed the first time around.'

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(62) a. Waon.pahpah 'iau son 'ï'ioe chi gheh. ...

　　 王伯伯　　 要　 送　 醫院　 去　 箇。......

　　 Uncle.Wang need send hospital go VERUM

　　 'Uncle Wang does need to be sent to hospital. ...'

b. ... pahku mmeh sa duzythi. / pahku zhieu.zy chi tsu tsah zankue

　　 ...... 不過　 嘸沒　 啥　 大事體。/ 不過　 就　　 是　 去　 做　 隻

　　 but not.exist any big.deal but only.COP go do CL regular

ciezo.

常規

check-up

'... But there is no big deal. / But he's just getting a regular check-up.'

The intuition about the (a) sentence in each example is that, if uttered on its own, it carries a presupposition-like implication [*Xiaozhang took the make-up exam* in (61), *Uncle Wang is in a medical emergency* in (62)]. In particular, this implication projects out of negation, as (61) shows. However, these implications are cancelled by the (b) sentences. If one is presented with the combined utterance of the (a) and (b) sentences, the construed context is indeed one in which the common ground does not entail the respective soft presuppositions.

Once again, examples such as (60a) and (60b) are canonical questions because the SPKR is truly ignorant about all the (contextually anticipated) alternatives, and, in asking these mirative questions, does oblige the ADDR to give an answer.

Thus, the same descriptive generalization as for mirative canonical *wh*-questions holds for mirative polar questions: the mirative attitude of *yikaon* is directed towards the informative aspect of the set of alternatives associated with the interrogative prejacent. The difference is that, except for cases involving semantic presuppositions or pragmatic, presupposition-like content, polar questions are typically uninformative, because the set of alternatives of a canon-

ical polar question fully bipartition the space of all possible worlds. Thus, uninformative polar questions are incompatible with *yikaon*, since it is psychological impossibility for a mirative attitude to be directed towardsno new information at all.

4.4   Summary: a three-way typology of mirative content

SHW *yikaon* is a mirative marker in that it encodes a mirative-range attitude (COUNTEREXPEC-TATION). More interestingly, it is a mirative marker whose CONTENT is calculated from a *set* of propositions, rather than just being identical to the single proposition that a declarative prejacent denotes. This pattern is evidenced by *yikaon*'s behavior with canonical interrogatives: it is generally compatible with *wh*-questions but only compatible with non-trivially informative polar questions. In both cases, *yikaon* expresses a counterexpectational attitude towards the informative aspect of the interrogative.

This type of MIRATIVE CONTENT is novel. First, it is distinct from illocutionary miratives. Recall that the hallmark of illocutionary miratives is the presence of attitude-towards-speech-act readings, across declaratives, interrogatives and imperatives, as diagnosed by "forgot and remember" contexts (40-42). SHW *yikaon* does not evoke the same reading across the same types of prejacents. *Yikaon* is incompatible with imperatives, and in declaratives and interrogatives it is infelicitous in "forgot and remember" contexts where only the speech act, but not the information in the prejacent, is targeted by the mirative attitude. I show this with examples (63), modifying AnderBois' (2018) "FORGOT-AND-REMEMBERED" contexts just to account for the attitudinal flavor of the SHW marker.

(63)   *Yikaon* is not an illocutionary mirative:

   a.   DECLARATIVE: [I have an interview appointment with you today in the career center, in one of the small windowless interview rooms. I have just gotten indoors from walking in pouring rain, which is the forecasted and expected weather for today. I meet you; we talk at length as interviewer and interviewee. At some point I suddenly see that you have no umbrella, and, totally not expecting myself to break the flow of the interview but wanting to warn you about the terrible weather, I say:]

   ngadeu lahlah loh   yu   # **yikaon**.

   外頭   辣辣   落   雨   # 渠講。

   outside PROG   fall rain   **MIR**

   Intended: '(# Oh—I totally didn't expect that I should be saying this, but) it is raining outside.'

   b.   INTERROGATIVE: [During your interview process last week I had asked you about your preferred team. Now you and I are standing in front of the general manager, who tells us he has decided to hire you and I am to be your supervisor who needs to assign you. Suddenly forgetting what you told me about your team preference, and totally not expecting myself to have to ask you again, I ask you:]

   non zy   shian tau ghali.gheh doede tsu zythi a   # **yikaon**?

   儂   是   想   到   何裡.個   團隊   做   事體   啊   # 渠講？

   2SG COP   want   go   which.CL   team   do   thing Q   **MIR**

   Intended: '(# Oh—I totally didn't expect that I should be asking you this, but) which teach do you want to work on?'

In these examples, what is counterexpectational to the SPKR is the speech act—asserting in (63a), questioning in (63b). The intended attitude-towards-speech-act interpretation, which paraphrases to *Oh—I did not expect that I should be saying this, but...*, is unavailable. Instead, the mirative declarative in (63a) would be felicitous in a context where the SPKR's expectation has

been that the weather outside is beautiful, while the mirative interrogative in (63b) would be felicitous if the SPKR's expectation has been that ADDR does not want to work on any of her teams in the first place.

We started this chapter by stating the MIRATIVE CONTENT QUESTION, which consists of two sub-questions:

(64)   The MIRATIVE CONTENT QUESTION [repeated from (35)]

    a.   SPECIES/ONTOLOGY: What sorts of content can mirative attitudes be directed to-wards?

    b.   REPRESENTATION: How are these mirative contents encoded or derived in the se-mantics?

Thus, the SHW case brings an important update to the typology of mirative contents. We have seen that the content of the mirative attitude contributed by *yikaon* is neither the speech act, nor a single proposition that is directly represented as the mirative prejacent, but rather, it is derived from the informative content of a prejacent that is a set of propositions. In partic-ular, in light of the SHW case, I construe the cross-linguistic variation over mirative content in terms of two factors: ontological status, and representation (exactly the two sub-questions in my formulation of the MIRATIVE CONTENT question). In terms of ontological status, the mira-tive content of SHW *yikaon*, which we have been loosely calling "the informative aspect" of the prejacent, is ultimately still **propositional**. This should not be surprising: in each of the fore-going examples of *yikaon* in declaratives or interrogatives, it has been possible to state exactly one proposition which is the content of the counterexpectation attitude. The only difference is that this proposition is not straightforwardly **represented as** the prejacent's denotation. Rather, it must be *derived* from it.

Thus, I updated AnderBois's (2018) two-way typology of mirative contents (43) to a three-

way typology, formulated in terms of two criss-crossing factors: {ontological status × direct representation (as the prejacent)}. This is presented in (65).

(65) Updated three-way typology of mirative contents

ontology / representation	+propositional	-propositional (=speech act)
+directly rep.'d	Turkish *-mIş*, Bulgarian *-l*, English ! ...	Yucatec Maya *bakáan*
-directly rep.'d (=derived)	SHW *yikaon*	

In the next chapter, I will provide a formal analysis of the semantics of *yikaon* which explicitly cashes out this derivation from a (Hamblinian) set of propositions to a single proposition representing its informative content, viz. in terms of the union-of-alternatives operation.

CHAPTER 5

A FORMAL SEMANTICS OF SHW *YIKAON*

5.1 Introduction

In this chapter, I present a formal analysis of the semantics of SHW *yikaon*, and I consider its implications for current efforts to build towards a cross-linguistic semantic theory of mirative meaning.

The key components of the formal analysis are the following. First (§5.2), I adopt a standard Hamblinian view that prejacents, whether declarative or interrogative, denote *sets* of alternative propositions, and argue that the mirative content of YIKAON is derived via a set-union operation over this Hamblin set, which essentially yields the *informative content* (Ciardelli et al., 2013, 2018) of the prejacent. In particular, I show that elements of SHW morphosyntax can in fact be analyzed as overt spell-outs of this set-union operation, and that this analysis correctly captures the lexical soft presupposition-sensitive felicity patterns of *yikaon* in polar interrogatives specifically.

Then, in §5.3-§5.4, propose an analysis of the mirative update encoded by *yikaon*, adopting a Farkas and Bruce-style (2010) framework of discourse contexts and moves with a modification proposed by Rett (2021a) to include attitudinally "flavored" discourse commitments as modelling a more diverse range of sincerity conditions. Specifically, in my full implementation §5.4, I formulate *yikaon* as a force modifier, which has the effect of adding a mirative attitude-predicated proposition to the CG.

Finally, in §5.5, I discuss a number of important theoretical implications of this analysis to existing theoretical views on the semantics of mirativity (in particular, to Rett, 2021b). I argue that mirative meanings such as that encoded by SHW *yikaon* are not amenable to being

identified as what Rett calls "emotive content," instantiated by English emotive interjections and adverbs such as *alas* and *unfortunately*. The extent of cross-linguistic variation in the type of MIRATIVE UPDATE will continue to be an interesting question.

§5.6 concludes this chapter and Part II of the dissertation.

5.2 Deriving mirative content: proposition-from-alternatives

Hamblin (1976) proposes to treat the semantics of questions as the set of alternative answers, an influential proposal which has become a staple approach which sees instantiations and variations in many subsequent work on the modelling of questions and interrogative force and answerhood in general (Karttunen, 1977; Groenendijk and Stokhof, 1984; Simons, 2001; Alonso-Ovalle, 2006; Farkas and Bruce, 2010; Krifka, 2001, a.m.o.), and prominently in the recent tradition of inquisitive semantics (Groenendijk and Roelofsen, 2009; Ciardelli et al., 2013, 2018). Staying close to the core Hamblinian insight, the semantics of *wh-* and polar questions can be schematized in (66). Questions denote sets of propositions which are possible answers. For *wh-* questions this set consists of propositions differing just in the (relevant) alternative entities of the appropriate constituent type; for polar questions this set consists of the positive and negative proposition (66b).

(66)   a.   Who won?

$= \lambda p[\exists x[\mathsf{person}(x)] \wedge p = \lambda w \mathsf{won}(w, x)$

$= \{\lambda w.\mathsf{Alice\ won\ in\ } w, \lambda w.\mathsf{Bob\ won\ in\ } w, \lambda w.\mathsf{Cathy\ won\ in\ } w, ...\}$

b.   Did Floyd win?

$= \{\lambda w.\mathsf{Floyd\ won\ in\ } w, \lambda w.\neg\mathsf{Floyd\ won\ in} w\}$

For technical uniformity, this view is also extended to declaratives: declaratives would de-

note singleton sets. This is shown in (67). Thus, both declaratives and interrogatives denote objects of type stt.

(67) Floyd won.

  $= \{\lambda w.\text{Floyd won in } w\}$

I will adopt this base version of Hamblin semantics in my analysis of declarative and interrogative *prejacents* to mirative *yikaon*.

A terminological note. I will use MIRATIVE PREJACENT or simply PREJACENT to refer to the semantic object denoted by everything in a mirative sentence excluding the mirative marker *yikaon*. Thus, in SHW, mirative prejacents are already sentential-typed, either as declarative or interrogative. Within a prejacent, I will call the untyped constituent part of a prejacent the SENTENCE RADICAL or simply RADICAL, treating mood particles as doing the work of sentential-typing, i.e. turning radicals into declarative or interrogative prejacents to the mirative.

5.2.1 Radicals denote Hamblinian sets

While a fully interface-integrated compositional analysis of SHW questions would require a full inquiry into the syntax of this language and thus far exceed the range of this study, I assume the task of compositionality at the level of sentential-typing, i.e. where radicals compose with sentential-type operators. I claim that the radical is the level at which Hamblinian sets are constructed, which then feeds composition with mood particles, which are overt spell-outs of sentential type operators. As I will show below, such an analysis of radicals and mood particles have the benefit of according with cross-linguistic patterns of *wh*-indefinites and disjunctions serving as compositional bases for question formation.

Like in all Chinese varieties and across many languages, *wh*-words in SHW "double" as indef-

inites. (68) shows a number of examples. In each case, a *wh*-word occurs in a plain declarative sentence (interrogatives in SHW being obligatorily marked by dedicated mood particles), and gives rise to an indefinite interpretation.

(68) a. [Seeing that the apples I brought to the office is missing and that there is a new apple spit in the trash can, I say:]

sanyin	'nē	ngo	tsah	binku	chih	-thah	lah.
啥人	擎	我	隻	蘋果	喫	-脫	了。
who(=someone)	OBJ.RAISE	1SG.GEN	CL	apple	eat	-RES	PF

'Someone has eaten my apple.'

b. [Smelling the odor of burnt stuff and seeing smoke coming from a certain faraway direction, I tell my son:]

'ihmietah	hauyan	lahlah	sō	samezy.
伊面噠	好像	辣辣	燒	啥物事。
over.there	seemingly	PROG	burn	what(=something)

'Something is burning over there.'

c. [Offering a casual invitation to a friend whom I have just come across on the street:]

non	sazenkuaon	tau	ngo	ghehtah	le	behshian	'au.
儂	啥辰光	到	我	辮噠	來	白相	噢。
2SG	when(=sometime)	to	1SG	here	come	play	HORT

'Hey, come visit my place sometime.'

The indefinite-interrogative homomorphism with *wh*-words has been typologically well-observed (Haspelmath, 1997; Bhat, 2000, a.m.o.) and have given rise to unified theoretical treatments which derive both from the same semantic core (see Onea, 2020 for a review). Kratzer and Shimoyama (2002 (2017)), working on Japanese and German data, propose that *wh*-words

in indefinites[1] also denote sets of alternatives (of different constituent types, corresponding to the lexical form of the *wh*-word), exactly as they do in *wh*-questions. Then, through their Hamblinian extension to classical first-order logic, Hamblin sets can be compositionally derived at the propositional level, which, combined with the appropriate quantificational force, derive the indefinite interpretation. Subsequent work (e.g. Beck, 2006; AnderBois, 2011) in various frameworks have furthered strengthened this semantic connection between *wh*-indefinites and interrogatives in the direction of fully unifying indefinites and *wh*-interrogatives under a single semantic core. In particular, AnderBois (2011), based on a homomorphism between focused indefinites/disjunctions (assertions) and *wh*-/alternative questions in Yucatec Maya, argues that indefinites and disjunctions, once focused, are essentially *equivalent* to *wh*- and alternative questions, even in terms of their ability to raise issues in discourse. Such analyses proffer a view where alternative-evoking expressions, whether formally marked as declarative or interrogative, are nevertheless deeply similar even in their dynamic semantic profile.

It is sufficient for our present purposes to observe that there is deep conceptual unity between *wh*-questions and indefinites. For perspicuity, I adopt a classical Hamblinian view in the spirit of Kratzer and Shimoyama (2002 (2017)) for SHW: *wh*-words denote (sets of) alternatives of the lexically-specified constituent type, from which sets of alternative propositions can ultimately be derived compositionally, via a Kratzer-Shimoyama-style system. Abstracting away from sub-sentential-level compositionality, I will treat SHW sentence radicals as denoting Hamblin sets, i.e. sets of alternative propositions. Thus, a radical containing an alternative-set-denoting element, such as a *wh*-word, denotes a Hamblin set of alternative propositions, as shown in (69)

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[1]Kratzer and Shimoyama termed *wh*-indefinites "indeterminates."

(69)   Radicals containing *wh*-word denote Hamblin sets of constituent-alternative proposi-
tions:

$[\![$you ate what (=56a)$]\!] = \lambda p.\exists x[\text{ate}(\textbf{ADDR}, x)]$

$= \{\text{you ate shrimp, you ate shellfish, you ate peanuts}\}$

Radicals that go on to form declarative prejacents, which do not contain alternative-set-
denoting elements, denote a singleton Hamblin set, as shown in (70).

(70)   Declarative-forming radicals denote singleton Hamblin sets:

$[\![$it's raining (=50a)$]\!] = \lambda p.[p = \text{raining}]$

$= \{\text{raining}\}$

For canonical polar interrogative prejacents, I adopt the following compositional analysis
of the mood particle *va* 哇: I treat *va* as a phonological contraction of two elements, *v-* 'NEG'
and *a* 'Q', each with a distinct semantics. *a* is analyzed as the general-purpose question particle
in SHW, for which I will give a formal denotation in §5.4.2. Note that this is identical to the
mood particle *a*, written ⟨ 啊 ⟩, the same particle that oblitatorily marks *wh*-questions. On the
other hand, I analyze *v-*, a contracted form of the negation morpheme *veh* 弗, as overtly spelling
out an operator that constructs the Hamblin set consisting of the positive proposition and its
negation[2] . This is given in (71a). Treating *v-* as part of the sentence radical that forms polar
interrogative prejacents, then, interrogative prejacents thus denote a mod-2 Hamblin set of
propositions, as shown in (71b).

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[2]The fact *va* 哇 is typically thought of as a single and distinct mood particle is at least partly attributable to
a feature of the Chinese orthographic convention: the writing system maintains a strict one-to-one syllable-to-
grapheme correspondence. Since in Chinese languages the morpheme-to-syllable ratio is also close to one, the
default assumption is that monosyllabic elements are also monomorphemic. However. the fact that mood parti-
cles like *va* 哇 are written with single graphemes need not reflect the underlying morpho-semantic constitution.
The discernible origin of *va* 哇 as a contraction of *veh* 弗 'NEG' and *a* 啊 'Q' lends further support to this analysis.

(71) a. $[\![\mathbf{\mathit{v}}\text{-}]\!] = \lambda p \lambda q.[q = p \vee q = \neg p]$

  b. $[\![\text{you need to be hospitalized } \mathit{v}\text{- (=60b)}]\!]$

$$= \lambda q.[q = \text{need.hospitalize}(\text{ADDR}) \vee q = \neg\text{need.hospitalize}(\text{ADDR})]$$

$$= \{\text{need.hospitalize}(\text{ADDR}), \neg\text{need.hospitalize}(\text{ADDR})\}$$

This analysis is in line with the view in Wu dialectology that many of the mood particles are compositionally analyzable into smaller elements. Qian 钱 (1996), for instance, points out for polysyllabic mood particles in Suzhou Wu (a closely related variant to SHW) that the semantics of some can be a "simple composite" of information of the component monosyllabic mood particles. A study by You and Gao (1988) further shows that *monosyllabic* mood particles in Suzhou Wu can also be analyzed compositionally into smaller morphemes with distinct semantic values. The fact that in the case of SHW *va*, the constituent parts are identifiable as free morphemes with transparent lexical semantics in the language, lends further support to the viability of this analysis. In particular, distinguishing *va* as consisting of *veh* and *a* gives us two empirical benefits. First, it accords with the typological patterns seen across Chinese languages that negation markers evoke Hamblin alternatives in polar question formation [see esp. the so-called "A-not-A questions" in standard Mandarin (Yuan and Hara, 2015; Ye, 2021, see also C.-T. J. Huang, 1991; Krifka, 2015)]. Second, it enables a more parsimonious analysis of *a* as a general-purpose interrogative force marker, which occurs across question types, rather than being specific to *wh*-questions[3].

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[3]*a* is also obligatory in biased questions, a pattern which I will not discuss in this study.

5.2.2 Mirative content as union-of-alternatives

I now address the mirative content question for *yikaon*. I claim that the mirative content of *yikaon* is a proposition (=a set of worlds, type st) which is derived via a set-union operation $\bigcup$[4] over the Hamblin set (= set of propositions, = set of sets of worlds, type stt) denoted by the sentence radical. For convenience, I call this Hamblin set that is denoted by the sentence radical the RADICAL ALTERNATIVE SET, and represent it with P_R. Representing the counterexpectational mirative attitude with the predicate $\neg$expect, I give a first-pass formulation the mirative meaning of *yikaon* as in (72).

(72)   Mirative meaning of *yikaon* (first pass, static, to be revised):

$\neg\text{expect}_{\text{SPKR}}^{\langle w_u, t_u \rangle}(\bigcup P_R)$, defined iff. $\bigcup P_R \subset W$

where P_R is a radical alternative set of type stt;

$\langle w_u, t_u \rangle$ are a set of world-time indices for the utterance context;

W is the domain of all possible worlds.

Thus, the mirative content of *yikaon* is in fact *propositional*. This is because the set-union operation $\bigcup P_R$ generates a set of worlds, i.e. a proposition (type st). In this way the mirative attitude encoded by *yikaon* is type-theoretically identical to that encoded by other propositional mirative, or any garden-variety propositional attitude predicate. The difference lies in merely in how this proposition is identified.

Union/disjunction of alternatives is proposed by Abusch (2002, 2010), originally as an account for generating soft presuppositions. Abusch's original project concerns a certain class of pragmatic presuppositions, which she calls *soft* presuppositions, that are like "hard" (semantic) presuppositions in their projection/transformation behavior in family-of-sentences environ-

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[4] The set-theoretic union operation $\bigcup$ can be equivalently stated as the logical disjunction operation $\vee$ over the set of propositions. The difference is merely one of conceptual convenience: it is easier to think of union over a set of sets of worlds, and to think of logical disjunction of a set of propositions. I will use either formulation as convenient.

ments, but that show a degree of context variability. To this class of soft presuppositions belong the existential presupposition of *wh*-questions and focus, as well as a handful of other lexical triggers. Drawing from alternative-semantic analyses of questions and focus and extending it to the other cases, Abusch argues for a general analysis whereby soft presuppositions are derived by constructing the appropriate alternative set (with or without context-sensitive influences) and applying a disjunction over that set. Thus, the existential presupposition of a *wh*-question like *Who took Mary's bike*, for instance, is analyzed as coming from a disjunction of an set of alternative propositions of the form x *took Mary's bike*, where x ranges over a set of relevant people (Abusch, 2010: ex. 34).

Though Abusch's theory concerns soft presuppositions specifically, the conceptual purchase of disjunction of alternatives is broader. Concerning questions, one way to think of the union of an alternative set of propositions is that it models the part of the question's semantics that is *informative*. This sense of informative content as union of alternatives, which cuts across the classical division of linguistic forms that denote propositions (e.g. declaratives) and those that denote sets-of-propositions (e.g. questions), is fully articulated in a framework like Inquisitive Semantics. While I do not adopt an Inquisitive framework wholesale in my analysis of *yikaon*, I will develop the notion of informative content and its connection to mirative attitudes further in §5.2.3. The insight that matters is that *yikaon* differs from typical, propositional miratives in that it is able to target the informative propositional content in the prejacent *generally*, that is, whether or not such propositional content is encoded directly (=as the single alternative) by the prejacent.

Let us see how (72) derives the desired mirative meaning for each of the three types of sentential radicals. For a declarative-forming radical, as illustrated in (73) with the "raining" example (50a), the radical alternative set contains just one proposition. Therefore, the union operation will simply return that proposition, therefore leading to a mirative meaning of counterexpectation over the same.

(73) $⟦$it's raining -*yikaon* (=50a)$⟧$

$$= \neg\text{expect}_{\text{SPKR}}\left(\bigcup(\{\text{raining}\})\right)$$

$$= \neg\text{expect}_{\text{SPKR}}(\text{raining})$$

Now, there is a non-trivial issue in formalizing the notion of contextually determined or salient alternatives, which is important for deriving the mirative content in interrogatives. Strictly speaking, the alternative set denoted by radicals such as *you ate what* includes *all* formal alternatives, i.e. all propositions of the form ADDR ate x, where x is *any* member of the domain of individuals. But in analyzing a mirative question like *what did you eat -yikaon* in (56a), we want to constrain the SPKR's counterexpectational attitude to the disjunction of just those alternatives which is entailed by the Common Ground regarding the ADDR's allergies. This issue is recognized in Abusch (2010: fn. 18), who tentatively suggests incorporating a context variable which introduces contextually determined alternatives. Since my analysis will eventually be integrated into a fully dynamic framework which explicitly keeps track of the Common Ground as a set of propositions, I will cash out this contextual salience constraint on alternatives by incorporating a Common Ground entailment restriction on mirative content derivation. Thus, I revise (72) as (74).

(74)   Mirative meaning of *yikaon* (second pass, static):

$\neg\text{expect}_{\text{SPKR}}^{\langle w_u, t_u\rangle}\left(\bigcup P_R \cap CG\right)$, defined iff. $\bigcup P_R \subset W$

where P_R is a radical alternative set of type stt;

CG is the Common Ground of type stt;

$\langle w_u, t_u \rangle$ are a set of world-time indices for the utterance context;

W is the domain of all possible worlds.

(75) illustrates this derivation for a *wh*-interrogative-forming radical, with the "food allergy" example (56a). In this example, the Common Ground entails that the ADDR ate shrimps or shellfish or peanuts (75a). The radical alternative set P_R contains a set of propositions of the

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form *ADDR ate* x, where x may be an allergenic food (shrimps, shellfish, peanuts) or not (apples, pears, ...). Importantly, intersecting the union of this P_R with CG, shown in (75c) will return a proposition which entails just that the ADDR ate shrimps or shellfish or peanuts (the allergenic foods). Therefore, we get the desired mirative meaning of counterexpectation over the disjunction of just the three relevant alternatives being true.

(75) (56a) you ate what *-yikaon*

    a. $CG \ni \text{ate}(\text{ADDR}, \text{shrimps}) \lor \text{ate}(\text{ADDR}, \text{shellfish}) \lor \text{ate}(\text{ADDR}, \text{peanuts})$

    b. $P_R = \{\text{ate}(\text{ADDR}, \text{shrimps}), \text{ate}(\text{ADDR}, \text{shellfish}), \text{ate}(\text{ADDR}, \text{peanuts}),$

$$\text{ate}(\text{ADDR}, \text{apples}), \text{ate}(\text{ADDR}, \text{pears})...\}$$

    c. $[\![\text{you ate what } yikaon \,]\!]$

$$= \neg\text{expect}_{\text{SPKR}}^{\langle w_u, t_u \rangle}\left(\bigcup P_R \cap CG\right)$$

$$= \neg\text{expect}_{\text{SPKR}}^{\langle w_u, t_u \rangle}(\text{ate}(\text{ADDR}, \text{shrimps}) \lor \text{ate}(\text{ADDR}, \text{shellfish}) \lor \text{ate}(\text{ADDR}, \text{peanuts}))$$

For canonical polar interrogatives, the revised mirative content derivation (74) is able to have the effect of capturing exactly the bifurcation in the felicity of *yikaon*, depending on whether the radical contains a contextually-supported soft presupposition trigger. Consider first the case where the radical contains no presuppositional material, as is the case in the "have you eaten" example (59). The radical alternative set P_R (76a) contains just a proposition and its logical negation. The union operation over P_R will return trivial truth, and intersection with CG will return the input CG. Since the input CG contains only mutually established information, it is mirativity-wise unremarkable. Thus, we preserve the insight that the infelicity of *yikaon* in these cases is explained by a psychological impossibility of holding a counterexpectational attitude towards "no new information in particular." This derivation is shown in (76).

(76) (59) you have eaten *va # yikaon*

    a. $P_R = \{\text{eaten}(\text{ADDR}), \neg\text{eaten}(\text{ADDR})\}$

    b. $[\![\text{you have eaten } \textit{va yikaon}\,]\!]$

$$= \neg\text{expect}_{\text{SPKR}}^{\langle w_u, t_u\rangle}\left(\bigcup P_R \cap CG\right)$$

$$= \neg\text{expect}_{\text{SPKR}}^{\langle w_u, t_u\rangle}(1 \cap CG)$$

$$= \neg\text{expect}_{\text{SPKR}}^{\langle w_u, t_u\rangle}(CG)\text{... psychological impossibility}$$

On the other hand, in case where the radical contains a soft presupposition trigger, then two things happen. First, the soft presupposition is introduced by being conjoined with each of the Hamblin alternatives. This is illustrated in (77a): the radical *you passed the make-up exam v-*, which is a soft trigger, denotes an P_R of two alternatives, consisting respectively of the positive and the negative alternative, each conjoined with the soft presupposition *you took the make-up exam.* This is an application of Abusch's (2010) insight that, for a proposition q with a soft lexical presupposition p, the alternative set of the form $\{p \wedge q, p \wedge \neg q\}$ can advantageously be used as an alternative set to model q's soft-triggering behavior, because as the union of this set will always return p, the presupposition[5].

Then, this soft lexical presupposition, which is generated via the union operation, gets a Common Ground membership check through the intersection operation with CG. Importantly, intersection with CG returns the soft presupposition as the mirative content just in case the soft presupposition is already in CG; otherwise it would return the empty set, over which counterexpectation cannot plausibly hold. Thus, this analysis correctly predicts the mirative marker would be compatible just with those polar interrogatives that trigger a soft presupposition, which is contextually supported, and which happens to be counterexpectational

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[5]Abusch cautions that there should be some independent motivation for using an alternative-set representation of this form for particular cases of soft triggers, as the formalism itself is able to generate *any* presupposition p for a proposition q without constraint. This is not a worry in our case, because alternative semantics is naturally called for in the analysis of questions.

to the SPKR. This step of the derivation is shown in (77b).

(77)   (60a) you passed the make-up exam *va yikaon*

     a. $P_R = \{\text{took}(\textsc{addr}, \text{the.make-up}) \wedge \text{pass}(\textsc{addr}, \text{the.make-up}), \text{took}(\textsc{addr}, \text{the.make-up}) \wedge$
        $\neg\text{pass}(\textsc{addr}, \text{the.make-up})\}$

     b. $[\![\text{you passed the make-up exam } \textit{va} \textsc{ yikaon}]\!]$

$$= \neg\text{expect}_{\textsc{spkr}}^{\langle w_u, t_u \rangle} \left(\bigcup P_R \cap CG \right)$$

$$= \neg\text{expect}_{\textsc{spkr}}^{\langle w_u, t_u \rangle} (\text{take}(\textsc{addr}, \text{the.make-up}) \cap CG)$$

$$= \begin{cases} \neg\text{expect}_{\textsc{spkr}}^{\langle w_u, t_u \rangle}(\text{take}(\textsc{addr}, \text{the.make-up})) & \text{if take}(\textsc{addr}, \text{the.make-up}) \in CG \\ \neg\text{expect}_{\textsc{spkr}}^{\langle w_u, t_u \rangle}(\emptyset) & \text{if take}(\textsc{addr}, \text{the.make-up}) \notin CG \end{cases}$$

5.2.3   Informative content and mirative content

In classical propositional logic, a proposition is a set of worlds in which the proposition is true. In turn, a proposition is true or false depending on whether this set of worlds that it denotes contains the actual world; thus, a proposition is *informative* in the sense that it specifies criteria by which to judge whether the actual world is a certain way.

     Under this view, questions differ fundamentally, because they encode a type of meaning that, rather than informing that the world *is* a certain way, primarily raises issues concerning particular *alternative* ways which the actual world *may* be, to be resolved in discourse. Under the classical ontology of propositions-as-sets-of-truth-worlds, the standard approach to modeling the semantics of questions resorts to *set*s of propositions (sets of sets of truth worlds), representing the *collection* of alternative ways-of-being of the actual world. Thus, informative content and inquisitive content are modeled dichotomously with distinct ontologies: informative content with single sets of worlds, inquisitive content as sets of sets of worlds. In particular,

alternatives can be multiplicitous, and thus can encode contradictory information; this multiplicity is taken precisely as a model of the unsettledness of information as raised (typically) by questions, which is in opposition to the settledness of information as provided (typically) by declaratives. Empirically, these two types of content are conventionally associated with two distinct linguistic forms (declarative and interrogative).

However, the association of informative and inquisitive contents with declarative and interrogative linguistic forms is not perfect. Contents can cross-cut linguistic forms: declaratives do not universally contain only informative content, and interrogatives do not universally contain only inquisitive content. Such cross-cutting suggests for the propositions-and-alternatives model that there are ways in which *multiplicitous* alternatives harbor non-trivial informative content. Since informative content is modeled propositionally, i.e. as a set of worlds used to inform what the actual world is like, the natural way to retrieve the informative content from a set of alternatives is via the union derivation: by collecting the set of worlds which *all* of the alternative units of criteria would rule in/out as the way the actual world is, exactly as in (74).

The union-of-alternatives derivation has both been used to account for a specific instance of informative content in interrogatives, and also been developed as a general model for informative content in alternatives-denoting expressions. Abusch (2010) proposes to use union-of-alternatives to account for soft presuppositions, which, characteristically though not exclusively, encompasses the existential presupposition of *wh*-questions. Barring other information-structural properties specific to soft presuppositions (projection, plugging and transformation behavior, pre-update Common Ground entailment), the existential presupposition of *wh*-questions can be thought of as an *instance* of informative content in the semantics of interrogatives, just in the sense that it rules in as candidate for the actual world only those worlds where the disjunction of all alternative answers is true. In a non-classical framework like Inquisitive Semantics, union-of-alternatives becomes a fully generalized operation to retrieve informative content. There, a reconstrued notion of propositions encodes both informa-

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tive and inquisitive content simultaneously, breaking down the ontological difference between single classical propositions and sets of classical propositions, while preserving the notion of alternatives. An informative question is precisely one where the union of all the alternatives it denotes is the domain of all possible worlds (Ciardelli et al., 2018: Fact 2.18).

Importantly, informativity being construed thus, there is then a clear connection between a question being informative and being compatible with mirativity. As I have shown, the SHW empirical data manifests a correlation between compatibility with *yikaon* and union-of-alternatives being informative (not equal to the domain of all possible worlds). I suggest that this correlation is precisely the linguistic exponent of the psychological nature of mirativity that I have explored in §3: mirativity is a range of attitudes generated by cognitive exposure to NEW INFORMATION. Among the many conditions that determine whether a piece of information is cognitively new, one necessary condition—one that has ramifications for linguistic expressions of mirativity—is that this information must be non-trivially informative. The SHW case shows that new information need not be encoded in linguistically declarative forms, but also in interrogative forms as well. Thus, cast in terms the classical-propositions-and-alternatives model, the informativity condition on NEW INFORMATION manifests as the requirement that the union-of-alternatives be non-trivially informative. This is the explanatory reason for the informativity restriction on the (static) radical alternative set $\bigcup P_R \subset W$ in (74), and also (dynamically) for why a mirative attitude over the information on input CG (76) is ruled out on psychological grounds.

5.3   The mirative update

Having argued for a model of the mirative content as the informative content of the mirative prejacent, derived via the union-over-alternatives operation, I now turn to the task of integrating it into a fully dynamic semantic analysis of *yikaon*.

5.3.1 Mirative contribution is illocutionary

To start with, the mirative meaning contributed by *yikaon* is standardly not-at-issue (Potts, 2005; Simons, 2007, a.m.o.): it projects out of operators on truth-conditional content, such as negation, and cannot be targeted in discourse by direct denials (Amaral et al., 2007). This is shown by (78a-78b).

(78) *Yikaon* encodes not-at-issue meaning

    a. *yikaon* projects out of event and sentential negation

      A: mmeh loh yu   yikaon / veh.zy   lahlah loh yu   yikaon.

      A：嘸沒　落　雨　渠講　/ 弗是　　辣辣　落　雨　渠講。

         NEG_E fall rain MIR   / NEG_S.COP PROG   fall rain MIR

    'Gosh, it's not raining/ it is not the case that it's raining (I had not expected it to not be raining).'

                                       (# it is not the case that I had not expected this fact).'

    b. *yikaon* cannot directly address the QUD

      A: lahlah loh yu   yikaon.

      A：辣辣　落　雨　渠講。

         PROG   fall rain MIR

    'Gosh, it's raining (I had not expected it to be raining).'

B:	veh-te	/	geh.gheh	veh-te.	#	non	lautsau	zhieu	shiauteh
	弗對	/	辯個	弗對。	#	儂	老早	就	曉得
	NEG-correct		this.one	NEG-correct		2SG	long.before	INCL	know

	lahlah	loh	yu	lah.
	辣辣	落	雨	了。
	PROG	fall	rain	PF

Intended: 'Not true/that's not true. # You had known since a long while ago that it's raining.'

A different but overlapping theory of at-issueness Simons et al. ([2010](#)) construes at-issue content as that which is able to directly address the Question-Under-Discussion (QUD, see e.g. Roberts, [2012](#)). Koev ([2018](#)) develops a diagnostic for this type of at-issueness (he terms it Q-AT-ISSUENESS), by checking whether the contet in question is able to directly address an overt QUD about it. ([79](#)) renders this diagnostic for *yikaon*, showing that *yikaon* is also not-at-issue under this view of at-issueness: the counterexpectational mirative attitude on the SPKR's part, which is the meaning contribution *yikaon* encodes, is unable to address an overt QUD about the SPKR's attitude towards the prejacent.

(79)   Mirative proposition is Q-NOT-AT-ISSUE: cannot answer a QUD about SPKR attitude

[A is standing in front of a list of grades posted on the school bulletin and sees that he failed the exam. B, who is A's friend and who has heard that A underperformed this time, walks over and tries to talk to him.]

B: ngo shiauteh non geh.thaon khau huahpie   lah. non yieze kuhzeh

我   曉得   儂   觖.趙   考   豁邊   了。儂   現在   覺著

I   know   you this.time   score   out.of.typical.range PF   you now   feel

nanen   a?

哪能？

how   Q

'I know you kind of flunked it this time. How do you feel now?'

\# A: ngo veh-jihkah yikaon.

我   弗及格   渠講。

1SG NEG-pass   MIR

'I failed (I didn't expect that).'   (Modeled after Koev, 2018: ex.7)

More specifically, the content encoded by *yikaon* is *illocutionary*, and, in particular, it can be analyzed as a restriction on the *sincerity condition* of the utterance.

The notion of illocutionary content as a distinct level of meaning, analytically differentiated from propositional content and conventionally encodable by linguistic markers, is articulated in Searle and Vanderveken (1985: p. 1)

> *"The minimal units of human communication are speech acts of a type called* illocutionary acts ... *In general an ilocutionary act consists of an illocutionary act consists of an illocutionary force* F *and a propositional content* P. *For example, the two utterances "You will leave the room" and "Leave the room!" have the same propositional content, namely that you will leave the room; but characteristically, the first of these has the illocutionary force of a prediction and the second has the illocutionary force of an order.*

A conceptual distinction between the propositional and the illocutionary levels of meaning thus made opens up the possibility to analyze certain conventionally-encoded meanings as specifically occurs at the level of F (rather than P), that is, illocutionary content. In the simple English examples by Searle and Vanderveken, the meaning difference between declarative and imperative is argued to be a difference just at the level of F (namely, assertion and command). One may therefore think of the different linguistic forms—the presence of an overt 2SG subject, tense inflection, declarative vs. imperative intonation, etc.—as conventionalized linguistic exponents of that meaning difference between the two different F's. Many types of linguistic markers across a variety of morphosyntactic and meaning domains have been argued to encode illocutionary content; some examples are certain high adverbs (e.g. Ifantidou-Trouki, 1993; Rett, 2021a), mood/modal particles (e.g. Zimmermann, 2004), and evidentials (Faller, 2002; Murray, 2010, 2017).

The Searle-Vanderveken line of work breaks down the concept of illocutionary force F into a plurality (seven in Searle and Vanderveken, 1985, six in Vanderveken, 1990) of definitive components. For instance, the ILLOCUTIONARY POINT (e.g. for declaratives, representing a state of affairs as actual) is the essential purpose of that type of speech act, that which is achieved if the speech act is successful. The PROPOSITIONAL CONTENT CONDITIONS are what restricts the speech act by specifying the particular propositional content, i.e. the particular state of affairs concerning the world, that the speech act concerns in its particular way. The component that will concern us is the SINCERITY CONDITIONS. Sincerity conditions specify the psychological or mental state that the SPKR must be in in order for an illocutionary act of a particular force F committed by that SPKR to be successful. And, conversely, in successfully commiting an illoctutionary act of force F, the SPKR does also express (make explicit in some way) that she is indeed in the psychological state specified by the sincerity conditions. Searle and Vanderveken (1985) gives the following illustrative discussion:

> *"Whenever one performs an illocutionary act with a propositional content on expresses a*

certain psychological state with that same content. Thus when one makes a statement one

expresses a belief, when one makes a promise one expresses an intention, when one issues a

command one expresses a desire or want." (p. 18)

Vanderveken ([1990](#)) explicitly defines the "psychological state" that sincerity conditions specify in attitudinal terms:

> *"[Sincerity conditions are] propositional attitudes of the form $m(P)$, where m is a* psychological mode *such as, for example, desire, regret, or hope... A performance of an illocutionaary act is* sincere *when the speaker has the mental state that he expresses in the performance of that act, and it is* insincere *otherwise."* (p. 117, cited in Faller, [2002](#): p. 17)

Thus, under this construal, sincerity conditions constitute just that part of the illocutionary meaning domain which has to do with SPKR-oriented attitudes. Such attitudes may be purely epistemic, such as the SPKR's attitude of belief in the truth of the proposition when she utters a declarative; or they might be of various evaluative or emotive flavors, as is the case with the extremely diversity of discourse particles across languages. One crucial upshot of the Searle-Vanderveken formulation is that sincerity conditions are precisely the locus of Moore's Paradox phenomena: Moore's Paradox results just from the performance of the speech act while denying the sincerity condition that necessarily constitutes that speech act. In turn, Moore's Paradox behavior diagnoses an attitudinal meaning contribution as illocutionary.

This is exactly what we see for miratives in general, and for SHW *yikaon* specifically. Rett and Murray ([2013](#)) argue that mirativity is illocutionary content, based on a version of the Moore's Paradox test to mirative (declarative) utterances in Cheyenne. They show that explicitly denying the mirative contribution leads to a Moore's-Paradoxical sense, which is intuited by native speakers to be distinct from contradiction of truth-conditional content. This result is replicated in SHW: in ([80](#)) [repeated from ([55](#))], the sense is one of the SPKR expressing and

then denying her own mental state, leading to a sense of "confusion about one's own feelings."

(80) lahlah loh yu **yikaon**. ...

辣辣　落　雨　渠講。　......

PROG　fall　rain　MIR

'It's raining (I had not expected it to be raining). ...'

#...　(pahku) ngo lautsau　zhieu shiauteh / fahciuih / khoetau geh.tsaon zythi

......(不過)　我　老早　　就　曉得　/ 發覺　/ 看到　辮.椿　事體

　　　but　　1SG while.ago INCL know　　realize　see　this　matter

lah.

了。

PF

'... (but) I had known/realized/seen this fact from a while ago.'

#...　(pahku) ngo lautsau　zhieu shiantau / liautau wetah loh yu　lah.

......(不過)　我　老早　　就　想到　/ 料到　會得 落 雨 了。

　　　but　　1SG while.ago INCL think.of　expect would fall rain PF

'... (but) I had realized/expected for a while that it would rain.'

5.3.2   Sincerity condition as attitudinal updates to DC_SPKR: Rett (2021a)

A handful of formal semantic works have attempted to come up with explicit representations of sincerity conditions: for instance, Faller's (2002) analysis of evidentials in Cuzco Quechua, which identifies evidential meaning as illocutionary and analyzes them as sincerity conditions, includes a distinct layer in the semantic representation which is dedicated to hosting the set of all sincerity conditions associated with the utterance. Among more general-purpose discourse models implementing the "conversational scoreboard" concept of Lewis (1979), there is a natural place for the default sincerity condition of declaratives [belief in the truth of the propo-

sition, sometimes strengthened to the *knowledge norm of assertion* (Williamson, 2000)], namely, the SPKR's Discourse Commitments (DC_{SPKR}). The discovery of linguistic phenomena that is sensitive to *individiual* commitments in discourse, and the consequent proposal to model such commitments with sets of propositions indexed to each discourse participant, goes back to Gunlogson's (2001; 2004) critical work on bias in questions. Many later models of discourse have incorporated individual Discourse Commitment sets as a key component (e.g. Farkas and Bruce, 2010; Davis, 2009; Malamud and Stephenson, 2015). DC is the natural locus of the belief sincerity condition because the very definition of Discourse Commitment sets is *epistemic* (Rudin, 2018): propositions that are added to DC are, by definition, those that the discourse participant has publicly committed to *believing* in.

What about sincerity conditions that specify a non-belief attitude? Recent work by Rett (2021b), drawing on a close study of emotive attitudinal expressions such as English *fortunately* and *alas*, argues for a generalized approach whereby any attitudinal illocutionary content is modeled as an update to DC_{SPKR}. Under this view, DC in fact need not only encode *one* attitudinal flavor (belief), but can rather contain attitudinal updates of *various* flavors. This expanded view of Discourse Commitment sets, therefore, provides a general model for sincerity conditions.

Rett's proposal can be summarized as follows. She identifies a class of meaning called "emotive content," which is essentially a subcase of illocutionary content that involves a SPKR-oriented emotive attitude. Instances of emotive content in English include expressions such as *unfortunately* and *alas*, which convey that the SPKR is regretful or dismayed, respectively, towards the prejacent. Rett argues that emotive content is demonstrably distinct from other not-at-issue contents by two defining features: Moore's-Paradoxical infelicity with denials and suppose-embedding (81), and scoping above local clauses but below illocutionary mood (82). (81) is a standard Moore's Paradox set of tests (Hintikka, 1962): denials of the emotive attitude conveyed by *unfortunately* is judged to be infelicitous, even though embedding the conjunction

of the emotive-marked sentence and the denial under *suppose* is felicitous, i.e. the two are not logically contradictory. (82) shows that English emotives like *alas* and *unfortunately*, whenever occurring at a high position (left or right periphery), attest only a matrix-clause scope reading but no embedded-clause scope readings on the one hand, while on the other hand scoping under interrogative mood.

(81) English emotive markers display Moore's Paradox behavior: (Rett, 2021b: exs. 21a, 22a)

    a. #Unfortunately, Jane lost the race, but I do not find it unfortunate that she did.

    b. ✓ Suppose that, unfortunately, Jane lost the race, but that I do not find it unfortunate that she did.[6]

(82) English emotive markers scope above local clauses but below illocutionary mood: (ibid.: exs. 26a, 33b)

    a.   Unfortunately, if the mayor is convicted, she must resign from office.

                  $\neq$ The SPKR would find the case of conviction unfortunate.

                  = The SPKR finds the conviction$\rightarrow$ resignation implication unfortunate.

    b.   Did Jane get kicked out of the program, alas?

                = The SPKR would find it regrettable if Jane *did* get kicked out of the program.

                $\neq$ The SPKR would find both alternatives regrettable.

Particularly crucial for Rett is the Moore's Paradox behavior of emotives: she argues, fol-

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[6]The grammaticality of Rett's embedding diagnostic of English emotives (81b) appears to be controversial among native speakers of English (AnderBois p.c.). If this is true, then it seems the empirical grounds on which her analysis English emotives stands would at least have to be characterized as dialectal, if not ideolectal.

lowing similar earlier claims in Rett (2011) and Rett and Murray (2013), that this crucially sets the semantics of emotive content apart from other not-at-issue content in being a sincerity condition contribution, rather than a backgrounded truth-conditional contribution such as appositives. Just as in canonical Moore's Paradox scenarios SPKR belief in the asserted proposition is the sincerity condition which constitutes an assertive speech act, with emotive markers the SPKR's emotive attitude also constitutes a sincerity condition. Failure to hold the specified emotive attitude while performing the utterance also results in a Moore's-Paradoxical conflict with the attitude the SPKR, in performing the speech act, represents or expresses herself as having. Thus, a theory of emotive content is ultimately a theory of illocutionary attitudinal content in general: the default epistemic attitude (belief) that comes with the force of assertions differs only in attitudinal flavor, but not in the kind of theoretical animal, from emotive attitudes (of various flavors) that markers like *alas/unfortunately* contribute.

In light of this, Rett proposes to generally model emotive and other illocutionary attitudinal content as updates to DC (specifically, DC_{SPKR}) under a version of the Farkas-Bruce (2010) model of discourse. Whereas Discourse Commitments are classically cast just in terms of public *beliefs* (Gunlogson, 2001: p. 42), Rett proposes to expand the notion of discourse commitments to "flavored" discourse commitments: DC updates may contain a wider range of attitudes other than beliefs. The definition of this expanded notion of discourse commitments is presented in (83). Emotive markers like *alas* and *unfortunately* would thus encode an update which adds the corresponding attitude predications (is-disappointed$_a(p)$ and finds-it-unfortunate$_a(p)$, respectively) to the DC.

(83)   Flavored Discourse Commitments   (Rett, 2021b: def.48)

Let DC_a be sets of propositions of the form $\text{Att}_a(p)$ representing the public commitments of a with respect to a discourse in which a and b are the participants, where:

a.   Att is an attitude predicate from {believes, is-pleased, is-disappointed, is-surprised, is-not-surprised, ...}

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b. $\text{Att}_a(p)$ is a public commitment of a iff. 'a Att p is a mutual belief of a and b.

Strictly speaking, expressing public commitment to holding an attitude through the performance of a speech act is conceptually different from having such an attitude be the sincerity condition for the successful performance of that speech act: while the former is a downstream outcome of the speech act *if* successfully performed, the latter is akin to a constitutive norm which *governs* the success and failure of the performance of the speech act in the first place. Nevertheless, Rett (p. 326) argues that "for the purposes of modeling conversation" public commitment can be treated "as a proxy for belief" or other attitudinal sincerity conditions. The reason is that, as long as the SPKR is being *treated as* sincere in a context (whether for the purpose of the conversation, or by default until decided otherwise), any of her speech acts will be successful on account of its sincerity conditions. And because in the Searle-Vanderveken formulation, sincerity conditions are in fact publicly expressed (or committed to) by the SPKR when the speech act is successful:

> "*...successful performances of illocutionary acts necessarily involve the expression of the psychological state specified by the sincerity conditions of that type of act,*"   (Searle and Vanderveken, 1985: p. 18))

therefore, sincerity conditions are not distinct in terms of its effect on the discourse context from any other DC update: the SPKR, in performing the speech act in question, will be mutually recognized as having publicly committed to the sincerity conditions.

Rett's larger, though tentative, claim is that mirativity *in general* would fall under this category of emotive content, displaying the same defining features as English *alas/unfortunately*. The tenability of this claim is in fact not well substantiated. The current study shows that mirative meanings across languages do not show the same embeddability properties with respect to her diagnostics, even if their semantic contribution may ultimately be the same as that of English emotives. For instance, even though there are very good reasons to analyze *yikaon* as

contributing an attitudinal update to DC_{SPKR}, it has strictly matrix-clausal and unembeddable behavior with respect to Rett's embedding diagnostics for emotive content, and this is not due to a purely morphosyntactic prohibition on embedding. I will discuss this issue in Rett's theory in more detail in §5.5. However, Rett is crucially correct on one score: mirative meaning is illocutionary attitudinal content (=a sincerity condition), precisely in that it displays Moore's Paradox. For this reason, it *is* amenable to being modeled as an update to the SPKR's DC; the particular scope-taking behavior of English emotives *alas/unfornately* is orthogonal to this theoretical insight.

Therefore, I recast the mirative meaning encoded by *yikaon*, formulated in static terms in (74), as an update to DC. This is stated in words in (84), and formalized in the next section.

(84)   *Yikaon* encodes an update to DC_{SPKR} with

$$\neg\text{expect}_{\text{SPKR}}^{\langle w_u, t_u \rangle}(\bigcup P_R \cap CG) \wedge \forall t \leq t_u \neg\text{know}_{(}^{w_u, t} spkr)(\bigcup P_R \cap CG), \text{defined iff.} \bigcup P_R \subset W$$

$$\text{where } P_R \text{ is a radical alternative set of type } stt;$$

$$CG \text{ is the Common Ground of type } stt;$$

$$W \text{ is the domain of all possible worlds.}$$

Note that (84) includes an additional component $\forall t \leq t_u \neg\text{know}_{(}^{w_u, t} spkr)(\bigcup P_R \cap CG)$ besides the counterexpectational attitude component. This prior ignorance sincerity condition is to model the fact that mirative-range attitudes by definition involves NEW INFORMATION acquired on the SPKR's part, and therefore always impose in discourse a sincerity condition that the SPKR did not know the mirative content until the time of acquisition and generation of the mirative attitude (call this the MIRATIVE TIME). In the case of *yikaon*, the mirative time is always the temporal index of the utterance, though it is conceivable that other mirative markers may allow other temporal specifications: English *it turns out*, for example, allows past tense marking, which would specify a past MIRATIVE TIME.

5.4 A Farkas-Bruce-Rett implementation

Putting together all the analytical elements discussed in the foregoing sections, I now present a complete implementation of the semantics of the SHW mirative marker *yikaon*.

5.4.1 Framework essentials

In modeling the discourse context, I adopt the framework of Farkas and Bruce (2010), with modifications introduced in Rett (2021b) to capture "flavored discourse commitments" and also to represent sentential mood and illocutionary operators compositionally. For convenience I will call this framework the Farkas-Bruce-Rett (FB-R) model of discourse. Restricting our formalisms to just contexts involving two participants, the elements of the FB-R model is summarized as follows.

(85) A context structure K of a conversation between a SPKR and an ADDR is a quintuple $\{T, CG, DC_{\text{SPKR}}, DC_{\text{ADDR}}, ps\}$, where

    a. T (**Table**) is a *stack* of issues under discussion, each of which is an ordered set $\langle S; Q \rangle$ where S is (the syntactic structure representing) the sentence uttered and Q the Hamblin set of propositions denoting the sentence;

    b. CG (**Common Ground**) is a set of propositions which all discourse participants are committed to for the purpose of the conversation;

    c. DC_{SPKR} and DC_{ADDR} (**Discourse Commmitment sets**) are sets of propositions which the SPKR and the ADDR, respectively, have publicly committed to.

    d. ps (**Projected set**) is a set of future (projected) CGs (=a set of sets of propositions) that are being considered as the new CG.

Operations to update the DCs and CG, which are sets, are canonical set operations such as the union operation $\cup$. A number of operations to update the Table T, which is a stack, and to ps, which is a set of sets, are conventionally defined, of which we will use two: the *push* operation (86a), which adds a new and current issue to the top of T (thus modeling QUDs), and the $\bar{\cup}$ operation (86b), which generates a new set of projected CG's which represents the updating of current projected CGs with propositions newly proposed in discourse, i.e. by updating each of the current projected CGs with each of the newly-proposed propositions.

(86) Key operations on FB-R context structures   (Farkas and Bruce, 2010: p. 90)

    a.   *push*(e, T) returns the new stack obtained by adding item e to the top of the stack T.

    b.   Let $ps = \{CG_1, ..., CG_n\}$ be a collection of projected common grounds and $P = \{p_1, ..., p_m\}$ be a set of propositions. Then,

$$ps \bar{\cup} P := \{CG_i \cup \{p_j\} | 1 \leq i \leq n, 1 \leq j \leq m\} - \{CG' | CG' \text{is inconsistent}\}.$$

5.4.2   Sentential mood operators D and Q

Given these definitions of context structures and operations, speech acts can be defined in terms of a function from context structures to context structures, consisting of operations on the input structure to generate the output structure. In their original work, Farkas and Bruce do not explicitly define canonical declarative and interrogative updates as functions from contexts to contexts. This is done in Rett (2021b) with explicit definitions of a declarative force operator **D** (87a) and polar interrogative mood operator **PQ** (87b): these operators map an ordered set of the sentence being uttered and the input context to an output context with updates to the different contextual elements.

(87) Declarative and polar interrogative mood operators *à la* Rett ([2021b](#): defs. 49, 67):

a. For a declarative sentence S with at-issue content p and not-at-issue content q, input context structure K_i, output context structure K_o, author a,

$\mathbf{D}\left(\langle S, K_i \rangle\right) = K_o$ s.t.

(i) $DC_{a,o} = DC_{a,i} \cup \{\mathsf{believes}_a(p)\}$

(ii) $T_o = \mathbf{\textit{push}}(\langle S; \{p\}\rangle, T_i)$

(iii) $ps_o = ps_i \bar{\cup} \{p\}$

(iv) $CG_o = CG_i \cup \{q\}$

b. For a polar interrogative sentence S with bias or highlighted alternative p, at-issue content $\{p, \neg p\}$ and not-at-issue content q; input context structure K_i, output context structure K_o, author a,

$\mathbf{PQ}\left(\langle S, K_i \rangle\right) = K_o$ s.t.

(i) $DC_{a,o} = DC_{a,i} \cup \{\mathsf{believes}_a(p)\}$

(ii) $T_o = \mathbf{\textit{push}}(\langle S; \{p, \neg p\}\rangle, T_i)$

(iii) $ps_o = ps_i \bar{\cup} \{p, \neg p\}$

(iv) $CG_o = CG_i \cup \{q\}$

While it enables transparent compositional analyses of illocutionary mood markers, Rett's formulation of mood operators $\mathbf{D}$ and $\mathbf{PQ}$ can be improved in one way. The operators in their current form are not fully Hamblin semantics-compatible: since they take single propositions as argument and only construct Hamblin sets at the context-update level, interfacing with e.g. *wh*-questions, whose Hamblin set is constructed at the constituent level, is not straightforward. One would either need to posit a separate mood operator for *wh*-questions in addition to $\mathbf{PQ}$, or modify the definition of these operators to make them fully Hamblinian. (Rett's study does not cover interrogatives beyond polar questions.)

In our case, the latter approach is well-motivated: first, there is good reason to model SHW sentential radicals as denoting Hamblin sets, as evidenced by the alternatives-evoking semantics of *wh*-words in indefinte declaratives and the overt spell-out of polar alternative formation by *v-*, which is etymologically a negation element. Having the mood operator take these Hamblinian sentential radicals as argument is the natural choice. Second, referencing Hamblin sets instead of single propositions will give us the added benefit of positing a single (canonical) interrogative mood operator, rather than Rett's polar question-specific **PQ**. This is desirable not only theoretically, but also empirically: in SHW, there is a single form, namely, the particle *a*, which spells out canonical interrogative mood across polar and *wh*-questions.

Thus, I redefine the declarative mood operator **D** and a single interrogative mood operator **Q** as in (88a-88b), crucially using the radical alternative set P_R, rather than the proposition p, as one of the arguments. In SHW, **Q** is directly spelled out by the sentence-final mood marker *a*.

(88)   Declarative and canonical interrogative mood operators: *final*

   For sentence S with radical alternative set P_R, not-at-issue content q, author a, input context K_i and output context K_o,

   a.   **D** $(\langle S_p, P_R, a, K_i \rangle) = K_o$ s.t.   b.   **Q**$(\langle S_p, P_R, a, K_i \rangle) = K_o$ s.t.

    (i) $DC_{a,o} = DC_{a,i} \cup$ (i) $DC_{a,o} = DC_{a,i} \cup$

         $\{\mathsf{believes}_a(\bigcup P_R)\}$ $\{\mathsf{believes}_a(\bigcup P_R)\}$

    (ii) $T_o = \textit{push}(\langle S, P_R \rangle, T_i)$ (ii) $T_o = \textit{push}(\langle S, P_R \rangle, T_i)$

    (iii) $ps_o = ps_i \bar{\cup} P_R$ (iii) $ps_o = ps_i \bar{\cup} P_R$

    (iv) $CG_o = CG_i \cup \{q\}$ (iv) $CG_o = CG_i \cup \{q\}$

Note an additional benefit: by introducing P_R, the SPKR's discourse commitment update is also unified across declaratives and unbiased interrogatives, as the update $\mathsf{believes}_a(\bigcup P)$ to DC—essentially, that the SPKR is committed to the *informative content* of the radical. In declar-

atives, $\bigcup P = p$. In *wh*-questions, $\bigcup P$ gives the (contextually supported) soft existential pre-supposition. In unbiased polar questions with a non-trivially informative presupposition, $\bigcup P$ amounts to that presupposition; otherwise, $\bigcup P$ amounts to the universal set of worlds W, which correctly models the lack of any substantial epistemic commitment.

5.4.3 Mirative *yikaon*

I analyze *yikaon* as a force modifier: it takes, as one of its arguments, a mirative prejacent, i.e. a sentential radical plus a mood operators **D** and **Q**. It adds the mirative meaning contribution that the intersection of $\bigcup P_R$ (the informative content) and the input CG_i is counterexpectational to the SPKR. This denotation is shown in (89).

(89)   For input context K_i and output context K_o, mirative prejacent S containing a radical alternative set P_R and the **D** or **Q** mood operator, world-time indices $\langle w_u, t_u \rangle$, author a:

$[\![yikaon]\!](K_i) = K_o$ s.t.

   (i) $DC_{a,o} = DC_{a,i} \cup \{\neg\mathsf{expect}_a^{w_u,t_u}(\bigcup P_R \cap CG_i)\} \wedge \forall t \leq t_u \neg\mathsf{know}_{(}^{w_u,t}\mathsf{SPKR})(\bigcup P_R \cap CG)$

                                   defined iff. $\bigcup P_R \subset W$, where W is the domain of all possible worlds

As discussed in §5.3.2 and preliminarily formulated in (74) and (84), intersection with CG_i models the fact that the mirative content, which is the informative content of the sentential radical, must be contextually supported. This update is added to the SPKR's DC, thus modeling its status as a sincerity condition.

5.5   Discussion: mirativity is not English-style "emotive content"

I now turn to discuss a theoretical implications of the analysis presented above. Specifically, I reconsider Rett's claim that mirative meaning cross-linguistically is an instantiation of her notion of "emotive content." The analysis of SHW *yikaon* presented above shows that this claim cannot be taken as-is.

In particular, the SHW case shows at least two crucial empirical divergences between miratives and English emotives, namely, scope relations with sentential mood, and attitudinal content in interrogatives. These empirical divergences are possibly reflective of fundamental differences in theoretical character, and thus indicate a greater range of potential variation underneath the "emotive content" label. I discuss each empirical difference in turn.

5.5.1   Scope relations with sentential mood

One clear difference between the SHW mirative and English emotives lies in their scope relative to sentential mood. For English, Rett observes that *unfortunately* and *alas* can apparently occur either in matrix positions (sentence-initially/finally), or inside embedded environments. (90) illustrates these two positions with an appositive clause. Importantly, the interpretative possibilities in each case are different: in matrix positions, English emotives take matrix (sentential) scope, whereas in embedded positions they can take embedded (sub-sentential) scope.

(90)   English emotive markers scope above local clauses but below illocutionary mood: (summarized from Rett, 2021b: pp. 330–1)

    a.   Alas, Jane, who lost the race, won the lottery.

            =The SPKR is disappointed by Jane's losing the race and winning the lottery.

b.   Jane, who alas lost the race, won the lottery.

<div align="right">= The SPKR is disappointed by Jane's losing the race.</div>

Rett's analysis therefore places the emotive update below matrix mood operators. Adopting a dynamic view of semantic composition at the sub-sentential level, this then allows for a unified (dynamic) semantics of emotives to apply to either matrix or embedded content. (91) shows how the embedded scope of *alas* in example (90b) is incrementally derived: English emotives such as *alas* encode an illocutionary attitudinal update *and* an update to T (91a). When taking embedded scope, English emotives update DC with an attitude over the embedded content, and adds the embedded content to T as the QUD (91b). Then, this intermediate context structure becomes the input to the mood operator **D** when the matrix sentence is interpreted (91c). At this point, among other things, the T gets another update, this time with the *matrix* content as the QUD, thus achieving the overall effect of having the matrix (at-issue) content on the Table once the entire sentence is interpreted.

(91)   English emotives scope below matrix mood; can range over embedded clauses   (Rett, 2021b: exs. 55-57)

    a.   *Alas* (i.e. **A**), for sentence S with content p: $\mathbf{A}(S, a, K_i) = (S, a, K_o)$ such that

        (i) $DC_{a,o} = DC_{a,i} \cup \{\text{is-disappointed}_a(p)\}$

        (ii) $T_o = \textit{push}(\langle S, \{p\}\rangle, T_i)$

    b. $[\![\text{alas } t_i \text{ lost the race}]\!] = \mathbf{A}(S_1, a, K_i) = (S_1, a, K_{o_1})$ such that

        (i) $DC_{a,o_1} = DC_{a,i} \cup \{\text{is-disappointed}_a(\text{Jane lost the race})\}$

        (ii) $T_{o_1} = \textit{push}(\langle S, \{\text{Jane lost the race}\}\rangle, T_i)$

    c. $[\![\text{Jane, who alas lost the race, won the lottery}]\!]$
        $= \mathbf{D}(S_2, a, K_{o_1}) = K_{o_2}$ such that

(i)　　$DC_{a,o_2} = DC_{a,o_1} \cup \{\text{believes}_a(\text{Jane won the lottery})\}$

(ii)　　$T_{o_2} = \textbf{\textit{push}}(\langle S; \{\text{Jane won the lottery}\}\rangle, T_{o_1})$

(iii)　　$ps_{o_2} = ps_{o_1} \bar\cup \{\text{Jane won the lottery}\}$

(iv)　　$CG_{o_2} = CG_{o_1} \cup \{\text{Jane lost the race}\}$

The situation with miratives is rather different. I have shown that the SHW mirative scopes *above* sentential mood operators **D** and **Q**. Strong empirical evidence of this comes from the overt linear order of **Q** and the mirative: *yikaon* obligatorily occurs to the right of the canonical interrogative mood marker *a*. A direct prediction of this is that mirative *yikaon* cannot be embedded or otherwise take sub-sentential scope. This is borne out: *yikaon* cannot occur in e.g. appositives, antecedent of conditionals, or embedded clauses under modals—all environments that diagnose the sub-sentential-scope of English emotives, per Rett.

(92)　a.　geh.gheh nyin　(au),　　zaonthaontsy pise sȳ-thah gheh **#yikaon**, kāonkaon

　　　　辦個　　人　　（噢），上趟著　　比賽 輸-脫　 箇　 **#**渠講，　剛剛

　　　　this.CL　person TOP　　last.time　　race lose-RES REL　MIR　　just.now

　　　　tson cianchoe　　lah.

　　　　中　　獎券　　　了。

　　　　hit　lottery.ticket PF

　　　Intended: 'This guy, who (contrary to my expectations) lost the race last time, has just won the lottery.'

b. ciasykaon yautsan pah tsuhchile ghehghegho **#yikaon**, yi khendin ’iau

假使講 校長 畀 捉起來 箇閒話 #渠講， 渠 肯定 要

if principal PASS arrest COMP MIR 3SG definitely would

    ghole gheh.

    下來 箇。

    step.down VERUM

Intended: 'If (contrary to my expectation) the principal is arrested, he certainly will step down.'

c. yeu khunen [lahlah loh yu **#yikaon**].

有 可能 [辣辣 落 雨 #渠講]。

exist possibility PROG fall rain MIR]

Intended: 'It is possible that it is, contrary to my expectation, raining.'

In general, unembeddability appears to be the norm rather than the exception for true miratives: English exclamatives (*what a beautiful day!*), Turkish *-mIş* and Bulgarian *-l* (Ótott-Kovács, p.c.) and Cheyenne (Rett and Murray, 2013) all resist the types of embedding used to diagnose "emotive content" in Rett's sense, that is, as exemplified by the empirical profile of English *alas* and *unfortunately*. Thus, we must at least acknowledge that it is amiss to assume that miratives are "emotive content" by apparent analogy.

But how do we explain the difference in terms of embeddability between miratives and English emotives? One possibility is that there is simply variation in the scope-taking pattern of illocutionary attitudinal markers relative to sentential mood. Scoping above sentential mood rigidly implicates unembeddability, since mood is properly a root clause phenomenon. Scoping below sentential mood, on the other hand, allows for embeddability. Miratives belong to the former type, whereas English emotives belong to the latter.

Possible extensions to expressive meaning?   Ultimately, however, I suggest that this variation in semantic scope with respect to sentential mood may reflect a deeper distinction *within* the kinds of content that may be grouped together as "illocutionary (attitudinal) content." Specifically, I suggest that while all illocutionary content conveys something non-truth-conditional about the SPKR's mental state in the immediate context of the speech act, not all content that conveys such meaning is of the same Kaplanian (Apr. 3, 2004, also 1989) character. In particular, *expressives of attitude* and *non-expressive illocutionary attitudinal content* both display indexicality, but differ in the nature of this indexicality. Expressives of attitude are indexed to the immediate context of the speech act because they **constitute** part of the speech act, whereas non-expressive illocutionary attitudinal content are speech context-indexed just in the sense of being SPKR-oriented and time-locked to matrix speech time. True miratives, exclamation intonation, as well as Kaplannian expressives such as *oops* belong to the former class, whereas English emotives belong to the latter class[7].

The distinction between these two classes of content is *not* the distinction between illocutionary vs. non-illocutionary content; both are illocutionary. In the Murray-Rett line of work, illocutionariness is diagnosed primarily by Moore's-Paradoxical behavior. The content that is targeted by Moore's Paradox has two properties: it is by nature attitudinal and SPKR-oriented (because sincerity conditions are about the SPKR's mental states), and it is immediately conveyed upon, and as part of, the speech act. Both expressives of attitude and non-expressive illocutionary attitudinal content display these properties: in the same way that saying *Unfortunately, Jane lost the race, but I am not disappointed that she did* induces a Moore's Paradox, saying *Oops—but I'm not caught off guard that I dropped the vase* also induces a Moore's Paradox. In both cases, it can be said that the SPKR's holding the relevant attitude constitutes a sincerity condition for the speech act.

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[7]Interestingly, Rett (2021b: p. 306) does draw an explicit, though "loose," parallel between her emotive content and Kaplan's expressive content. The context in which she draws this parallel makes it clear, however, that for her this parallel only need go so far as being attitudinal, SPKR-oriented and speech context-immediate. Thus, she eventually does not make enough distinction to recognize an expressive vs. non-expressive difference *within* emotive content

I tentatively suggest a reflex of the distinction between expressive and non-expressive attitudinal content that may be used as diagnostics to differentiate the two types. I call this test the POST-DELIBERATION REPETITION test. In it, the SPKR utters the original sentence containing illocutionary attitudinal content, goes through a explicit period of deliberation which mitigates (though does not completely dispel) the attitude, and then repeats the sentence, all in succession. The prediction is that, barring retrospective-empathetic uses, expressives of attitude cannot be repeated post-composure, whereas non-expressives can. (93) illustrates this contrast with English exclamations (expressive) and emotive *alas* (non-expressive).

(93) Expressive vs. non-expressive illocutionary attitudinal content: the post-deliberation repetition test

a. [Believing that England would have won the match against Italy earlier today because I am an England fan, I go on to check my sports news source and see that it actually lost in the penalty shoot-out, which I am momentarily surprised by. Then I am reminded of the fact that England always loses in penalty shoot-outs, which makes this outcome feel less outrageous.]
(Gosh,) England lost! (—They went to penalty shoot-outs again. Well, ok, that makes sense. They never win shoot-outs.) [Turns to friend who just came in] # (Gosh,) England lost!

b. [Believing that England would have won the match against Italy earlier today because I am an England fan, I go on to check my sports news source and see that England actually lost in the penalty shoot-out, which I find very disappointing in the moment. Then I am reminded of the fact that England always loses in penalty shoot-outs, which makes this outcome feel less disappointing.]
Alas, England lost. (—They went to penalty shoot-outs again. Well, ok, that makes sense. They never win shoot-outs.) [Turns to friend who just came in] ✓ Alas, Eng-

land lost.

The crucial intuition behind this test is that expressives must index a speech context-immediate cognitive experience episode on the SPKR's part, whereas non-expressives need not. Deliberation is a process which by nature distances the SPKR's mental state from the moment of the episode, thus rendering expressives infelicitous. The reason why miratives have a strong tendency belong to the expressive category of illocutionary attitudinal content is that mirative attitudes are generated through a short but intense and recognizable cognitive experience episode, more so than most other attitudes. Therefore, it is much more likely for languages to have mirative markers which are expressive[8].

The precise target range of this test and its applicability to miratives of other attitude flavors and contents will need to be worked out in more detail. However, if the intuition is correct that the expressive vs. non-expressive distinction among illocutionary content is real, then there is a deeper explanation for why mirative markers like SHW *yikaon* do not scope sub-sententially: being expressive, they are intrinsically tied with the performance of the root speech act. They are also inherently unable to be embedded in inherently deliberative environments, such as conditional antecedents and modals.

5.5.2 Attitudinal content(s) in interrogatives

A second difference between the SHW mirative and English emotives is the derivation of their attitudinal content, in particular, in interrogatives. Whereas *yikaon*'s felicity patterns with *wh-* and polar questions clearly points to the general characterization that its mirative content is

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[8]There are, of course, mirative markers (in the sense of encoding a mirative-range attitude) which are not expressive—or in fact may be anti-expressive. English *it turns out* is one such case: it is intuitively much more felicitous to utter *England lost, it turns out* with some distancing from the moment of realization, than right in that moment. In general, one would expect some correlation between the flavor of the attitude and the likelihood that illocutionary exponents of it is expressive or non-expressive, but such correlation is most likely not categorical.

the (contextually supported) informative content of the prejacent, derivable via the union-of-alternatives operation, English emotives target a subtly, but clearly different, sort of attitudinal content.

According to Rett ([2021b]), in *wh*-interrogatives, English emotives target the *existential presupposition* of the prejacent[9] , wheras in polar interrogatives, they target (the alternative that corresponds to) the polar interrogative radical. This is shown respectively in ([94]) and ([95]).

(94) a. Alas/Unfortunately, who got kicked out of the program?

   =SPKR is regretful/disappointed that *someone* got kicked out of the program.

   b. When did the doctor's office close, unfortunately?

   =SPKR is disappointed that the doctor's office closed *at some point.*   ex.32

(95) a. ?Alas/Unfortunately, did Jane get kicked out of the program?

   b. Did Jane get kicked out of the program, alas/?unfortunately?

   =SPKR is dismayed/disappointed that *Jane got kicked out of the program.*   ex.33

In *wh*-questions, the attitudinal content of English emotives is identical to that of *yikaon*: one way to model the existential presupposition of *wh*-questions *is* as the union of all the constituent alternatives. In fact, doing so introduces the additional benefit of the contextual supportedness, or *softness* in Abusch's term, of this presupposition. Though Rett does not specifically discuss this, the existential presupposition English emotives target in examples such as ([94]) *is* context-sensitive in the same way as seen with SHW *yikaon*. First, the set of alternatives

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[9]Here I maintain the terminological consistency in this chapter: I call the part of the sentence minus the emotive marker the ATTITUDINAL PREJACENT (cf. MIRATIVE PREJACENT), or simply the PREJACENT. Note that Rett ([2021b]: p. 319) has a particular use of the term "prejacent" (of a polar question):

   "I take a question's prejacent to correspond to the form of the question radical (Farkas, [2010]; Roelofsen and Farkas, [2015]; Roelofsen and van Gool, [2010]); these are the alternatives that function as propositional discourse references for anaphoric answer particles."

I refer to this part of the question as the RADICAL, which is in keeping with the Farkas-Roelofsen-Van Gool convention, and with my use of the term RADICAL throughout this chapter.

are contextually constrained: in (94b), for instance, the SPKR's disappointment is understood to be about the fact that the doctor's office closed *at some point within a set of salient times*, it being unrealistic that anyone should feel disappointment at a doctor's office being closed at *any* time whatsoever. Second, the particular sense of "presupposedness" displayed by the English examples is that of entailment by the Common Ground. Intuitively, both (94a) and (94b) are questions that are felicitously asked just in case the SPKR and the ADDR have both already committed to the fact that *someone* (from a salient set) got kicked out of the program, or that the doctor's office is closed *at some* (salient) *point*.

The difference lies in polar questions. For speakers that share Rett's judgment [10], English emotives can apply felicitously to polar questions to convey an attitude towards the alternative denoted by the radical. This alternative is intuitively already highly biased towards, if not already known, by the SPKR at the time of utterance: (95) would be felicitous in a context where the SPKR has just received evidence (either conclusive or suggestive) that Jane got kicked out of the program [11]. Thus, English emotives target information at the level of *specific* alternatives, whereas *yikaon* necessarily targets informative content of the *entire* set of alternatives.

The fact that English emotives appear to target different *sort*s of propositions across question types (existential presupposition in *wh*-questions, the radical-denoted alternative in polar questions) means that English emotives deviates from the informative-content-of-Hamblin-alternatives pattern seen in SHW, and as such are not amenable to that unifying analysis. For Rett, ad-hoc interrogative mood operators are necessary: in her denotation of the polar interrogative mood operator **PQ** (87b), overt reference needs to be made to the "bias or high-

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[10]It is at least possible that Rett's judgments are not universally shared. Murray (p.c.) finds the use of both *alas* and *unfortunately* in polar questions somewhat problematic; AnderBois (p.c.) accepts the judgments on *unfortunately*, but cannot comment on *alas*, observing that this word is not in the lexicon of certain contemporary American English speakers.

[11]The paraphrases of the attitudes conveyed by *alas* and *unfortunately* in terms of attitude predicates (roughly, *be.dismayed.that* and *be.disappointed.that*) are factive. I am not sure whether the same level of factivity holds for the prejacent of *alas* and *unfortunately*: to me it is not necessary that (95) should be rhetorical or quiz questions (where the SPKR already knows which alternative is true), but such questions could also be felicitous when the SPKR has a strong bias towards the alternative corresponding to the radical.

lighted alternative" (the radical-denoted alternative). She does not explicitly formulate a *wh-*interrogative mood operator, but does state that the existential presupposition must be the content of the attitude.

This empirical difference in attitudinal content between the SHW mirative and English emotive markers provides cause to expand Rett's general proposal of the defining semantic features of her EMOTIVE CONTENT. In its current form, emotive content across different languages and attitude flavors is expected to "range over a single (salient) proposition." In Rett's view:

> The characterization of emotive markers in (91a) accounts for the fact that emotive markers do not scope over a question (like utterance modifiers do), or participate in interrogative flip (like evidential adverbs do). It also accounts for their incompatibility with any sentence that cannot be associated with a single salient proposition... This definition predicts that emotive markers are not compatible with a (matrix) question or imperative... This aspect of the account is not, I believe, stipulative: other aspects of natural language suggest that it is not possible to express an emotive attitude towards a set of propositions or anything non-propositional. As I have argued, emotive markers implicitly encode (i.e. in not-at-issue content) the speaker's emotive propositional attitudes. The explicit equivalents cannot take question complements, as demonstrated below; given the parallel behavior of emotive markers, this seems like a semantic rather than a syntactic prohibition.

(96)   a.   *Has Jane arrived on time, which disappointed me?

       b.   *Who won the race, which surprised me / which I hadn't expected?   (p.332-3)

The SHW mirative case complicates this set of claims. Most importantly, the fact that an emotive maker *can* scope over a question (or other alternatives-denoting element), shows that there *is* a theoretically principled way in which a propositional attitude can be directed towards

("range over") a *set* of propositions—namely, to the informative content in that set. Of course, there is a sense that Rett's generalization must be correct: a propositional attitude's immediate semantic argument can only be propositional. However, this single-proposition argument need not be directly encoded in the linguistic form of the emotive marker's prejacent; it can be derived via semantically meaningful operations. Generally speaking, attitudinal (mirative or otherwise) contents vary cross-linguistically, as exemplified by the three-way typological picture emerging from our study of mirative contents across languages. There is thus no principled constraint in natural language that "it is not possible to express an emotive attitude towards a set of propositions or anything non-propositional"; rather, where the attitudinal content is not a single proposition, the constraint is, properly speaking, on the ways in which such attitudes can be meaningfully predicated upon the non-single-proposition content in question.

In fact, there is reason to believe that the SHW pattern of an attitude-towards-set emotive marker is not unique. Zhuang and Ótott-Kovács (2022) have demonstrated for the Turkish "double -*mIş*" construction that the second -*mIş* is a synchronically distinct, speech act-level marker of an emotive attitude, namely, an attitude of incredulity, roughly paraphrased as "SPKR finds it ridiculous that p." (The inner -*mIş* is the reportative indirect evidential.) (97) shows an example of this construction in the declarative.

(97) Turkish incredulity -*mIş* in the declarative

[Gökçen told Merve that the school is going to reopen on Monday. **Merve thinks that this information is ridiculous.** Merve says to her mother:] *I just talked to Gökçen...*

Okul   Pazartesi   günü   aç-ıl-acak-mış-**mış**.

school   Monday   day   open-PASS-PRSP-REP-**INCRED**

'The school is going to reopen on Monday (I heard it from someone, **but I think it's ridiculous**).'

Crucially, the incredulity-attitudinal -*mIş* can also occur in questions; its interpretation di-

rectly parallels that of SHW *yikaon* in terms of being directed towards the *set* of alternatives, rather than a specific alternative. This is shown in (98).

(98) Turkish incredulity *-mIş* in interrogatives: attitude towards *set* of alternatives

[Gökçen told Merve that the school is going to reopen on Monday. Merve's brother overheard Merve's conversation, but misses the date. **Merve's brother thinks that Gökçen is a liar** who is only pretending to know anything about the question of school reopening, and thus thinks any of Gökçen's claims on this question to be simply ridiculous. He asks Merve:]

Okul ne zaman aç-ıl-acak-mış-**mış**?

school what time open-PASS-PRSP-REP-**INCRED**

'(According to your second-hand report) When is the school going to reopen (**—and I would find either answer to be ridiculous**)?'

Here, the sense evoked is also that the SPKR's attitude of incredulity is directed towards all of the alternative answers. Though Zhuang & Ótott-Kovács do not explicitly analyze the attitudinal content of the incredulity *-mIş* as the *union* of all alternatives, the interpretation in (98) is compatible with such an analysis: what the SPKR finds ridiculous in this context is "whichever information about the school-reopening issue is given by this untrustworthy source"; in other words, the attitude roughly of the form finds-ridiculous$_\text{SPKR}$($\bigcup$(p-according-to-Gökçen, $\neg p$-according-to-Gökçen)). The bottom line is that the attitudinal content of emotive markers being a set of propositions may well not just be an exception. More cross-linguistic research is needed to understand the extent of distribution and variation in the attitude-towards-set-of-alternatives interpretation, a program of which which SHW offers a starting point.

5.6 Conclusion

In this and the preceding chapter, I have investigated the semantics of mirativity from a second angle: MIRATIVE CONTENT. Guided by the MIRATIVE CONTENT QUESTION, I have summarized known cases of mirative markers across languages into two types of content: (single) propositional, and illocutionary. However, I have shown that this typology is incomplete: I have demonstrated that the mirative marker *yikaon* in SHW, which occurs in declaratives, *wh*-questions and a small subset of canonical polar questions, instantiates a third type of mirative content: *set*s of propositions which are Hamblinian alternatives, the informative content of which becomes the argument to the mirative attitude predicate. I have provided a unifying semantic analysis across all sentence types for this type of mirative marker, couched in terms of a Farkas and Bruce-style framework, whereby the mirative scopes above sentential mood operators (hence behaving like an utterance modifier) and contributes an attitudinal discourse commitment update to DC_{SPKR}. This analysis successfully and economically captures the distributional and interpretational properties of *yikaon*.

I have demonstrated a number of important implications of the SHW case. To semantic typology, SHW supports an updated three-way classification of miratives (or other illocutionary attitudinal markers) along the CONTENT dimension: single-propositional, set-derived propositional, and illocutionary. To the ongoing theoretical work on illocutionary attitudinal content, the SHW case offers two crucial insights. First, some illocutionary attitudinal markers may rigidly scope above sentential mood, and I tentatively suggest that such markers may correspond to an *expressive* sub-type of illocutionary attitudinal content, in contrast to a *non-expressive* subtype, represented by English *alas/unfortunately*, which arguably scope below sentential mood. Second, cross-linguistically, illocutionary attitudes can be directed towards ("range over") content that is not single propositions, and any theory of this domain of meaning will need to account for this variation in attitudinal content.

Part III

Diachronic issues:

how miratives develop from evidentials

EVIDENTIAL-MIRATIVE AFFINITIES

6.1 Introduction

In this and the next chapter, I turn to address an interesting and frequently observed empirical pattern, which I call EVIDENTIAL-MIRATIVE AFFINITY: many languages have dedicated mirative markers that are formally indistinguishable from ("homophonous"/"syncretized" with) certain evidential markers, most commonly, indirect evidentials (e.g. Turkish, Bulgarian, Paraguayan Guaraní), and reportative-like evidentials (e.g. Cheyenne, Shanghai Wu, Cantonese). Examples including the well-known indirect-evidential *-mIş* (99) from Turkish, and the narrative evidential-mirative *neho~hoo'o* (100) from Cheyenne illustrate this affinity: in these languages, the same element can have either evidential semantics, as in the (a) examples, or mirative semantics, as in the (b) examples.

(99) a. [I did not know how much money Kemal has. Then I see that he has just bought lots of expensive goods/Someone told me that Kemal does have a lot of money. I say to you:]

Kemal pul   var   **-mış**.   Turkish

K.   money exist **-INDIR**

'Kemal has money (I infer/heard).'

b. [I always thought that Kemal is of little means. Seeing that, contrary to my expectation, Kemal has a lot of money in his pocket, I say:]

Kemal pul   var   **-mış**!

K.   money exist **-MIR**

'Kemal has money (I didn't expect him to have money)!'

(Simeonova, 2015: exs. 6a, 5a, adapted)

(100) a. É-x-hoo'kȯhó-**neho**.   Cheyenne

3-REM.PST-rain-**NAR**.SG.INAN

'It rained long ago (it is told).'

b. É-x-hoo'kȯhó-**neho**!

3-REM.PST-rain-**NAR**.SG.INAN

'It's raining!'   (Rett and Murray, 2013: exs. 11a-b, repeated from (36)

Why do miratives display such an affinity towards evidentials? What is the nature of the connection between the two types of meaning? This will be the framing question for this and the next chapter.

(101) The EVIDENTIAL-MIRATIVE AFFINITY question:

What is the nature of the semantic connection between evidentiality and mirativity?

This question has long hovered in the background of the literature on mirativity: the initial proposal of the mirative typological category by DeLancey (1997) emerges out of his observation of the Turkish indirect evidential-mirative *-mIş* and collating its mirative meaning with other cross-linguistic elements also conveying mirative meanings. The focal point of the argument between later proponents (DeLancey, 2001, 2012; Aikhenvald, 2012; Hengeveld and Olbertz, 2012) and skeptics (Lazard, 1999; Friedman, 2012; Hill, 2012) of the mirative category has always also been evidential-miratives: in each case, should their semantic value be analyzed as mirative, or evidential? If the latter, is there enough evidence to give credence to mirativity as a standalone typological category at all? Inherent in these arguments is precisely the theoretical question over what the connection between certain evidentials and their mirative counterparts is.

However, existing work addressing the EVIDENTIAL-MIRATIVE AFFINITY question has been somewhat scattered. Typological studies of the evidential-mirative affinity (Aikhenvald, 2004:

§6), (Aikhenvald, 2012: §4.2), while compiling a wide range of cross-linguistic data and sometimes identifying intriguing meaning connections ("extensions") between certain evidentials and their mirative counterparts, often fall short of providing clear characterizations of their semantic value, relying instead on vague descriptive language. On the other hand, the handful of theoretically-oriented studies on the evidential-mirative affinity (e.g. Peterson, 2010b, 2016; Smirnova, 2013; Rett and Murray, 2013; Simeonova, 2015; Salanova and Carol, 2017), which have emerged over time, have typically focused on particular instances of evidential-miratives. As I review below, these studes offer insightful approaches to evidential-mirative affinities of specific types, though existing literature has not explicitly formulated or addressed the EVIDENTIAL-MIRATIVE AFFINITY question in a concerted way.

Such a concerted research program would require work on two fronts. On the empirical front, we need a more semantically informed typology of evidential-miratives across languages, rooted in robust, contextual diagnostics that tease apart potentially collinear semantic factors between evidential and mirative meaning. Such an augmented typology will then serve as the empirical basis for theorizing about the nature of evidential-mirative affinities. On the theoretical front, not only do we need a greater number of detailed studies on a larger collection of cross-linguistic cases of evidential-miratives, for each theoretical account developed in this way over particular cases, we need to be able to assess its explanatory range by evaluating it against the range of typological possibilities. Semantic typology and theory go hand in hand.

Thus, in this third part of this dissertation, I study the EVIDENTIAL-MIRATIVE AFFINITY question in two steps. In this chapter, I provide a semantically-informed typological review of the main types of evidential-miratives across languages (§6.2). Specifically, I classify evidential-miratives into three main types: indirect (§6.2.1), reportative (§6.2.2), and inferential (§6.2.3) evidential-miratives, making further distinctions within the latter between "deferred realization" inferentials and non-temporal inferentials. With this semantically informed classification, I make the case that there are multiple evidential-mirative affinities with

potentially rather different theoretical profiles. I then evaluate three existing schools of theories on the evidential-mirative affinity against this typology (§6.3), identifying their explanatory range within this typology of evidential-miratives.

In the next chapter, I will challenge a particular assumption that all three existing schools of theories make (the synchronicity assumption), arguing that for at least one type of evidential-miratives (reportative), the semantic affinity between the evidential and the mirative "counterparts" can be diachronic.

6.2 A classification of evidential-miratives

As with many other research questions on mirativity, the first point that must be acknowledged about the evidential-mirative affinity question is, empirical diversity. There are many instances and types of affinities between evidentiality and mirativity, and the full empirical landscape is indeed complex. Aikhenvald (2004: §6) shows in her data-rich typological survey that both the type of evidence encoded and the *system* of evidentiality marking in which the evidential-mirative in question occurs are apparent factors in what sort of mirative "extension" might occur.

Before diving into the typological details, I first address the question of criterion for distinction: how do we tell that the mirative "version" or "counterpart" of an evidential is semantically distinct enough that its connection with the evidential becomes a non-trivial pattern that calls for a theoretical explanation? I suggest that, aside from encoding a mirative-range attitude (whether cognitive or evaluative-emotive, see §3), the key criterion for identifying an evidential-mirative whose semantic distinction is non-trivial is an effect which I call EVIDENCE TYPE NEUTRALIZATION: the elimination of the evidence-type specification in the semantics of the evidential when used in a mirative context to convey a mirative attitude. Since evidence

type specification is by definition part of the conventional semantic value of the evidential marker, the fact that apparently the same marker may be used in violation of its literal meaning is the key fact to be explained.

Generally speaking, I summarize Aikhenvald's survey of evidential-mirative affinities into roughly three main types: indirect (INDIR), inferential (INFR), and reportative (REP) evidential-miratives. As I will show below, these different types of evidential-miratives display EVIDENCE TYPE NEUTRALIZATION in different ways. This diversity is what ultimately suggests that the theoretical profile of each type of evidential-miratives may be very different.

6.2.1 Indirect evidential-miratives

Indirect evidentials are a class of evidentials that encode what is variously described as "non-first-hand evidence" (Aikhenvald's own term), or evidence which "[the origo] *classifies as* external evidence—evidence that originates outside of the [origo]'s inner psychological world" (Smirnova, 2013: §3.3). The hallmark empirical property of INDIR evidentials is that they are compatible with either inferential evidence contexts or reportative evidence contexts; this dual-compatibility pattern has often been taken as definitive of the INDIR evidence type itself (though see discussion below). Cross-linguistically, it is very common for an indirect evidential to attest a mirative counterpart with the following properties: (i) it has an identical form with the evidential, and (ii) it nevertheless conveys a mirative attitude, rather than—and to the *exclusion* of—the indirect evidential meaning. (102) re-presents Simeonova's (2015) diagnostic examples of the INDIR evidential-mirative *-mIş* in Turkish and its analog *-l* in Bulgarian: whereas the evidential (102a) is only compatible with indirect evidence contexts (inferential or reportative), the mirative (102b) is felicitous in all regardless of evidence type.

(102)   Turkish and Bulgarian indirect evidential-miratives

(i)   DIRECT context: I see a lot of money in Kemal/Ivan's pocket.

(ii)   REPORTATIVE context: someone tells me that Kemal/Ivan had money.

(iii) INFERENTIAL context: I notice that Kemal/Ivan is buying expensive items.

a. Indirect evidential: #(i), ✓(ii), ✓(iii)

Kemal pul   var   -**mış**.   Turkish

K.   money exist -**INDIR**

'Kemal had money (I #saw / ✓heard / ✓inferred).'

Ivan ima   -**l**   pari.   Bulgarian

I.   have.PRES -**INDIR** money

'Ivan had money (I #saw / ✓heard / ✓inferred).'

b. Mirative: ✓(i), ✓(ii), ✓(iii)

Kemal pul   var   -**mış**!   Turkish

K.   money exist -**MIR**

'Kemal has money (I ✓saw / I ✓heard / I ✓inferred, but I didn't expect him to have any money)!'

Ivan ima   -**l**   pari!   Bulgarian

I.   have.PRES -**MIR** money

'Ivan has money (I ✓saw / I ✓heard / I ✓inferred, but I didn't expect him to have any money)!'   (Simeonova, 2015: exs. 5-7, adapted)

Indirect evidential-miratives are also commonly reported in the typological literature. Although minimally-differentiating contexts such as in (102) are often lacking, in some instances the data do reveal just the same pattern: the evidential counterpart restricted to INDIR evidence, the mirative counterpart without evidence-type restriction. (103-104) gives an example from Abkhaz (Northwest Caucasian, Georgia), cited in Aikhenvald (2004: §6.2) as an illustrative example of indirect evidential-miratives. The suffix *-zaap'*, as an evidential, is attested only in

indirect evidence contexts (103a-103b), while as a mirative it may be used either in indirect evidence (104a) or direct evidence (104b) contexts.

(103) Abkhaz *-zaap'*: indirect evidential   (Chirikba, 2003)

a. REPORTATIVE:

l-x°əč''ə   d-anə-l-ba-ø   a-c'°əwa-ra d-a-la+ga-**zaap'**

her-child him/her-when-(s)he-see-AOR:NFIN ART-cry-DN (s)he-it-begin-INDIR

'When she saw her child, she **reportedly** started crying.'   (ex. 2)

b. INFERENTIAL: [A giant observes (as an outside observer of the action) the battle of two protagonists, and then makes a tentative conclusion (about the goal of the action):]

ar+t   ø-nə-(a)j+ba-r-c'°a-wa-**zaap'**

these they-PREV-REC-CAUS-perish-PROG-INDIR

'They are **apparently** killing each other (=I **infer**).'   (ex. 4, adapted)

(104) Abkhaz *-zaap'*: mirative

a. INDIRECT evidence context: [The Prince of Abkhazia is visiting a peasant. The latter is entertaining the high guest with stories, while the prince sometimes asks about the details. Apparently they were speaking loudly, because the host's child started crying in its cradle. The prince is surprised, as he **was not aware** of the presence of the child (and infers it from the noise). He exclaims:]

sa+ra jə-s-ajha+bə-w   a-wa+j°-dəw-c'°q''a abra də-q'a-**zaap'**.

I   it-me-elder-PRES:STAT:NFIN ART-man-big-really here (s)he-be-MIR

'There is really a great person here who is more important than me (**it turns out, unexpectedly**)!'   (ex. 7, adapted)

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b. DIRECT evidence context: [A person, having met another character called Arsana after some time, is perplexed by the fact that Arsana's hair had turned grey. Though the person does not doubt the actual exactness of his observation, he expresses his surprise at this fact:]

arsana, wə-xə   ø-šla-**zaap'**, ž'əm.

A.   your-head it-grey-**MIR** INTERJ

'Arsana, you hair (lit. head) is **apparently** grey, man (I didn't expect it to be grey)!'

(ex. 8, adapted)

Many of the better-known indirect evidential-miratives are found within the territory of the former Ottoman Empire, and in particular in the Balkan Sprachbund. There is little doubt that contact with Turkish would have been a relevant factor in the areal prevalence of indirect evidential-miratives. However, it is worth noting that indirect evidential-miratives are commonly attested across linguistic areas, being found in languages such as Mapudungun (isolate, Chile, see Hasler Sandoval, 2012; Hasler Sandoval et al., 2020). In Mapudungun, the suffix *-rke* displays the familiar three-way interpretation: reportative (105a) or inferential (105b) evidential interpretations, and a mirative attitudinal interpretation (105c) which neutralizes the indirect evidence type restriction[1].

(105) a. Mapudungun *-rke*: reportative indirect evidential

Feymew rume lladkü-**rke**-y   ka   rume weñangkü-**rke**-y.

then   a.lot suffer-**INDIR**-IND.[3SG] CONJ a.lot sadness-**INDIR**-IND.[3SG]

'Then he was saddened and suffered a lot (**they say**).'

b. Mapudungun *-rke*: inferential indirect evidential

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[1]Earlier work by Zúñiga (ms) identifies only the reportative evidential interpretation of *-rke*, alongside its mirative interpretation. This now appears to be an incomplete charaterization in light of . Thanks to Scott AnderBois for bringing these more recent works to my attention.

rupa-**rke**-y   kiñe koneku tüfa mew.

pass.here-**INDIR**-IND.[3SG] a   rabbit   DEM PPOS

'A rabbit passed through here (**I infer** it because I see rabbit droppings on the path).'

c.   Mapudungun -*rke*: mirative

wiño-me-**rke**-y   ta   Andrea.

return-DIR-MIR-IND.[3SG] DET A.

'Andrea returned (earlier than we were expecting).'

<div align="right">Hasler Sandoval et al. (2020: exs. 12-14)</div>

We thus see that this first type of affinity—between INDIR evidentials and their mirative counterparts—exhibits EVIDENCE TYPE NEUTRALIZATION. An adequate theory of INDIRECT evidential-miratives must be able to account for this effect. Is it that the evidential and the mirative have different semantic values, and some additional process or mechanism gets the mirative semantics from the INDIR evidential semantics? Or are what have been called the "evidential" and the "mirative" in fact the same element, with the same semantic value, which happens to be compatible with indirect evidence contexts in one condition, but with non-indirect evidence contexts in a different condition?

This question about the nature of what I and many other linguists conventionally call "indirect" evidential has been recurrently grappled with, by both typologists and formal semanticists. In the typological literature, debate over this essentially semantic question manifests itself in terms of an argument over the proper label. The term "indirect evidence" is mainly due to Slobin and Aksu (1982), the first descriptive study and (non-formal) semantic analysis of Turkish -*mIş*. They are the first to regularize the use of phrases such as "indirect experience"/"learned indirectly" to describe the evidential flavor that subsumes inference and hearsay (as both are "indirect" ways of coming to awareness of a fact, as opposed to e.g. direct sensory witnessing). Under this sort of descriptive characterization, the mirative counterpart

of an indirect evidential like *-mIş* must receive a separate explanation: why is it able to neutralize the indirect evidence type? For this reason, some typologists have rejected the "indirect experience" characterization of evidentials of the Turkish *-mIş* type. One alternative label is "non-first-hand knowledge," which is preferred by Aikhenvald. This label evokes another descriptive characterization, proposed by Slobin and Aksu (1982) in the concluding section: instead of "indirect evidence," they tentatively suggest "no premonitory awareness" and "unprepared mind" as descriptions that may unify both the indirect evidential and the mirative usage. The rough idea is that indirect experiences (inference, hearsay) and mirative experiences may be characterized by someone's mind not having "premonitory consciousness of the event in question," and thus "the speaker feels distanced from the situation he is describing." "Non-first-hand" would signal that the knowledge did not come from first-person consciousness, but from awareness of an external circumstance. Another label proposed along similar lines of thought is "mediative" (Lazard, 1999), signaling that the utterance is not "immediate statements but statements *mediated* by (unspecified) references to the evidence," presumably evidence from somewhere outside the speaker.[2]

For semanticists, one may well look beyond this superficial squabble over labels. However, the takeaway point is precisely this: the EVIDENCE TYPE NEUTRALIZATION effect is central to distinguishing the mirative "counterpart" from the indirect evidential, and this effect requires an explanation. As I will review in §6.3, existing theoretical accounts on indirect evidential-miratives grapple with the very same question.

6.2.2 Reportative evidential-miratives

Reportative (and reportative-like) evidentials represent a second class of evidential-mirative affinities. I follow the stricter terminological convention in using the term "reportative" to

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[2]Another label used by Johanson (2000, 2003) is "indirective," a label which does not seem to have a explicit rationale apart from being differentiated from "indirect evidence."

refer specifically to hearsay evidence which come from actual speech reports, and the term "reportative-like" to more loosely encapsulate other hearsay evidence types, such as from impersonal narratives (e.g. the Cheyenne example below). In general, this distinction is not pertinent to the affinity between this class of evidentials and mirativity, and thus I will call all such evidential-miratives "reportative (REP) evidential-miratives."

Like INDIR evidential-miratives, the typical pattern of REP is also one of EVIDENCE TYPE NEU-TRALIZATION: one version of ostensibly the same linguistic element specifically encodes that the origo has reportative-like evidence for the prejacent proposition, while another version of that element conveys instead that the origo (or the SPKR) has a mirative attitude towards the prejacent proposition *without* any restriction on the type of evidence she has.

The Cheyenne examples (106), repeated from (100), illustrate this class of evidential-miratives. Rett and Murray (2013) (based on Murray, 2010) show that the "narrative" evidential, which "is typically only used in legends and folktales, co-occurring with the remote past tense" (ibid.: p. 23), attests a mirative version which clearly does not specify narrative evidence, and is in fact used with the present tense.

(106) a. Cheyenne *neho*: narrative evidential

        É-x-hoo'-kóhó-**neho.**

        3-REM.PST-rain-**NAR.SG.INAN**

        'It rained long ago (**it is told**).'   ex. 11a

    b. Cheyenne *neho*: mirative:

        É-hoo'-kóhó-**neho**!

        3-rain-**MIR.SG.INAN**

        'It's raining (**I didn't expect that**)!'   ex. 11b

Another example from Western Apache (Southern Athabaskan, Arizona, de Reuse, 2003),

cited in Aikhenvald's survey, has exactly parallel patterns. The narrative reportative[3] evidential *lę́k'eh* has one version, shown in (107), which is obligatorily used in every sentence that is part of a narrative. However, another version of *lę́k'eh* conveys not narrative evidentiality, but a (novelty and/or counterexpectational) mirative attitude regardless of evidence type. This is shown by (107a). Revealingly, the author shows that mirative *lę́k'eh* in these sentences are compatible with essentially all evidence types: (107b) is uttered in either a reportative or an inferential evidence context, while (107c) is uttered in a direct perceptual evidence context.

(107)   a.   Western Apache *lę́k'eh*: narrative evidential

        [The first sentence of the story *The Tale of Peter Rabbit* by Beatrix Potter:]

        Łah   jı̨̄ı̨̄,   gah   dı̨̄ı̨̄'i dagólı̨̄ı̨̄   **lę́k'eh**.

        some day rabbit four 3PL.IMPFV.live NARR

        'Once upon a time there were four rabbits (**it is said**).'   (de Reuse, 2003: ex. 11)

     b.   Western Apache *lę́k'eh*: mirative, with indirect evidence

        [I lost my memory and did not recall being at the store. Later, someone tells me/I infer that I was at the store. I say:]

        Yáhwą̄hyú nashāā   **lę́k'eh**.

        store=at   1SG.IMPFV.be.around MIR

        'I was at the store (**it turns out**).'   (ibid.: ex. 16, adapted)

     c.   Western Apache *lę́k'eh*: mirative, with direct evidence

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[3]de Reuse terms the narrative reportative "quotative," though the evidential examples she adduces generally involve narrative contexts. I assume for the purposes of this illustration that the W. Apache "narrative" reportative evidential is in a rough sense comparable to e.g. the Cheyenne one.

[On our way from a dance, we became very tired and spent the night on a spot in the dark, not knowing where we were sleeping. Being bothered through the night by something touching us, we left before sunrise. After dawn, when we look back, we see that the place we were sleeping at was a graveyard. I say:]

Áí n'í nanezna' łeshijēēdyú nohwiheską̄ą̄ **lę́k'eh**!

'We had slept in a graveyard (**it turns out**)!'   (de Reuse, 2003: ex. 14, adapted)

Aside from narrative evidentials, ordinary reportative evidentials also attest the same affinity with mirativity. Two examples are shown here. In contemporary (spoken) Korean, a reportative evidential *-ta* has developed (from its erstwhile complementizer meaning). This reportative evidential meaning is shown by examples such as (108a). Note that this reportative evidential usually combines with additional sentential mood markers (e.g. *-nun* 'VERUM' in (108a)), which independently express various attitudinal meanings on the part of the SPKR. Interestingly, with certain other sentential mood markers, such as *-myense* (literally 'even though,' a discourse particle that usually elicits a confirmatory response from the ADDR), *-ta* attests a meaning whereby its reportative evidential value is entirely neutralized, instead giving rise to an attitudinal meaning akin to mirativity. As shown in (108b), the information in the prejacent (that the ADDR is cold) is not based on any reportative evidence, since the SPKR in fact witnesses it herself. Rather, *-ta* in this case conveys that the SPKR is surprised (and also a a bit exasperated) at the coldness that the ADDR continues to expose herself to.

(108) a.   Korean *-ta*: reportative evidential

Mary-ka   aphu-**ta**-nun.

Mary-NOM be.sick-REP-VERUM

'Mary is sick (**I hear** that it is indeed the case; I don't know about it personally).'

(Ahn and Yap, 2015: ex. 1c, adapted)

b.   Korean *-ta*: mirative

[I have just offered you a ride in my car because it is cold. You hesitate to get in, and I see that you are wasting time and further exposing yourself to the cold weather. I say:]

ellun   tha!   chwup-**ta**-myense?!

quickly get.on cold-**MIR**-CONFRM

'Get in quickly! You are cold (**I presently perceive**)—isn't that right?!'

<div align="right">(Ahn and Yap, 2015: ex. 29, slightly adapted)</div>

The Shanghai Wu counterexpectational mirative marker *yikaon*, which I studied in depth in §4, is in fact also an instance of the reportative evidential-mirative affinity. In SHW, mirative *yikaon*, a sentence-final mood particle, has a counterpart *yi kaon* '(s)he says/said,' shown in (109). This element, occurring in the same sentence-final position as mirative *yikaon*, is a speech report parenthetical, parallel to the English translation "*p*, s/he says."

(109) a. Shanghai Wu *yi kaon*: speech act parenthetical

lahlah loh yu, **yi   kaon**.

辣辣 落 雨 , 渠 講。

PROG   fall rain **3SG say**

'It's raining, **s/he said**.'

b. Shanghai Wu *yikaon*: mirative

lahlah loh yu **yikaon**.

辣辣 落 雨 渠講。

PROG   fall rain **MIR**

'Gosh, it's raining (**I had not expected it to be raining**).'

It is important to note that speech report parentheticals such as *yi kaon* are distinct from "pure" reportative evidentials in a number of important ways. As far as the original speech

report occasion is concerned, speech report parentheticals typically encode eventive meaning (see esp. Bary and Maier, 2021) as opposed to non-eventive, source type-only evidential meaning encoded by reportative evidentials. Speech report parentheticals can contain genuinely anaphoric elements, such as the 3SG pronoun *yi* in the SHW case, whereas reportative evidentials are usually not anaphoric. On the other hand, speech report parentheticals and reportative evidentials pattern together in that both contribute a certain kind of report-based evidential meaning, viz. by encoding, as not-at-issue content (Murray, 2010, 2017; Simons, 2007; Hunter, 2016; Bary and Maier, 2021), that the evidence holder has heard about the prejacent, at-issue proposition through a third-party report. Insofar as our goal is to explicate the diachronic connection between *this* type of meaning and mirative meaning, we may be justified in suspending the eventive vs. non-eventive distinction until further empirical data suggest otherwise[4]. In the remainder of this part, I will indistinctly refer to the meaning contribution of the speech report parenthetical *yi kaon* as reportative evidential.

In §7 I will return to treat the Shanghai Wu case in much greater detail, as the key empirical case for my proposal that the reportative evidential-mirative affinity can be an instance of diachronic semantic reanalysis.

6.2.3 Inferential evidential-miratives

Inferential evidentials always involve two pieces of information: the scope proposition itself, and the information which serves as inferential evidence for that scope proposition. The two pieces of information must stand in a particular relation: there must be some sort of gap or *removal* between the evidence and the scope proposition, in order for an act of inferring to

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[4]Scott AnderBois (p.c.) suggests that it may be possible that, with the presence of eventivity and potential for an explicitly allocentric (non-first-person) attribution of the report, speech report parentheticals may instantiate a different range of potential diachronic connection to mirative meanings than reportative evidentials. I am open to this line of inquiry: it would be interesting to see how cases of non-parenthetical, genuine reportative evidential-turned miratives differ from speech report parenthetical-turned miratives, both in terms of synchronic attitudinal flavor, and in terms of diachronic mechanisms of semantic reanalysis.

occur.

This feature of inferential evidentials results in a more complex empirical landscape over the precise nature of the inferential evidential meaning. This is because there are now two potential parameters of variation: (i) TYPE OF REMOVAL: the kind of informational gap between the evidence and the scope proposition inferred from it, and (ii) SOURCE OF EVIDENCE: the source from which the evidence itself arises.

Consider the following schematic example. To assert the proposition "John left today-INFR," the SPKR may have as inferential evidence the proposition (110a) or (110b) or (110c). Each of the evidence propositions stands in a different removal relation to the scope proposition: (110c) inferentially supports (110) because it evidences the temporal *post*-state of John's having left today, from which the SPKR infers "John left today"; (110b) inferentially supports (110) because it evidences the event of John's leaving as it happened, and (110c) inferentially supports (110) because it evidences the temporally-prior cause of John's leaving. This is the TYPE OF REMOVAL parameter of inferential evidentiality.

(110)   Scope proposition: *John left today*.

    a.   Inferential evidence 1 (post-state): *John's office is empty.*

    b.   Inferential evidence 2 (course of event): *John boarded a train this morning.*

    c.   Inferential evidence 3 (temporally-prior cause): *The boss assigned John to go on a business trip two days ago.*

The SOURCE OF EVIDENCE parameter is independent from TYPE OF REMOVAL: it concerns how the evidence itself is known. For instance, the SPKR may have come to know (110a) by directly seeing the empty office, or (110b) by directly catching sight of John boarding the train at the station, or (110c) by being present at the same meeting at which the boss pronounced the assignment. In these cases, the source of the evidence would be direct perception. There can be

other sources of the evidence: the SPKR could have known any of (110a-110c) through (credible) reports, or another inference, or general world knowledge/common sense, etc.

Existing literature that uses the term "inferential evidence" has not been explicit about these semantic distinctions inherent in the inferentiality of these evidential-miratives, but knowing the precise nature of inferentiality is crucial for understanding the affnities between inferential evidentials and mirativity. As I show below, inferential evidentials with different TYPE OF REMOVALs and SOURCEs OF EVIDENCE have different patterns of EVIDENCE TYPE NEU-TRALIZATION. In particular, I discuss two inferential evidential subtypes which have been de-scriptively associated with mirativity: "deferred realization" inferential evidentials, and non-temporal inferential evidentials. Ultimately, the different semantic values under the same la-bel of "inferential evidentiality" may well display different affinities with mirativity, and thus require different accounts.

"Deferred realization" inferentials. The first type, sometimes called "deferred realization" evidentials, involves a particular TYPE OF REMOVAL, namely, the evidence is *temporally* removed from the scope proposition, specifically by being in the *post*-state of the eventuality described by the scope proposition. Though it is conceptually possible for deferred realization eviden-tials to have different SOURCEs OF EVIDENCE, the most commonly attested instances of such evidentials all involve directly-perceived evidence. Thus, in discussing the examples below I will treat SOURCE OF EVIDENCE as a constant.

In Qiang (Sino-Tibetan, Western China), the verbal suffix -*k* is a deferred realization, inference-from-direct-perception evidential: it encodes that the origo infers the scope propo-sition ("it has rained") from directly perceiving just the post-state of the eventuality (the wet ground), as shown by (111a). The same utterance containing -*k* can also be used in a mirative context where the origo has presently discovered, through direct perception, that it is *currently* raining. This is shown in (111b).

(111)   a.   Qiang -*k*: inference-from-direct-perception evidential

[I see that the ground is wet, through which I infer it has rained. I say:]

me:ꜝ de-ɕi-**k**-wɑ.

rain   DIR-release-**INFR**$_{\text{DIR}}$-EMPH

'It has rained (I infer from seeing the post-state=wet ground).'

b.   Qiang -*k*: mirative

[I didn't know what the weather is like, and I just discover that it's raining by seeing it. I say:]

me:ꜝ de-ɕi-**k**-wɑ!

rain   DIR-release-**MIR**-EMPH

'It's raining (I presently realize through seeing it)!'

(LaPolla and C. Huang, 2008: ex. 4.229a)

In the Qiang case, the evidential encodes direct SOURCE OF EVIDENCE and a post-state TYPE OF REMOVAL, whereby the evidence be the post-state of the eventuality described by the scope proposition. The mirative counterpart in Qiang does *not* neutralize the SOURCE OF EVIDENCE restriction: in (111b), it is still through direct perception that the SPKR comes to know the evidence. What is remarkable is that the mirative neutralizes the TYPE OF REMOVAL restriction: in (111b), what the SPKR has evidence for is the ongoing eventuality itself ("it *is raining*"), rather than the post-state (wet ground), as in the evidential, from which the SPKR must make an inference to get to the scope proposition ("it has rained"). Empirically, this amounts to an effect of neutralization of just the *inferentiality* of the original "deferred realization" evidential (but not of the SOURCE OF EVIDENCE restriction to direct perception), with the result that the mirative, unlike the evidential, becomes compatible with contexts with direct perception of *the scope proposition itself*. That is, because the TYPE OF REMOVAL restriction is neutralized in the mirative, realization is no longer temporally "deferred."

Some "deferred realization" inferential evidential-miratives do not neutralize either SOURCE OF EVIDENCE or TYPE OF REMOVAL, thus constituting a point of cross-linguistic variation. In Lhasa Tibetan (Sino-Tibetan, Tibet & diaspora), for instance, the evidential *bzhag* is also a "deferred realization" evidential (Caplow, 2017, also Hill, 2017): in (112a), *bzhag* encodes that the origo infers that "it rained" through directly perceiving the post-state. However, as a mirative, *bzhag* is only felicitous in a context in which the SPKR has direct perception of the *post-state* (and not the course of the eventuality itself), from which she infers the scope proposition "it rained." This is shown in (112b).

(112)   a.   Lhasa Tibetan *bzhag*: inference-from-direct-perception evidential

[I see that the ground is wet, through which I infer it has rained. I say:]

char.pa   btang   bzhag.

rain   release   INFR_{DIR}

'It rained (I infer from seeing the post-state=wet ground).'

b.   Lhasa Tibetan *bzhag*: mirative

[I didn't know what the weather has been like. Walking out, I suddenly see {✓ that the ground is wet, through which I infer it rained / # that it is raining right now}. I say:]

char.pa   btang   bzhag!

rain   release   INFR_{DIR}

'It rained (I presently realize through inference from seeing {✓ the post-state=wet ground / # the ongoing eventuality})!'

Thus, in summarizing the EVIDENCE TYPE NEUTRALIZATION pattern of "deferred realization" inferential evidential-miratives, it is necessary to separate SOURCE OF EVIDENCE and TYPE OF REMOVAL: the former is not neutralized; the latter is neutralized in some cases, but not in others. When TYPE OF REMOVAL is neutralized, the resulting mirative essentially encodes a mi-

rative attitude over directly-perceived information, without any inferentiality. When TYPE OF REMOVAL is not neutralized, inferentiality is preserved, and thus the mirative attitude consists (at least in part) in the coming-to-know of the proposition through inference.

Non-temporal inferentials. The second type of inferential evidential-miratives does not specify a particular TYPE OF REMOVAL between it and the scope proposition. Since the attested TYPES OF REMOVAL are all temporal in nature, I call this class of inferentials "non-temporal" inferentials. In other words, the evidence may be before, during, or after the eventuality described by the scope proposition, as long as it does not constitute direct evidence for the scope proposition, i.e. as long as there is still an inferring act from the evidence to the scope proposition.

An example of this comes from Gitksan (Tsimshianic, Northwestern USA, Peterson, 2010a). In Gitksan, the inference-from-direct-perception evidential *ṅakw=* encodes that the origo infers the scope proposition from something that the origo sees (or saw). Unlike the "deferred realization" inference-from-direct-perception evidentials in the previous section, here the direct perceptual evidence can temporally succeed (113a), be concurrent with (113b), or precede (113c), the eventuality described by the scope proposition. In particular, if this direct perceptual evidence is concurrent, it cannot be direct evidence for the scope proposition (114): a layer of logical removal, to be overcome by an act of inference, is required. In other words, the inferential evidence type restriction must be observed, regardless of the temporal relation between directly perceived evidence and the scope proposition.

(113)   Gitksan *ṅakw=:* evidential, inference from direct perception

      a.   Direct perceptual evidence *succeeds* described eventuality

[I see there are tracks in the field that lead through a hole in the fence.]

ṅakw=hl   kuxw-(t)=hl   kyuwatan

INFR_{DIR}=CND   run.away-3SG=CND   horse

'The horse **must have** run away (I infer from seeing the post-state=hoof-tracks and damaged fence).'   ex. 2.75b, adapted

b.   Direct perceptual evidence is *concurrent* with described eventuality

[I touch my daughter's forehead and it is very hot.]

ṅakw=hl   siipxw-n

INFR_{DIR}=CND   sick=2SG

'You **must be** sick (I infer from directly perceiving it as it happens=hot forehead).'
                                             ex. 2.78c, adapted

c.   Direct perceptual evidence *precedes* described eventuality

[I hear some raindrops on the roof. There is a certain scent to the air that is associated with imminent rain.]

ṅakw=hl   yukw   tim   wis.

INFR_{DIR}=CND   PROG   FUT   rain

'It **must be** going to rain (I infer from directly perceiving its pre-state=droplets and scent).'   ex. 2.77b, adapted

(114)   Gitksan inferential evidential *ṅakw*=: concurrent direct perceptual evidence must be logically removed

[Upon pulling clothes off the line that have been in the sun all day, I touch the clothes, and say:]

\# **ṅakw**=hl   kwalkw

   INFR_{DIR}=CND dry

Intended: 'It **must be** dry (I infer from directly perceiving it).'

(Comment: "If you're touching it and it's dry, you would just say 'it's dry'.")

<div align="right">ex. 3.68b, adapted</div>

With non-temporal inferential evidentials such as Gitksan *ṅakw=*, their mirative counterpart does neutralize TYPE OF REMOVAL completely. That is, even in the case where the evidence is concurrent with the described eventuality, the erstwhile *evidential* requirement that there be some kind of removal between the two is eliminated; an act of inference is no longer required. The upshot is that the mirative counterpart, unlike the evidential, becomes compatible with direct perception of the scope proposition. On the other hand, the mirative does *not* neutralize SOURCE OF EVIDENCE.

This pattern is shown in (115) for Gitksan. Mirative *ṅakw=* is compatible (and commonly used) with contexts where the SPKR directly perceives the eventuality described by the scope proposition, thus eliminating the inferential evidence type restriction of the evidential counterpart which examples such as (114) clearly corroborate.

(115)   Gitksan mirative *ṅakw=* requires direct perception of evidence

      [Alvin's family is preparing a surprise birthday party for him. Gwen doesn't expect him home for another hour. However, in the middle of their preparations Alvin walks through the door. In this context Gwen exclaims:]

      ṅakw=hl   witxw=s   Alvin

      MIR=CND arrive=PND A.

      'Alvin is here (I presently realize by seeing it, but I didn't expect it)!'

<div align="right">(Peterson, 2017: ex. 16, adapted)</div>

Thus, non-temporal inferential evidential-miratives of the Gitksan type pattern with "deferred realization" inferential evidential-miratives of the Qiang type: in the mirative, SOURCE OF EVIDENCE restrictions remain, but TYPE OF REMOVAL restrictions are completely neutralized, leading to compatibility with direct-perception, no-inference mirative contexts.

6.2.4 Interim summary: many affinities, different theoretical profiles

In this section, I have reviewed a wide range of attested instances of evidential-mirative affinities, providing a more fine-grained classification of these affinities based on (i) the type of evidential, and (ii) the pattern of EVIDENCE TYPE NEUTRALIZATION displayed by the mirative counterpart of each evidential-mirative. I summarizes these evidential-mirative affinities and their empirical properties in (116).

(116) a. Indirect evidential-mirative affinities: 1 parameter (NEUTRALIZATION)

NEUTRALIZATION	
mir. neutralizes evid.	mir. does not neutralize evid.
Turkish *-mIş*, Bulgarian *-l*, Abkhaz *-zaap'*, Mapudungun *-rke*...	⟨unattested so far⟩

b. Reportative evidential-mirative affinities: 1 parameter (NEUTRALIZATION)

NEUTRALIZATION	
mir. neutralizes evid.	mir. does not neutralize evid.
SHW *yikaon*, Korean *-ta*	⟨unattested so far⟩

c. Inferential evidential-mirative affinities: 3 parameters (TYPE OF REMOVAL, TYPE OF EVIDENCE, NEUTRALIZATION)

RMVL. TYPE EVID. TYPE	precedence	concurrence	succession
DIR	⟨unattested so far⟩	⟨unattested so far⟩	LTib. *bzhag* mir. neutralizes: ✓↔, # ↕ Qiang -*k* mir. neutralizes: ✓↔, ✓↕
		Gitksan *n̓akw=* mir. neutralizes: # ↕	
other	⟨unattested so far⟩		

↔: mirative neutralizes TYPE OF REMOVAL restriction (horizontal);

↕: mirative neutralizes EVIDENCE TYPE restriction (vertical).

What does this more comprehensive view of the empirical landscape suggest for theoretical work on the evidential-mirative affinity question? Most importantly, it suggests the comparative insight that all evidential-mirative affinities are not created equal; the theoretical character behind each type of affinity may well be very different.

To see this, consider the nature of inferential evidential-miratives. By necessity, an act of inference leads the origo from some proposition which she already knows (the evidence), to another proposition which she did not know and is only presently coming to know (the scope proposition). Thus, the moment when the origo comes to know the scope proposition is a moment in which the origo starts to hold a mirative attitude (specifically, novelty) towards the scope proposition. In this sense, inferential evidentiality can be said to have an innate affinity with mirativity. Precisely this innate affinity is borne out by the Lhasa Tibetan-type "deferred realization" inferential evidential-miratives, as inferentiality (and therefore a novelty mirative attitude at the time of inference) is *preserved* in the mirative as in the evidential. However, such is not the case with the Qiang-type or the Gitksan-type inferential evidential-miratives: there, all inferentiality is *neutralized* in the mirative, allowing for direct evidence for the scope

proposition in the mirative. Thus, this type of evidential-mirative affinity cannot be attributed to the nature of inferentiality, but must be due to some other mechanism. Affinities between indirect, and reportative, evidentials and their corresponding mirative meanings are likely due to still other mechanisms.

This fact of diversity of theoretical character has been vastly underappreciated in existing work on the evidential-mirative connection. As I will show in the next section, oftentimes an analysis of a particular type of evidential-mirative is proposed in a way that appears to address mirativity in general. A large part of the problem is the lack of comprehensive, theoretically-informed typological studies of mirativity and related phenomena, causing the generic labels "mirative" and "mirativity" to be applied to cases with very different, possibly incommensurable, semantic characters. We need a more informed set of terminology for the facts to be able to orient and evaluate theoretical accounts of the facts. Now that we have this set of terminology, I turn to review the merits of existing theories.

6.3   Three theories on evidential-mirative affinities

In this section, I review three schools of existing semantic theories which address the evidential-mirative affinity question: mirativity as Quantity-flouting implicature (Peterson, 2010a,b, 2013), mirativity as constraint on evidence acquisition time (Smirnova, 2013, a.o.), and mirativity as the equivalence of evidential and expectational base (Rett and Murray, 2013). These existings theories each address a different range of empirical types of evidential-mirative affinities, and thus differ significantly in their analytical approach. It isimportant to take stock of the scope and limitations of each.

6.3.1 Mirativity as Quantity-flouting implicature

In a series of studies on the Gitksan evidential system, Peterson (2010a,b, 2013) identifies the evidential *ṅakw=* as having a mirative counterpart, and proposes that the mirative meaning of *ṅakw=* is a conversational implicature resulting from flouting the Maxim of Quantity in using the evidential *ṅakw=*.

Recall that evidential *ṅakw=* marks non-temporal inference from direct perception: the speaker has direct perception of a state of a affairs, from which she infers the scope proposition. The mirative use of *ṅakw=* neutralizes inferentiality: it can be used in a direct perception context (117b), to convey that the newly perceived information is counterexpectational to the speaker.

(117) a. EVIDENTIAL context: The speaker has sensory evidence of John's presence (i.e. his pick-up in the driveway; you can hear loud music playing inside his house).

ṅakw=hl   witxw=t   John

EVID=CND arrive=PND John

'John must be here / Looks like John is here.'

b. MIRATIVE context: The speaker has sensory evidence (John is standing in the doorway; his pick-up in the driveway; you can hear loud music playing inside his house).

ṅakw=hl   witxw=t   John

EVID=CND arrive=PND John

'John's here! / Look who's here! / I see John's here!'

(Peterson, 2010a: exs. 5.59-60)

Thus, in this type of evidential-mirative affinity, the core explanandum is the neutralization of inferentiality (i.e. the TYPE OF REMOVAL restriction) by the mirative, but not the direct perception of evidence (the SOURCE OF EVIDENCE). Peterson's analysis of this neutralization of

the inferential evidential meaning is the following. The mirative meaning in (117b) is a conversational implicature, which overrides the literal inferential evidential semantics of *ńakw=*. Specifically, this implicature is an instance of flouting the Maxim of Quantity. Peterson assumes that propositions corresponding to the speaker's direct perception are assumed to be already in the Common Ground (a problematic assumption). Thus, in a mirative context like (117b), by marking the prejacent redundantly with the evidential and thereby indicating that the source of information is an inference based on direct perception), the speaker is flouting the Maxim of Quantity ("do not make your contribution more informative than necessary"). Thus, the speaker must be implicating that the prejacent was previously unknown and counterexpectational (a problematic conclusion).

(118) Analysis of the Gitksan evidential mirative as flouting of the Maxim of Quantity (Peterson, 2010a: ex. 5.63)

  (i) The information expressed by the proposition is relevant to the context, and the speaker has (sensory) evidence for the proposition's truth.
  (ii) A cooperative speaker generally does not make additional, redundant statements that all the discourse participants already pragmatically presuppose.
  (iii) The speaker must be conversationally implicating that they were previously unaware of this fact, and its discovery possibly counters their expectations.

Peterson's account embodies an interesting intuition, namely, that the EVIDENCE TYPE NEUTRALIZATION effect of mirativity is indicative of a radical "overriding" of the evidential semantics by a pragmatically-induced meaning—nothing short of flouting a maxim, in his view. Of course, there are certain costs to associating the generation of mirative meaning through maxim-flouting, a process which is by definition norm-defying. First, it is not clear that (i) is always the case: novel information acquired through direct perception by the speaker should automatically be added to the Common Ground. By definition, CG is updated by collaborative

acts of discourse participants accepting publicly asserted propositions. A proposition which has presently occurred to a person cannot be in any component of CG unless some discourse move has been performed with this proposition[5].

Even assuming (i), it is not clear how the flouting of Quantity by using an inference-from-direct-perception evidential across diverse instances mirative contexts should gives rise to a stable mirative implicature that the speaker was "previously unaware of this fact and its discovery possibly counters their expectations." Prior unawareness and counterexpectation do not transparently follow from overinformatively providing the evidence source for the prejacent. To put it plainly: if a deer present jumps out of nowhere into the shared visual field between you and me, it is not the case that my asserting "There's a deer, **I see**" (as opposed to "There's a deer") will always predictably implicate that I was previously unaware of there being a deer, or that there being a deer at this moment is counterexpectational to me. I could be implicating *something* by adding the parenthetical "I see" (e.g. that I had previously doubted that there would be any deer around this area), or I might not be implicating anything by it. If using *ńakw=* in a context where the SPKR directly perceives the scope proposition without inference is indeed an inference of Quantity flouting, there is no reason that the implicature will *necessarily* be a mirative attitude over the scope proposition.

Peterson's account does not straightforwardly extend to other evidential-mirative affinity types. For one, it would require direct perception of the scope proposition *and* that the scope proposition be somehow in the CG as necessary conditions for Quantity flouting. Neither indirect nor reportative evidential-miratives guarantee satisfaction of this conditions. Moreover, conversational implicatures are defeasible. We have seen examples that mirative-marked sentences are consistently incompatible with follow-ups that deny the mirative attitude, i.e. mirativity is not defeasible. Nevertheless, Peterson's intuition that certain evidentials may *conversationally implicate* SPKR-oriented attitudinal meaning is valuable, and will form an important

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[5]A similar objection has been made by Smirnova (2013: pp. 489–90), though the objection is mainly concerned with the theory's applicability to Bulgarian.

part of my analysis of reportative evidential-miratives in §7.

6.3.2 Mirativity as a constraint on evidence acquisition time

A second class of theoretical accounts primarily concerns indirect evidential-miratives, introduced in §6.2.1. These accounts hold that indirect evidential-miratives may be analyzed as specifying temporal relations between evaluation time and speech time on the one hand, and evaluation time and evidence acquisition time on the other hand.

The basic theoretical insight is the following. Both the evidential meaning and the cognitive-attitudinal part of the mirative meaning (i.e. the "coming-to-know" attitudinal dimension, *not* the evaluative/emotive attitudinal dimensions) are in fact derived from the same semantic value, which is that the cognitive agent (the SPKR, or the reportative source) acquires evidence for the scope proposition at Evidence Acquisition time (t_{EA}), and thereby comes to believe the scope proposition. Under this unifying semantics, the evidential and the mirative counterparts are distinguished by one temporal relation: the evidential counterpart is the subcase where Evidence Acquisition time t_{EA} is *prior* to Speech time t_{Sp} ($t_{EA} < t_{Sp}$), i.e. where the SPKR had acquired evidence for the described eventuality sometime before talking about it in the present, and therefore the SPKR may not be holding a cognitive mirative attitude at speech time. On the other hand, the mirative counterpart is crucially the subcase where Evidence Acquisition time t_{EA} is made to *coincide* with Speech time t_{Sp}, whether due to the effect of exclamation intonation or due to some independent constraint associated with the mirative context. In this case, because evidence acquisition is *at* Speech time, the coming-to-know of the scope proposition also occurs at speech time, i.e. the SPKR holds a cognitive mirative attitude towards the scope proposition at speech time.

I review Smirnova's (2013) account of the Bulgarian indirect evidential-mirative *-l* as a representative instance of this line of theory. I demonstrate how it accounts for the particular

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EVIDENCE TYPE NEUTRALIZATION pattern of indirect evidential-miratives, and also evaluate the extent of its empirical coverage.

Smirnova's (2013) account. Smirnova offers a well-constructed analysis which derives the indirect evidential and the mirative versions of the Bulgarian evidential-mirative from different temporal relations of evidence acquisition time t_{EA} in relation to evaluation time t_{Eval} (and further, to speech time t_{Sp}). The Bulgarian evidential-mirative *-l* is an instance of the indirect evidential-mirative affinity. Its defining feature is that the evidential counterpart specifies indirect (inferential or reportative) evidence for the scope proposition, whereas the mirative counterpart neutralizes this restriction, being also compatible with direct evidence. (119) repeats the illustrative examples (102) shown previously.

(119)   Bulgarian indirect evidential-mirative *-l* [repeated from (102)]

    a.   Indirect evidential:

        Ivan ima   **-l**   pari.

        I.   have.PRES **-INDIR** money

        'Ivan had money (I #saw / ✓ heard / ✓ inferred).'

    b.   Mirative:

        Ivan ima   **-l**   pari!

        I.   have.PRES **-MIR** money

        'Ivan has money (I ✓ saw / I ✓ heard / I ✓ inferred, but I didn't expect him to have any money)!'

First, Smirnova argues for a unified (modal) semantics of the indirect evidential and the mirative *-l*: both encode that some agent α has acquired (external) evidence at some $t_{EA} \leq t_{Sp}$ such that α believes at that moment t_{EA} that the scope proposition must be true. This semantic

value, along with its definedness condition, is shown in (120a), formalized in (120b).

(120)   a.   The meaning of the Bulgarian evidential construction ($\text{EV}(p)$)   (ex. 66, symbols adapted)

For any model M, assignment function g, times t_{Sp}, t_{Eval}, t_{EA}, worlds w, w', epistemic agent α, where α = SPKR in direct/inferential contexts, α = SRC in reportative contexts:

$[\![\text{EV}(p)]\!]^{M,g,t_{Sp},w}(w)(t_{Sp})$ is defined iff. the SPKR acquires evidence for p and classifies it as external evidence, where the external evidence subsumes reports, evidence-based inferences and direct perception of p.

If defined, $[\![\text{EV}(p)]\!]^{M,g,t_{Sp},w}(w)(t_{Sp}) = 1$ iff. there exists a time t_{EA}, located either before or at the evaluation time t_{Eval} in w, such that the SPKR acquires the external evidence for p at t_{EA}, and for all world time pairs $\langle w', t'\rangle$ compatible with what α believes in w at t_{EA}, p is true in w' at t'.

   b. $[\![\text{EV}]\!] = \lambda p \lambda w \lambda t_{Eval} \lambda t_{EA}[(t_{EA} \leq t_{Eval}) \wedge \forall \langle w', t'\rangle \in MB_{\text{DOX},\alpha}[p(w')(t')]]$

where $MB_{\text{DOX},\alpha}$ is the epistemic modal base relativized to some cognitive agent α

(ex. 69, symbols adapted)

This unified semantics is to be the core of the affinity between indirect evidentiality and mirativity. Smirnova proposes the following derivations to get the evidential and the mirative meanings respectively. The mirative, she argues, involves an operator which forces Evidence Acquisition time t_{EA} to be present, i.e. $t_{EA} = t_{Sp}$, whereas the evidential involves one which does not. Smirnova stylizes the operator in the mirative as EXCL and the operator in the evidential as DECL, because of the observation that in the case of Bulgarian (and Turkish), at least, the mirative is obligatorily marked with exclamatory intonation. The denotations of these two operators are thus as in (121). The denotation of the indirect evidential utterance "Ivan had money-INDIR" and the mirative utterance "Ivan has money-MIR!" are thus as in (122).

(121) a. $[\![\text{EXCL}]\!] = \lambda F \lambda w \lambda t_{Sp} \lambda t_{EA}[F(w)(t)(t_{EA}) \wedge \underset{\sim}{t_{EA} = t_{Sp}}]$

   b. $[\![\text{DECL}]\!] = \lambda F \lambda w \lambda t_{Sp} \lambda t_{EA}[F(w)(t)(t_{EA}) \wedge \underset{\sim}{t_{EA} < t_{Sp}}]$

(122) a. $[\![\text{Ivan has money-INDIR}]\!] = \text{DECL}(\text{EV}(\text{Ivan has money}))$

   $= \lambda w \exists t_{Sp}[\underset{\sim}{t_{EA} < t_{Sp}} \wedge \forall \langle w', t' \rangle \in MB_{\text{DOX, SPKR/SRC}}[\text{Ivan has money in } w' \text{ at } t']]$

   b. $[\![\text{Ivan has money-MIR}]\!] = \text{EXCL}(\text{EV}(\text{Ivan has money}))$

   $= \lambda w \exists t_{Sp}[\underset{\sim}{t_{EA} = t_{Sp}} \wedge \forall \langle w', t' \rangle \in MB_{\text{DOX, SPKR}}[\text{Ivan has money in } w' \text{ at } t']]$

The crucial factor distinguishing the evidential from the mirative meaning is the *temporal* relation between t_{Eval} and t_{Sp}. The DECL operator specifies that t_{EA} strictly precedes t_{Sp}. This crucially means the agent (SPKR if inferential, SRC if reportative) acquires evidence for the scope proposition, and therefore comes to believe the (necessary) truth of it, *before* Speech time. That is to say, at the time of speech, the agent may *not* hold a cognitive mirative attitude towards the scope proposition any longer, since the proposition may very well no longer be novel information to her by then. This is to be the non-mirative, indirect evidential meaning.

By contrast, the EXCL operator specifies that t_{EA} coincides with t_{Sp}. This means that the SPKR acquires evidence for the scope proposition right at t_{Sp}, and therefore comes to believe the (necessary) truth of it right at Speech time. That is to say, at Speech time, the SPKR does hold a cognitive mirative attitude (i.e. novelty) towards the scope proposition. This is thus the mirative meaning.

What about the EVIDENCE TYPE NEUTRALIZATION effect of the mirative? Smirnova analyzes this effect in terms of another temporal relation: that between Evidence Acquisition time t_{EA} and the Reference time of the eventuality described by the scope proposition (t_{Ref_e}). The idea is the following. Logically, the acquisition of evidence can happen before, during, or after the

time course of the eventuality itself. However, as far as *external* evidence (i.e. inferential, reportative or direct) are concerned, there is a conceptual gap which separates direct evidence from inferential and reportative evidence regarding when evidence is acquired relative to the time course of the eventuality. Whereas inferences can be made and reports can be heard about an eventuality before, during, or after the eventuality itself, direct perception of the eventuality is only possible during the eventuality's runtime. Direct perception of pre- or post-states of the eventuality are inferential by nature (a fact which I have called "temporal removal" in the foregoing discussion in §6.2.3 on inferential evidentials). Thus, a direct perceptual evidence interpretation of the indirect evidential-mirative only possible under the condition $t_{Ref_e} = t_{EA}$, whereas inferential and reportative evidence interpretations are not bound by this specific temporal relation.

Bulgarian has an overt morphological spell-out of the temporal relation between t_{Ref_e} and t_{EA}. Verbs with the evidential-mirative *-l* are also marked for the temporal relation between t_{Ref_e} and t_{EA}. This relation is essentially a relative tense: it situates the reference time of the eventuality relative to an external timepoint which is not Speech time. (Some authors, such as Arregui et al. (2017), term this relation "evidential tense".) In evidential tense, "present" refers to *concurrent* Evidence Acquisition with the eventuality ($t_{Ref_e} = t_{EA}$). This is spelled out in Bulgarian by the suffix *-e* in Bulgarian. "Past" evidential tense refers to *deferred* Evidence Acquisition ($t_{Ref_e} < t_{EA}$) i.e. the evidence is acquired *after* the time course of the eventuality. This is spelled out by the suffix *-a*. (123a) and (123b) exemplify these two evidential tenses respectively: in (123a), the verb *piš-**e**-l-* contains the reportative or inferential evidence must be concurrent, whereas in (123b), with the verb *pis-a-l-*, the evidence must be deferred.

(123)   a.   Evidential *-l* with relative "present" tense: concurrent evidence acquisition $t_{Ref_e} = t_{EA} < t_{Sp}$

Maria piš-**e**-l-a / # pis-**a**-l-a kniga.

M. write.IMPFV-**PRES**-INDIR-F write.IMPFV-**PST**-INDIR-F book

'Maria was writing a book (I heard/inferred **concurrently**).'

(i) CONCURRENT REPORT: [last month at the class reunion, Ivan told me that Maria was busy writing a book (**around the same time**). Today, an old friend asks me what kept Maria from coming to the class reunion last month. I say:]

(ii) CONCURRENT INFERENCE: [I am hosting a party at your house. My roommate Maria promised to be at the party, but she is not here. When I check Maria's calendar, I see that she planned to spend the evening writing her book. I inferred that **right now** she is sitting in the library and writing her book. A week later, when a friend of mine asks me why Maria did not show up at the party, I say:]

b. Evidential *-l* with relative "past" tense: deferred evidence acquisition $t_{Ref_e} < t_{EA} < t_{Sp}$

Maria pis-**a**-l-a / # piš-**e**-l-a kniga.

M. write.IMPFV-**PST**-INDIR-F write.IMPFV-**PRES**-INDIR-F book

'Maria was writing a book (I heard/inferred **afterwards**).'

(i) DEFERRED REPORT: [last month Ivan told me that Maria, my former classmate, spent **the previous year** writing a book. The book had just been published. Today, my old friend asks me what Maria was doing last year. I say:]

(ii) DEFERRED INFERENCE: [my late aunt Maria spent the last months of her life in Paris. No one knows why. **After the funeral**, I found a first chapter of an unauthored manuscript about Paris in Maria's papers. I inferred that Maria was writing a book. When one of the relatives asks me how Maria spent the last months of her life, I say:]

Crucially, in Bulgarian, it is only "present" evidential tense that occurs in the mirative. In Smirnova's data, only the "present" evidential form *piš-e-l-*, and never the "past" evidential

form *pis-a-l-*, occurs in the mirative, as shown in (124).

(124)   Mirative *-l* only occurs with concurrent evidence acquisition $t_{Ref_e} = t_{EA} = t_{Sp}$

Maria piš-**e**-l-a   / # pis-**a**-l-a   kniga!

M.   write.IMPFV-**PRES**-INDIR-F   write.IMPFV-**PST**-INDIR-F book

'Maria was writing a book (I discover **concurrently**, and I didn't expect it)!'

What this means is that there is an implication relation between mirativity and evidential tense (and therefore, the range of evidence types): if evidence acquisition is concurrent ($t_{Ref_e} = t_{EA}$), then the sentence must be mirative $t_{EA} = t_{Sp}$. If evidence is deferred ($t_{Ref_e} < t_{EA}$), then the sentence may be mirative or non-mirative ($t_{EA} \leq t_{Sp}$). Thus, conversely, if a sentence is mirative, then the evidence could either be concurrent or deferred, i.e. both direct and indirect evidence are possible. If a sentence is non-mirative, then the evidence could only be deferred, i.e. only indirect evidence is possible. Thus, we have an explanation for the EVIDENCE TYPE NEUTRALIZATION effect in the mirative.

Taking stock.   What Smirnova's theory purports to accomplish are the following two analytical moves. First, mirativity and the direct/indirect evidence type distinction are each reducible to a temporal relation: the former is between t_{EA} and t_{Sp}, and the latter is between t_{Ref_e} and t_{EA}. Second, any correlation between mirativity and direct/indirect evidence types, i.e. any EVIDENCE TYPE NEUTRALIZATION effects, is due to an implicational relation between one and the other of these two temporal relations: the incompatibility of direct evidence with the indirect evidential counterpart is explained as the implication that $t_{Ref_e} = t_{EA} \rightarrow t_{EA} = t_{Sp}$.

I evaluate each analytical move in turn. Smirnova's first move to analyze mirativity in terms of $t_{EA} = t_{Sp}$ captures two important aspects of the semantics of the mirative counterpart: shared attitudinal core with evidentiality, and temporal immediacy. Acquiring what Smirnova calls "external" evidence for the scope proposition entails that the SPKR comes to

know (for inferential or direct evidence[6]) of the scope proposition. By our definition and classification of mirative attitudes in §3 and Interlude A, coming-to-know is the definition of a *cognitive* mirative attitude (i.e. novelty), and novelty is a necessary, if not sufficient, condition for SURPRISE, which may engender other, evaluative/emotive mirative attitudes. Thus, accounts along Smirnova's lines successfully name the attitudinal identity of the mirative marker: it is "mirative" proper, because it encodes a cognitive mirative attitude. This identification also pinpoints the attitudinal core that mirativity shares with evidentiality: the former entails coming-to-know a proposition, while the latter concerns the evidence by which knowledge of the scope proposition is achieved. "Evidence *acquisition* (a consequence of which being knowledge acquisition) of the scope proposition" is precisely the conceptual bridge between the two. Furthermore, by analyzing the mirative as specifying evidence acquisition *at* Speech time, Smirnovan accounts succeeds at capturing temporal immediacy whenver it is applied to an indirect evidential-mirative where the mirative counterpart is restricted to contexts with *present* mirative attitudes, and not *past* ones. At least for Bulgarian, this is true.

On the other hand, Smirnova's second analytical move raises a number of questions regarding its explanatory generalizability. To say that the incompatibility of direct evidence with the indirect evidential counterpart in Bulgarian is due to the presence of the implication $t_{Ref_e} = t_{EA} \rightarrow t_{EA} = t_{Sp}$ *describes* this particular EVIDENCE TYPE NEUTRALIZATION effect, but does not explain it. In fact, there is data that suggests that such a restriction is not generalizable across languages. In fact, Lee (2013) demonstrates that the Korean evidential, which also derives its evidence type from the temporal relation between t_{Ref_e} and t_{EA}, is indeed felicitous with concurrent evidence acquisition ($t_{Ref_e} = t_{EA}$, i.e. direct evidence), even if this

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[6]Acquisition of reportative evidence entails coming-to-know not on the part of the SPKR, but only on the part of the source. This accords with the cross-linguistic empirical pattern that reportative evidentials have variable commitment-making potentials on the part of the SPKR (AnderBois, 2014). The bottom line is that the reportative subcase is not directly relevant to a Smirnova-style explanation of the indirect evidential-mirative affinity: the mirative counterpart of an indirect evidential is always anchored to the SPKR, never a third party (which is what the reportative subcase of the indirect evidential is analyzed as), and so the affinity is not first and foremost with the reportative subcase of the indirect evidential.

direct evidence acquisition is not immediate to Speech time[7].

(125)   Korean evidential *-te* is compatible with concurrent evidence acquisition non-immediate to Speech time (i.e. $t_{Ref_e} = t_{EA} \rightarrow t_{EA} = t_{Sp}$)

[Yenghi **saw** it raining **yesterday**. **Now**, she says:]

Pi-ka   o-∅-**te**-la.

rain-NOM fall-PRES-**EVID**-DECL

'It was raining (I made a past direct sensory observation).'   (Lee, 2013: ex. 1a)

This point of cross-linguistic variation has been taken up by Koev (2017), who proposes to explain the specific, Bulgarian-type restriction that direct evidence must be immediate to Speech time, by augmenting Smirnova's temporal analysis of Bulgarian-type indirect evidential-miratives with a spatial component. I will not go over the details of Koev's proposal here, but note that it constitutes a new attempt in resolving the EVIDENCE TYPE NEUTRALIZATION effect of indirect evidential-miratives, which is a non-trivial question under the Smirnovan temporal approach to this type of evidential-mirative affinity.

Regardless, it should be clear that mirativity-as-temporal-relation accounts are limited in their empirical scope. Importantly, they are only viable for evidential systems in which all manifested contrasts among evidence types can be successfully made by reference only to temporal relations. In the case of Bulgarian-type indirect evidential-miratives, this happens to be the case: the manifested evidential contrast (among "external" evidence) is between direct and indirect evidence types, and this contrast happens to be fully capturable by the temporal overlap ($t_{Ref_e} = t_{EA}$) vs. non-overlap ($t_{Ref_e} <> t_{EA}$) between evidence acquisition and (the reference time of) the described eventuality. Evidential contrasts in some, indeed many, languages may be amenable to the same sort of analysis (see e.g. Salanova and Carol, 2017 for an evidence-acquisition temporal analysis of the Paraguayan Guaraní evidential-mirative), but

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[7]In fact, the Korean evidential happens to be generally incompatible with temporal immediacy $t_{EA} = t_{Sp}$: (125) cannot be uttered in a context where the SPKR presently sees that it is raining (Young-hoon Kim, p.c.; Seung-Eun Kim, p.c.)

evidential contrasts in many other languages may outnumber the possible contrasts temporal relations can make.

A more fundamental question is whether an account which sufficiently makes all the evidence-type distinctions in the system necessarily reflects the conceptual underpinnings of the evidence types themselves. For instance, temporal overlap vs. non-overlap between evidence acquisition and the eventuality is sufficient for making the distinction between direct evidence vs. indirect evidence in Bulgarian-type systems, because direct perceptual evidence by nature entails the co-presence of the perceiving agent and the ongoing eventuality during the same time-frame, precisely where indirect evidence does not. But the reverse entailment does not hold: mere temporal co-presence of a perceiving agent and the ongoing eventuality does not entail direct perceptual evidence; other factors may be at play. The SPKR may, for example, be directly perceiving something about the ongoing eventuality (e.g. Maria hunched over a desk writing) without enough information at the moment to support p (e.g. "Maria is writing a book"), which she only realizes afterwards, perhaps through inferring from a publisher's note that what Maria was writing was a book. In this case, the perceptual episode is still concurrent with the eventuality, but arguably does not count as fully "direct" evidence for "Maria is writing a book"; a separate, temporally deferred inference is also involved. It is worth noting that other "temporal" theories of direct/indirect evidentiality have included more than the mere temporal relation between t_{Ref_e} and t_{EA}: Faller (2004) and Chung (2010) both include the notion of a "perceptual trace," which tracks not only temporal overlap, but also spatial co-presence, of the perceiving agent and the eventuality, an idea also taken up in Koev (2017). Speas (2008) models this co-presence straightly in terms of containment relations between situations (which are spatio-temporal slices of worlds), which allows for even richer contextual specifications. Even then, it is conceivable that certain features of the agent's mind should also play a role: Her attention will guide what she does, or does not, perceive, in that spatio-temporal region; her background knowledge, assumptions and working memory *in those moments* will affect what propositions she may, or may not, use to characterize what she per-

ceives presently.

Ultimately, evidence acquisition can implicate a complex range of cognitive processes, which are only *in part* about the temporal relations between evidence acquisition and the eventuality being known, and may not always be reducible to the latter (Hirayama and Matthewson, 2022). Thus, in explicating the mirativity affinity of certain complex evidentials (such as indirect evidentials), the bulk of the work will be in building an accurate model for the evidential meaning, after which one could then elucidate how this evidential meaning does (or does not) enocde cognitive mirative attitudes of coming-to-know the scope proposition.

6.3.3   Evidential base is expectation base

A third class of theories, represented by Rett and Murray (2013), seeks a generalized theory that has the potential to capture all types of evidential-mirative affinities. The core idea is to identify a unified epistemic base for both evidential and mirative attitudinal meanings, thus allowing for a single semantic core of both. The different evidential vs. mirative interpretations are argued to be an effect of different parametrization of the epistemic base, in terms of temporal and perspectival anchor.

Rett and Murray's theory.   Rett and Murray (ibid.) summarizes three key empirical generalizations about evidential-miratives (126), which they draw from a sample of cross-linguistic data.

(126)   Rett and Murray's three empirical generalizations of evidential miratives

    a.   INDIRECT EVIDENCE generalization: Evidential-miratives always encode (some type of) indirect evidence (reportative-like, inferential, or the "indirect" evidence type subsuming the two).

b. EVIDENCE-TYPE NEUTRALIZATION generalization: The mirative counterpart of evidential-miratives no longer restrict evidence type.

c. RECENCY generalization: evidential-miratives are licensed only when the speaker has *recently* learned the prejacent.

Based on these generalizations, Rett and Murray presents the following analysis of the evidential-mirative affinity, using the Cheyenne narrative reportative evidential-mirative *neho~hoo'o* in a schematic example (127a) as illustration. Rett and Murray adopt Murray's (2010) analysis of evidentials as contributing a not-at-issue update to the Common Ground, a type of update which is distinct both from the at-issue proposition (i.e. the scope proposition), and from illocutionary contentl, thereby differing from e.g. Faller's (2004) analysis of evidential meaning as sincerity conditions). This not-at-issue update, called "not-at-issue restriction" in Murray's terminology, is given in the (ii)-line of (127a).

(127) a. NARRATIVE REPORTATIVE EVIDENTIAL context: The speaker learns from a folklore that Hawk won the race long ago. Several years later, she utters:

Hawk won-*hoo'o.*

(i) At-issue proposition	$p = \lambda w.$Hawk won in w
(ii) Not-at-issue restriction	$E_c^t \models p$
(iii) Illocutionary relation	propose to add p to CG

b. MIRATIVE context: The speaker did not expect Hawk to win the race. However, she witnesses Hawk win the race (contrary to her expectation), turns to the hearer, and immediately utters:

Hawk won-*hoo'o*!

(i) At-issue proposition	$p = \lambda w.\text{Hawk won in } w$
(ii) Not-at-issue restriction	$E \models p$
(iii) Illocutionary relation	propose to add p to CG
	$\boxed{e_s \in \textbf{TARGET}(e_l) \rightarrow p \notin E_i^{\tau(e_l)}}$

(compiled from Rett and Murray, 2013: exs.35-6, pp.467-8)

First, Rett and Murray argue that the mirative meaning contribution lives on a different level from the not-at-issue evidential restriction, specifically, at the level of illocutionary relations. This is diagnosed via two tests: the lack of Interrogative Flip of the mirative attitude holder in questions, and the Moore's-Paradoxical behavior of uttering and then explicitly denying the mirative attitude, which standardly diagnoses sincerity conditions. As for the substance of the mirative meaning, Rett and Murray identify it as consisting of (a) a *mirative attitude*: a counterexpectational mirative attitude of the SPKR over the scope proposition, and (b) RECENCY: the fact that SPKR's knowledge of, and thus counterexpectational attitude over, the scope proposition is temporally recent to the SPKR's learning (evidence and consequent knowledge acquisition) of the eventuality described in the scope propositon. Thus, Rett and Murray formally encode mirativity as an additional clause in the illocutionary relation, given in the (iii)-line (highlighted) in (127b). The denotation can be paraphrased as: if the post-state of the SPKR's learning event includes the event described in the scope proposition p, then p is not in the SPKR's set of expectations at the time of her learning. Thus, the mirative attitude component (a) accounts for the attitudinal flavor, while the recency component (b) essentially accounts for the indexation of Evidence Acquisition time to Speech time.

The second claim by Rett and Murray is to account for EVIDENCE TYPE NEUTRALIZATION in the mirative. The explanation is the following: the mirative and the evidential interpretations are conceptually unified in that both make reference to a set of *expectations*: the evidential base and the set of expectations on the part of the SPKR, are literally the same animal, namely, a set of expectations, denoted by E in (127b-iii). It is only by being differently indexed to various

epistemic agents and times that E gets variously interpreted as an evidential base (in the case of an evidential) or a set of SPKR expectations (in the case of a mirative). The latter is straightforward: a counterexpectational mirative attitude may be analyzed as referencing a set of expectations, of which the mirative content proposition is not a member. In the former case, Rett and Murray crucially claim that the evidential counterpart of all evidential-miratives simply encode the not-at-issue restriction that E entails the scope proposition, with the particular evidence type of the evidential reduced to this expectation set E's being indexed to different evidence sources and to various points in time:

> "Indirect evidentials reference a set of expectations, too; this is what explains the cross-linguistic association of mirativity and evidentiality. In the case of inferential evidentials, the evidential content relates p to the speaker's set of expectations at some salient time t prior to the learning event... [For] reportative or narrative evidentials... we instead take the position that what's relevent for the evidence source is some third party's (an individual or group of individuals) set of expectations (and that a typically reliable way of determining the content of a third party's E is bia their speech)." (p. 466)

Thus, for instance, the evidential counterpart of Cheyenne *hoo'o*, a narrative reportative evidential, is analyzed as a set of expectations *of the community c holding the narrative* and *at a time t which is supposed to be long before speech time*. This is what underlies the notational representation E_c^t in (127a-ii). On the other hand, in the mirative counterpart, the not-at-issue evidential restriction that $E \models p$ remains the same: the only difference is that E is not lexically specified to be indexed to any particular evidence source at any particular time. This supposedly derives the EVIDENCE TYPE NEUTRALIZATION.

Taking stock. An aspiration behind Rett and Murray's theory is to account for all instances of the evidential-mirative affinity in a unified way. The key insight which drives their for-

mulation is substantially similar to the key insight behind temporal theories of the (indirect) evidential-mirative affinity: the bridge between evidentiality and mirativity is that evidentials encode acquisition of evidence, and consequently the coming-to-know, of the scope proposition, and the latter is essentially a cognitive mirative attitude (novelty), which is a necessary condition for evaluative/emotive mirative attitudes such as counterexpectation. However, the conceptual connection from evidence acquisition of a proposition, to counterexpectation over the same proposition, is not fully articulated in their semantic formulation. (127b-iii) contains a material implication from evidence acquisition about p to p's being counterexpectational. This implication is significant, because it would precisely model the link between a cognitive mirative attitude and an evaluative/emotive one.

However, we now know that this material implication from a novelty attitude to a counterexpectational attitude does not generally hold. As discussed in §3.4.3, whereas counterexpectation necessarily involves novelty, the other way round is not necessarily true. Thus, Rett and Murray's account can be seen as an *ad hoc* solution that may be able to account for just those cases involving a counterexpectational evidential-mirative, but not a novelty evidentialy-mirative.

Additionally, we can identify some empirical issues in two of Rett and Murray's empirical generalizations about evidential-miratives (126).

The RECENCY generalization (126c) aims to capture the fact that the mirative counterpart of many evidential-miratives are felicitous, or are felt to be more felicitous, when used in a context involving current SURPRISE. This is true of many evidential-miratives: the mirative in Cheyenne is only felicitous if uttered right at, or immediately after, evidence acquisition time. The mirative counterpart of indirect evidential-miratives of the Bulgarian type also explicitly require evidence acquisition time to be current. However, indexation is not necessary to mirativity by definition, which, as I have argued in §3, is only in terms of attitudinal flavor. However, miratives can and do also encode non-indexical mirative attitudes (§2.4), and the same is true

for *evidential*-miratives. For instance, the Shanghai Wu mirative *yikaon*, which is connected to a reportative-like evidential *yi kaon* as illustrated earlier in (109), can encode a counterexpectational mirative attitude that the SPKR held in the past. Cases such as these will not be covered by Rett and Murray's analysis.

(128)   Shanghai Wu mirative *yikaon* can encode past counterexpectation

[When talking about how I was shocked upon discovering the weather yesterday morning, I say:]

zohnyih	ngo	bau+tshahle	khoe	gheh.zenkuaon	lahlah	loh	yu	**yikaon**.
昨日	我	跑+出來	看	箇辰光	辣辣	落	雨	渠講。
yesterday	1SG	run+come.out	look	when	PROG	fall	rain	MIR

'Yesterday when I ran out to look (at the weather), it was raining (**I had not expected it to be raining then**).'

The INDIRECT EVIDENCE generalization (126) and the EVIDENCE TYPE NEUTRALIZATION generalization (126) are both limited in their empirical scope. We have seen that evidential-miratives may encode indirect, reportative-like, inferential as well as direct evidence. We have also seen that, depending on evidence type, the pattern of EVIDENCE TYPE NEUTRALIZATION can be very different and be due to rather different mechanisms. Rett and Murray's unification of evidential and expectational bases do not straightforwardly extend to account for the wider variety of evidence types.

A final question concerns the theoretical justification for the unified evidential-expectational base. Expectations about a proposition, and evidence sufficient to support the assertion[8] of same proposition, require different sorts of epistemic grounds. The latter must be able to justify (full) belief in the truth of the proposition to be asserted, whereas the former only needs some non-null level of credence. Identifying one with the other will lead to

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[8]Reportatives must, of course, be set apart.

the undesirable consequence that weaker-than-believed propositions (those that are merely expected) can serve as evidence for asserting the scope proposition.

6.4   Conclusion: typologically-informed semantics

The goal of this chapter has been to chart the status quo of research on the EVIDENTIAL-MIRATIVE AFFINITY question, situated in both typological and theoretical semantic work. Specifically, I have provided a more fine-grained typology of evidential-mirative affinities across languages. I have also reviewed three existing theories on evidential-mirative affinities, detailing both their successes and their limitations (both empirical and theoretical).

Going forward, the work done in this chapter is intended to serve as a reference point and foundation for a more coherent research program on the evidential-mirative question. As semanticists engage with ever more instances of evidential-miratives, it will be crucial in each instance to be typologically informed: knowing what kind of evidential-mirative affinity is implicated affords greater clarity on what the core explanandum is for the theoretical account, as well as on what the anticipated empirical coverage will be.

THE REPORTATIVE EVIDENTIAL-MIRATIVE AFFINITY:

A DIACHRONIC REANALYSIS ACCOUNT

7.1 Introduction

In the previous chapter, I have surveyed the empirical landscape and presented the state-of-the-art of semantic theory on the EVIDENTIAL-MIRATIVE AFFINITY question. I have shown that evidential-miratives across languages fall into at least four different types (indirect, reportative-like, inferential, non-first-person), each of which likely instantiating a different theoretical character. The three existing schools of theories, while containing genuine insight, are limited in that each rests on a different—and ultimately either partial or inaccurate—view of the typological landscape of evidential-miratives. The emerging picture of the status quo of research is that much theoretical work remains to be done on each type of evidential-mirative affinities, taking advantage of the greater definitional and typological clarity now supplied for the semantics of mirativity.

In this second chapter on the EVIDENTIAL-MIRATIVE AFFINITY question, I reconsider a theoretical assumption that has been commonly, but implicitly, adopted in existing formal semantic approaches to evidential-miratives: that the mirative meaning of an evidential-mirative marker is derived *synchronically* from its evidential meaning. I call this assumption the SYNCHRONICITY ASSUMPTION, presented as in (129).

(129)   The SYNCHRONICITY ASSUMPTION of evidential-mirative affinities:
        The mirative meaning of an evidential-mirative is exclusively due to *synchronic* mechanisms or derivations operating on the evidential meaning.

This assumption underlies all three existing schools of theories on evidential-mirative

affinities reviewed in the previous chapter: whether dealing with indirect evidential-miratives (Smirnova, 2013; Salanova and Carol, 2017; Rett and Murray, 2013 in part), reportative-like evidential-miratives (ibid.), or inferential evidential-miratives (Peterson, 2010a,b, 2013), the theoretical explanation of the mirative counterpart is assumed to be found in some synchronic process (Quantity-flouting implicature, a temporal constraint on evidence acquisition, or reference to a unified evidential-expectational base).

I argue that it need not be the case. At least for a certain type of evidential-miratives, namely, reportative-like evidential-miratives, the SYNCHRONICITY ASSUMPTION can be incorrect. In §7.2 I present a detailed study of the Shanghai Wu mirative *yikaon* and its evidential counterpart, the speech report parenthetical *yi kaon*. An illustrative example of both is shown in (130).

(130)   a.   Shanghai Wu *yi kaon*: speech act parenthetical

            lahlah loh yu,[2]**yi kaon**.

            辣辣   落 雨，   渠

            PROG fall rain   **3SG**

            'It's raining, **s/he said**.'

        b.   Shanghai Wu *yikaon*: mirative

            lahlah loh yu   **yikaon**.

            辣辣   落 雨   渠講。

            PROG fall rain **MIR**

            'Gosh, it's raining (**I had not expected it to be raining**).'

The synchronic status of the Shanghai Wu evidential-mirative doublet offers a unique van-

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[2]The comma here and in all subsequent examples indicates a prosodic boundary (a potential pause), which parenthetical *yi kaon* allows, but mirative *yikaon* does not; see §7.2.2 for details.

tage point into the potentially diachronic nature of the reportative evidential-mirative connection. I show that, though mirative *yikaon* and parenthetical *yi kaon* are apparently identical elements (and thus amenable to be treated as a single evidential-mirative under the SYNCHRONICITY ASSUMPTION), there is a cluster of formal and semantic differences between the two, which is not amenable to any straightforward synchronic account.

However, a diachronic account of the reportative evidential-mirative connection is not only viable, but has greater explanatory power for cross-linguistic instances of the same evidential-mirative affinity type. In §7.3-7.4 I propose a novel theoretical account that explains the reportative evidential-mirative connection as an instance of a principled diachronic semantic reanalysis. First, in §7.3, I formulate a Farkas-Bruce-style semantic analysis of parenthetical YI KAON, showing that it crucially encodes an asymmetric update to the SPKR's public discourse commitment and to address the QUD. §7.4 develops the crux of my diachronic account. I argue in §7.4.1 that reportatives, by asymmetrically contributing propositions to address the QUD from the *SPKR's* perspective but grounded in a *third-party's* public epistemic commitments, are particularly prone to generate Conversational Implicatures (CIs) about SPKR attitude. Crucially, I argue in §7.4.2 that the propensity of reportative-evidentialized utterances to generate SPKR-attitude CIs is driven by a general principle of EPISTEMIC TRANSPARENCY in discourse (131):

(131)   The EPISTEMIC TRANSPARENCY principle of discourse:
        Make, and assume others make, epistemically transparent assertions.

In cases of SHW-type reportative evidential-miratives, I show that it is these CIs which are reanalyzed as the conventionally-encoded meaning of the reportative marker in question, through a mechanism of avoiding opaque and effortful pragmatic resolution (§7.4.3). Finally, I demonstrate in §7.4.4 that this account correctly predicts a cross-linguistic empirical pattern of multiflavoredness. §7.5 concludes the study.

7.2   Mirative *yikaon* and parenthetical *yi kaon*

Recall SHW mirative *yikaon* 渠講: I have shown in §4 that it encodes a counterexpectational mirative attitude over the prejacent on the part of the SPKR. This mirative marker has a transparent etymology: *yi* 渠 '3SG' and *kaon* 講 'say, speak.' This makes the mirative *prima facie* indistinguishable from the speech report parenthetical construction "*p*, s/he says/said," which involves the same etymological morphemes in the same sentence-final position. As shown in the illustrative example (130b), the interpretation of the speech report parenthetical is that of a not-at-issue proposition that the prejacent is information from a speech report by a third person.

Thus, the pair *yikaon*/*yi kaon*[3] is essentially an evidential-mirative: the same element (putatively) has one evidential meaning (in this case, reportative) and one mirative attitudinal meaning associated with it.

7.2.1   Previous work on *yikaon*/*yi kaon*

Descriptively, the pair of sentence-final markers are by default treated as one lexical entry with two different senses, no doubt helped by the orthographical identity of the two markers. Han and Shi (2014), in the first linguistically-oriented study on this doublet, refer to various "uses" of the same construction, including the "quotative/reportative"[4] (= speech report parentheti-

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[3]Note that although the parenthetical and the mirative are transliterated differently (one with a space and one without), this is a feature of the Common Wu Romanization (*Tōngyòng Wúyǔ Pīnyīn*) scheme (adopted throughout this dissertation) which uses whitespaces to demarcate prosodic word boundaries, and *not* a feature of the Chinese writing system, which do not use whitespaces to demarcate intra-sentential boundaries and thus represents both identically. Thus, for all intents and purposes, native speakers and linguists consider the two to be identical lexical entries.

[4]Han and Shi (2014) makes a further distinction between "quotative" and "reportative" uses of parenthetical *yi kaon*. I collapse this distinction for two reasons: (i) while it is clear that they mean by "quotative" direct speech, their use of the term "reportative" is not clearly defined and does not align straightforwardly with "reportative" in the strictly evidential sense: in particular, they seem to group under "reportative" indirect speech reports, with or without a specified reference to the source. (ii) Characterizing *yi kaon* as a speech report parenthetical would capture all of Han and Shi's empirical observations (and more) without unnecessarily implicating specificities of

cal) and the "evaluative" (= mirative). (132) shows their examples.

(132) gho.gheh lipa   ciufah yeu.'iau khausy(,) yi   kaon.

下.個   禮拜 句法   又.要   考試 (,) 渠   講。

next   CL   week   syntax   again   FUT   exam

a.   'There will be another syntax exam next week, he says.'   "quotative/reportative
use" (=speech report parenthetical)

b.   'Unexpectedly, there will be another syntax exam next week!'   "evaluative use"
(=mirative)

(Han and Shi, 2014: ex. 8; translations original; terminological notes mine)

Han and Shi eventually propose a grammaticalization story of the two "uses": they say that the mirative sense is the result of a further step of grammaticalization, due to "clausal integration," from the speech report sense. The two senses are to be placed along a "grammaticalization path." These terms are hardly precise or explanatory: it is unclear exactly how "clausal integration," presumably a change in syntactic structure, leads to a shift in meaning from the speech report parenthetical to the mirative. Nevertheless, even though Han and Shi's grammaticalization story remains largely ambiguous both about the synchronic identity of the two markers and about the precise mechanism connecting the two meanings, in framing this connection in terms of a "pathway," the authors clearly express an intuition that the nature of this connection involves change over time. I will show that this intuition, as opposed to the SYNCHRONICITY ASSUMPTION, is on the right track: parenthetical *yi kaon* and mirative *yikaon* are differentiated by a number of formal (prosodic, syntactic) and semantic properties, and any synchronic analysis of the reportative evidential-mirative affinity, which posits one semantic value for both counterparts, will have a hard time accounting for the full range of empirical differences between the two markers.

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quotation or reportative evidentiality.

7.2.2   Differences in formal features

Syntactic status: full *v*P structure vs. single morpheme.   Syntactically, slifting parentheticals (Ross, 1973 (2018)) fall within the broader phenomenon of right dislocation, which, regardless of the specific analysis (see e.g. Kayne, 1994; Tanaka, 2001; Ott and de Vries, 2016), always involves *phrasal* material. In the case of parentheticals involving the embedding attitude verb and subject, therefore, we would expect to see a full range of evidence that the syntactic structure under which the slifting parenthetical is generated is present in the right-dislocated surface position.

This is indeed the case for parenthetical *yi kaon*. (133) shows that the verb *kaon* 'to say' can be modified at the *v*P-level (133a) with manner adverbials and instrumental PPs, as well as at the AspP- and TP-levels (133b) with aspect markers, temporal and locative adverbials/PPs. These examples show that the speech report parenthetical has internal syntactic structure: *kaon* is a true verb of speech that projects a full range of functional projections.

(133)   Parenthetical *yi kaon* admits phrase-level modification

[Xiaozhang is a friend and neighbor of mine and a high school student. I ran into him a moment ago as I was coming into the apartment building, and I chatted with him, during which time he talked, apparently in a slow and unenthusiatic manner, about the exams he just had. A minute later I arrive back home, and tell my family: "I ran into Xiaozhang outside; we talked for a bit about the exams...]

a.   *v*P-level modification

soeyah	khausy	lau	ne	gheh,	yi	['ion	tson	vehda	khēshin.gheh
算學	考試	老	難	箇，	渠	[用	種	弗大	開心
math	exam	very	difficult	VERUM	3SG	with	type	not.very	happy.MOD

chiāndiau]PP.INSTR	[thēnthenthuthu.gheh]Adv.MANNER	kaon.
腔調]	[吞吞吐吐. 箇]	
tone	mumbling.ADV	say

'The math exam was very difficult, he said [with a kind of not-so-happy tone]PP.INSTR [mumblingly]Adv.MANNER.'

b. AspP- and TP-level modification

soeyah	khausy	lau	ne	gheh,	yi	kāonkaon	lahlah	ngadeu	thah	ngo
算學	考試	老	難	箇，	渠	剛剛	辣辣	外頭	搭	我
math	exam	very	difficult	VERUM	3SG	just.now	at	outside	to	1SG

kaon	lah.
講	了。
say	PF

'The math exam was very difficult, he said to me outside just now.'

As shown in these examples, any modification to *yi kaon* does not affect its speech report parenthetical meaning: the parenthetically-contributed speech report from Xiaozhang is still conveyed. By contrast, mirative *yikaon* is a single morpheme with no internal structure. It does not permit any adverbial, aspectual or PP modification. This is shown by the fact that any of the utterances in (133) above, containing a modified *yi kaon*, does not encode any mirative meaning on the SPKR's part at all. The difference in surface form between mirative *yikaon* and speech report evidential *yi kaon* is levelled accidentally, when the latter is unmodified.

Prosodic profile.   Parenthetical *yi kaon* and mirative *yikaon* differ in another important formal feature: the two show different prosodic profiles, specifically, in two aspects: tonal realization, and "parenthetical prosodic pause." Although these differences are felt to be neutralizable in standard or fast speech, they do emerge perceptibly in slow, careful speech

Like all other Wu varieties, and unlike standard modern Mandarin, Shanghai Wu has a regular system of tone sandhi throughout all prosodic words (see e.g. Selkirk and Shen, 1990; Chen, 2008; Zhang and Meng, 2016). Glossing over some finer details, the general pattern is that in the vast majority of cases, the lexical word is also the prosodic word, and within each lexical-prosodic word, only the underlying tone of the first syllable is preserved and realized (in a complex but regular way) across the entire word. All but a small set of functional morphemes have underlying (lexical) tones; among those toneless morphemes are crucially all sentence-final mood particles.

Thus, parenthetical *yi kaon* and mirative *yikaon* differ in tonal profile. Mirative *yikaon* pattern with all other sentence-final mood particles in being strictly toneless. Parenthetical *yi kaon*, on the other hand, consists of a subject *yi* and a verb *kaon*, both independent lexical-prosodic words in their own right. Thus, in slow or careful speech, parenthetical *yi kaon* can have underlying tones on both *yi* (23 in Chao's 5-point notation) and *kaon* (34 in Chao's notation) realized[5]. This is in contrast to mirative *yikaon*: regardless of speech rate, the mirative is always toneless.

Second, parenthetical *yi kaon* is felt to require a "pause" (some type of prosodic boundary demarcating the parethetical) between it and the right edge of the prejacent. By contrast, mirative *yikaon* allows no such prosodic boundary, again patterning with all other sentence-final mood particles. Interestingly, in Han and Shi's illustrative example (132), the authors

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[5]In faster speech, two other possible tonal realizations emerge. First the subject *yi* and the verb *kaon* may merge into one prosodic word (Selkirk and Shen, 1990), realizing only the underlying tone on *yi*, the first syllable, yielding *yi²² kaon²⁴*. In yet faster speech, since both words are in the right periphery, they may drop their prosodic wordhood and be absorbed into the previous prosodic word, essentially rendering them toneless—and therefore prosodically near-identical to the mirative *yikaon*, which is also toneless.

have included a comma in parenthesis between the prejacent and *yi kaon/yikaon.* Though the authors give no explicit explanation, it would be judicious to assume that the comma is not a random choice of punctuation. Most plausibly, the comma represents precisely this parenthetical prosodic pause. The parentheses around the comma is an indication that the pause is absent in some cases: it is possibly absent with parenthetical *yi kaon* in faster speech, but it is crucially obligatorily absence with mirative *yikaon* regardless of speech rate.

It should be noted that the prosodic features described above are based on reflective reports of native speaker intuition only. Though these native speaker intuitions tend to agree, a fully articulate empirical representation of these intuitions about tonal realization and parenthetical prosody would necessitate phonetic experimental work. For now, I take the strength and clarity of reported intuitions as good indicators of some level of empirical reality of these features.

7.2.3 Differences in semantic & pragmatic behavior

The most telling differentiation between parenthetical *yi kaon* and mirative *yikaon* is in their semantic and pragmatic behavior. We expect a speech report parenthetical, which contains a true verb of speech, to display properties of speech embedding. If it also contains a genuine syntactic *pro* element, in our case, *yi*, we also expect the parenthetical to be truly discourse anaphoric and therefore subject to constraints on out-of-the-blue utterances. On the other hand, mirative *yikaon* should display contrasting patterns on both accounts: its prejacent should display matrix properties, and its felicity should not depend on discourse anaphora. All of these are indeed the case.

Different evidential meaning & discourse commitments. There is a clear difference in the evidential meaning of parenthetical *yi kaon* compared with mirative *yikaon*: the former,

which involves a genuine verbal structure containing a speech verb and its third-person subject, always contributes that the prejacent comes from an external speech report, whereas the latter makes no such evidential contribution. This can be shown by observing whether an *yi kaon/yikaon*-marked sentence is compatible with both reportative and non-reportative evidence contexts, under the speech report parenthetical interpretation and the mirative interpretation, respectively. As shown in (134): under the speech report parenthetical interpretation (i.e. *yi kaon*), the sentence is only compatible with a reportative context (134a) but not with inferential (134b) or direct (134c) evidence contexts. With the mirative interpretation (i.e. *yikaon*), however, the test sentence is felicitous regardless of evidence type.

(134)   Parenthetical *ghi kaon* specifies evidence type; mirative *yikaon* does not:

Shiautsan   soeyah   khausy   vehjihkah   [yikaon/yi kaon].

小張　　　　算學　　考試　　弗及格　　　渠講。

Xiaozhang   math   exam   fail   [MIR/3SG say]

(i) **Speech report parenthetical**: 'Xiaozhang failed the math exam, he said.'

(ii) **Mirative**: 'Xiaozhang failed the math exam, it turns out; I did not expect it.'

a.   REPORTATIVE CONTEXT: [Xiaozhang is my classmate and good friend. My class had a math exam two days ago. Today, I dropped by the teacher's office to take care of some business of my own, when I overheard the math teacher tell a colleague of his that five students had failed the exam, among which was Xiaozhang. Now I am chatting with another classmate about what I overheard. I say, "I was at the teacher's office and the math teacher was talking about the exam results..."]
√ (i), √ (ii)

b.   INFERENTIAL CONTEXT: [Xiaozhang is my classmate and good friend. My class had a math exam two days ago. Today during noon recess time, Xiaozhang was summoned to the math teacher's office and returned 15 minutes later looking rather upset and dejected. Knowing that the math teacher often summons students for

tête-à-têtes if they have performed poorly in exams, I infer that Xiaozhang has received a failing grade. I say to my deskmate:]

#(i), ✓(ii)

c.   DIRECT CONTEXT: [Xiaozhang is my classmate and good friend. My class had a math exam two days ago. This morning the math teacher summoned me and another classmate to the office to get the graded papers to hand back to our classmate in preparation for class in the afternoon. Now the two of us are slowly walking back to your classroom, flipping through the papers to see how people did, and I see that Xiaozhang has received a failing grade. I say to my classmate:]

#(i), ✓(ii)

In the same vein, if a sentence like that in (134) is followed up by explicit denial of any speech report concerning the prejacent, the only available interpretation of that sentence is a mirative one (ii), i.e. with *yikaon*. With the speech act parenthetical *yi kaon* (i), the follow-up results in a contradiction.

(135)   Parenthetical *yi kaon* resists denial of reportative evidence; mirative *yikaon* does not

Shiautsan	soeyah	khausy	vehjihkah	[yikaon/yi kaon].	Pehku	mmeh	nyin
小張	算學	考試	弗及格	渠講。	不過	嘸沒	人
Xiaozhang	math	exam	fail	[MIR/3SG say]	though	not.exist	person

thah	ngo	kaon-ku	geh-tsaon	zythi.
搭	我	講-過	辂-椿	事體。
to	I	say-EXP	this-CLF	matter

(i) **Speech report parenthetical**: 'Xiaozhang failed the math exam, he said. # Nobody told me about this matter, though.'

(ii) **Mirative**: 'Xiaozhang failed the math exam, it turns out; I did not expect it. ✓Nobody told me about this matter, though.'

Predictably, a pragmatic upshot of this difference in reportativity between parenthetical *yi kaon* and mirative *yikaon* is the different kinds of discourse commitments the speaker makes when uttering either. Parenthetical *yi kaon*, patterning with other reportative evidential constructions cross-linguistically (AnderBois, 2014), does not commit the speaker to the truth of the prejacent, whereas mirative *yikaon* does so rigidly. Thus, parenthetical *yi kaon* does not display Moore's paradox with an explicit denial of the prejacent (136-i), but mirative *yikaon* does (136-ii).

(136)   Mirative *yikaon* displays Moore's paradox; parenthetical *yi kaon* does not

Shiautsan	soeyah	khausy	vehjihkah	[yikaon/yi kaon].	Jizeh	Shiautsan	mmeh
小張	算學	考試	弗及格	渠講。	其實	小張	嘸沒
Xiaozhang	math	exam	fail	[MIR/3SG say]	in.fact	Xiaozhang	NEG

vehjikah.

弗及格。

fail

(i) **Speech report parenthetical**: 'Xiaozhang failed the math exam, he said. ✓In fact, Xiaozhang did not fail.'

(ii) **Mirative**: 'Xiaozhang failed the math exam, it turns out; I did not expect it. # In fact, Xiaozhang did not fail.'

Licensing of direct speech environment.   Parenthetical *yi kaon*, by virtue of having true embedding under a verb of speech in the deep structure, can license direct speech as its prejacent. This can be shown most directly through the referring behavior of indexical personal pronouns. First- and second-person pronouns in SHW, like their counterparts in English and in Mandarin, are rigidly SPKR- and ADDR-oriented indexicals. Only under direct speech embedding do they shift reference, since direct speech alters the context of utterance Recanati, 2000. Thus, we expect to see first- and second-perosnal pronouns refer to non-root SPKR and ADDR only with the

parenthetical *yi kaon*, but not with mirative *yikaon*. This is borne out in the following context (137)

(137) Parenthetical *yi kaon* licenses direct speech contexts; mirative *yikaon* does not

DIRECT SPEECH CONTEXT: [Xiaozhang is my deskmate at school. Today during math class, the teacher handed back graded papers from the most recent exam. I got mine and saw that I scored a 70, which I thought was fair and expected. When Xiaozhang got his paper, I glimpsed that he also scored a 75, which went entirely against my expectation of him, since I thought Xiaozhang, being typically not a very diligent student, would have failed. Later, when the two of us were chatting after class, he said to me with a straight face that he got 75, and he was fully expecting this grade since he had studied extremely hard and well. Afterwards, I tell my friend about this exchange: "Xiaozhang and I were talking about the exam grades..."]

a. "ngo$_{\checkmark\text{XIAOZHANG}}$ khau-lah 75 fēn," yi kaon.

"我$_{\checkmark\text{XIAOZHANG}}$ 考-了 75 分," 渠 講。

1SG score-PFV point, 3SG say

' "I$_{\checkmark\text{XIAOZHANG}}$ got 75," he$_{\text{XZ}}$ said.'

b. ngo$_{\#\text{XIAOZHANG}}$ khau-lah 75 fēn yikaon.

我$_{\#\text{XIAOZHANG}}$ 考-了 75 分 渠講。

1SG score-PFV point, MIR

'I$_{\#\text{XIAOZHANG}}$ got 75, it turns out, I didn't expect it.'

The above context licenses two felicitous utterances by the SPKR about Xiaozhang's grade: either a direct speech report of what Xiaozhang said *without* mirative meaning (since Xiaozhang completely expected his improved grade), or a non-speech report matrix utterance *with* mirative meaning (since the SPKR completely did not expect Xiaozhang's improved grade). The

crucial test sentence is (137b): either the first-person indexical *ngo* 'I' refers to the SPKR and the sentence is factually false because the SPKR's grade is 70, or, as is our intended target interpretation, the indexical *ngo* '1SG' refers to Xiaozhang, whose grade is indeed 75 and is indeed counterexpectational to the SPKR. However, that target interpretation is not available: *ngo* cannot refer to Xiaozhang if *yikaon* is mirative. This proves that only parenthetical *yi kaon* but not mirative *yikaon* licenses direct speech prejacents.

Non-declarative prejacents: embedded vs. matrix force. Another way that parenthetical *yi kaon* differs from mirative *yikaon* is that the former, but not the latter, can embed force. This test is most clear with prejacents that are non-declarative. (138) gives examples involving a prejacent that is a *wh*-question, complete with a *wh*-word and interrogative mood particle. As seen in (138a), parenthetical *yi kaon* can embed the original interrogative speech act in its original utterance context, thus giving rise to a reported-question interpretation. By contrast, mirative *yikaon* (138b) is obligatorily a SPKR-anchored question. The translation in (138b) shows this: if *yikaon* evinces the counterexpectational mirative meaning, the only available interpretation is that of the SPKR asking a question the answers to which she anticipates to be counterexpectational, as already studied in §4.

(138)   Parenthetical *yi kaon* can embed force; mirative *yikaon* cannot
        SETTING: [Xiaozhang's father came to school to speak with his math teacher about his recent performance.]

a. EMBEDDED INTERROGATIVE CONTEXT:

[I am Xiaozhang's math teacher, and I have just stepped out of my office to speak with Xiaozhang's father about his records. After I come back in, a curious colleague asks me what was going on. I tell him, "I was speaking with Xiaozhang's father. He wanted to know how his son was doing and had some questions ..."]

"Shiaotsan	geh-thaon	khau-lah	tūsau.fen	l-	a?"	yi	kaon.
"小張	辮-趟	考-了	多少.分	了	啊〈啦〉？"	渠	講。
Xiaozhang	this-time	score	PFV	how.many	point	Q	3SG

' "How many points did Xiaozhang score?" he said (=Xiaozhang's father asked); # I did not expect that.'

b. MIRATIVE INTERROGATIVE CONTEXT:

[I am Xiaozhang's father, and I am there on Xiaozhang's mother's request to ask about Xiaozhang's score on the recent exam. Both she and I know that Xiaozhang usually struggles a lot with math, and thus both she and I expect to hear that he has, as usual, done poorly on this exam. The math teacher comes out and tells me that Xiaozhang has in fact come within the top 15 of the class this time. Taken aback, I say:]

Shiaotsan	geh-thaon	khau	lah	tūsau.fen	la	yikaon?
小張	辮-趟	考-了	多少.分	了	啊〈啦〉	渠講？
Xiaozhang	this-time	score	PFV	how.many	point	Q

'How many points did Xiaozhang score—and I (=Xiaozhang's father) would not have expected him to have received any of the scores that you are about tell me / # she said (='Xiaozhang's mother asked)?'

The speech act-embedded interpretation of the prejacent (138a) must co-occur with the strictly speech report version of *yi kaon*, without mirative meaning, whereas the mirative version *yikaon* necessarily makes the interrogative force matrix. This would be expected only if *yi*

kaon in (138a) is a parenthetical that embeds a true speech report as its prejacent, while *yikaon* in (138b) is a mirative that is not simply a pragmatic extension of the parenthetical, on account of the illocutionary matrix-hood of its prejacent.

Obligatory discourse anaphoricity. Parenthetical *yi kaon* contains a pronoun *yi* '3SG,' and references a speech report made by that third person. Thus, there are two ways in which this construction must be discourse-anaphoric (henceforth "anaphoric" for brevity): pronominal and eventive.

Pronominal anaphoricity is straightforward: pronouns require prior introduction of an antecedent in discourse to resolve their reference. We would therefore expect parenthetical *yi kaon* to be infelicitous discourse-initially[6], that is, without any antecedent which it must anaphorically refer to. On the other hand, mirative *yikaon* would not display this constraint.

Cross-linguistically, some speech report constructions make their semantic contribution by reference to a speech *event* (Bary and Maier, 2021). Eventivity may be distinguished, among other diagnostics, by the richer range of possibilities for modification that is predictably afforded by (neo-Davidsonian) event semantics. Parentheticals are argued (ibid.: §6.1) to naturally instantiate the class of eventive speech report constructions, because they contain a rich enough internal syntactic structure so as to introduce the event variable with its various thematic and adverbial modifications. We have already seen that this is true for SHW parenthetical *yi kaon* in (133). The additional empirical observation is that when eventive speech report constructions are anaphoric, they require eventive antecedents, i.e. overtly introduced events of speech in prior discourse.

Eventive anaphoricity can technically subsume anaphoricity to any constituent part of the event: if a speech report construction must refer back to an speech event antecedent, it is

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[6]In addition, the context must preclude any possibility of extra-linguistic communicative features (such as deictic motion) that could potentially resolve pronoun reference.

automatically possible for a part of that construction, e.g. a pronoun that is the subject of the verb in the parenthetical, to refer back to a participant of that antecedent event, e.g. the agent of speaking. Thus, I will only refer to eventive anaphoricity in the following discussion on parenthetical *yi kaon* henceforth.

Parenthetical *yi kaon* differs crucially from mirative *yikaon* in that the former is obligatorily anaphoric. To wit, a declarative utterance with parenthetical *yi kaon* cannot occur discourse-initially, without a speech event already introduced that can serve as its antecedent: an utterance such as (139a) cannot serve as a response to a "what happened?" question (139). This is in spite of the fact that the prejacent "I failed my math exam," which is at issue, is a plausible contribution that addresses the QUD. By contrast, the same prejacent marked with mirative *yikaon* (139b) is a perfect answer to the same question.

(139) Parenthetical *yi kaon*, not mirative *yikaon*, displays eventive anaphoricity

[I am taking a walk on campus, and I randomly run into Xiaozhang, an acquaintance whom I have not run across for a few weeks. Being a good chap, I engage in catch-up small talk with him, beginning by asking:]

non	nanen	l-	a,	gehtahchian?	/	gehtahchian	fahsen	nge	sa	l-
儂	哪能	了	啊〈啦〉,	辮噠腔?	/	辮噠腔	發生	眼	啥	了
2SG	how	PF	Q	these.days		these.days	happen	some	what	PF

a?
啊〈啦〉?
Q

'What's been up these days on your end? / What's been happening these days?'

a. # ngo soeyah khausy vehjihkah, yi kaon.

我　算學　考試　弗及格，　渠　講。

I　math　exam　fail　3SG say

'I failed my math exam, he says.'

b. ✓ ngo soeyiah khausy vehjihkah yikaon.

我　算學　考試　弗及格　渠講。

I　math　exam　fail　MIR

'I failed my math exam, it turns out; I didn't expect it.'

In all the foregoing examples of parenthetical *yi kaon* that illustrate a property unrelated to eventive anaphoricity, I have intentionally specified at the end of the context settings some preceding utterance containing an appropriate individual and eventive antecedent. This has to be done precisely because of *yi kaon*'s anaphoric nature, so as to ensure that the felicity judgments of the sentences actually reflect the properties being targeted, rather than the confounding factor of anaphora resolution failure.

7.2.4 Interim summary I: Desiderata for a theory of the SHW mirative

I have so far demonstrated prosodic, syntactic and semantic/pragmatic evidence that the SHW mirative *yikaon*, though bearing apparent formal resemblance to the speech report parenthetical *yi kaon*, is distinct from the latter both formally and semantically. (140) summarizes these empirical differences.

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(140)   Empirical differences between mirative *yikaon* and speech report parenthetical *yi kaon*

	mirative *yikaon*	parenthetical *yi kaon*
Formal features:		
Tonal profile	toneless	phrasal tone; toneless (fast speech)
Morphosyntactic status	single morpheme	phrasal
Semantic properties:		
Reportative evidence type restriction	×	✓
Discourse commitment to prejacent	✓	×
Direct-speech prejacent	×	✓
Obligatory eventive anaphoricity	×	✓
Embedded interrogative force (=reported-question)	×	✓
Matrix interrogative force (=counter-expectation-over-alternatives)	✓	×

Thus, any analysis for mirative *yikaon* and parenthetical *yi kaon* needs to capture this cluster of semantic properties. There are two logical possibilities for such an analysis. One is to treat the parenthetical and the mirative as instances of the same lexical entry with a single semantic value and set of formal feature specifications, with all of their differences in (140) derived via some set of synchronic mechanisms. This is the option that follows the SYNCHRONICITY ASSUMPTION (129) regarding evidential-mirative affnities, and is by far the only option taken by existing theoretical accounts. However, given the full range of empirical differences between the parenthetical and the mirative (140), I argue that this option presents an essentially impossible, or at least extremely convoluted, analytical task. No known semantic or pragmatic mechanism can derive a rigid-commitment, non-evidential, mirative-attitudinal marker which scope *below* matrix force, cannot embed force in its prejacent, and is non-anaphoric, from a variable-commitment reportative marker which can license direct speech, embed force and is obligatorily eventive-anaphoric. And no single lexical element can be both tonal and toneless, and both be a monomorphemic and contain phrasal syntactic strcuture at the same time. Accounting for all these polar opposite features via synchronic derivations from a single element is either the wrong solution, or would require at least a multiplicity of processes both in the

semantics and in the phonology and morphosyntax. Occam's razor suggests the former.

Instead, I argue that analyzing the parenthetical and the mirative as two different lexical items in the synchrony, connected via a principled diachronic path, is the correct way to go. Not only does this diachronic analysis easily capture all synchronic empirical differences (140), but it also reveals deeper truths about the regularity of the affinity between reportative-like evidential elements and mirative elements across unrelated languages, I turn to present this analysis in the following sections.

7.3 A synchronic semantics for speech report parenthetical *yi kaon*

In this section, I present an analysis of the synchronic semantics of parenthetical *yi kaon*. The analysis is primarily motivated by the not-at-issueness properties of the reportative evidential proposition ("p according to what 3rd-person said") contributed by the speech report parenthetical: while this evidential proposition is unable to address the Question-Under-Discussion (QUD), it *is* able to be targeted by direct assent/dissent. Following Koev's (2018) finer-grained classification of types of at-issueness, I call this set of properties *Q-not-at-issue* (unable to address QUD) and *P-at-issue* (accessible by propositional anaphora). I propose a Farkas-Bruce-style formal analysis of parenthetical *yi kaon*, adopting a technical adaptation by Rudin (2018) to separate the QUD and the $Table$ as distinct components of the discourse model, to track Q- and P-at-issueness respectively.

7.3.1 Q-at-issueness vs. P-at-issueness

At-issueness refers broadly to the intuition that some part of the information in a sentence is the "main point" (Simons et al., 2010) or "the main themes of discourse" (Potts, 2005), as

opposed to being an aside or an addendum to the main point. A number of properties have been definitionally and diagnostically associated with the at-issueness of a proposition (see e.g. Tonhauser, 2012), including, in particular, the ability for it to address the QUD, and accessiblity to it by direct assent/dissent (and other propositional-anaphoric elements; see e.g. Snider, 2017). Ideas of at-issueness diverge on which properties at-issueness should centrally be defined in terms of, with some prioritizing QUD-addressing capability of at-issue propositions (Simons et al., 2010; Beaver et al., 2017, a.o.), and some prioritizing the proposalhood, and therefore anaphoric accessbility, of at-issue propositions (Murray, 2014; AnderBois et al., 2015, a.o.). Interestingly, recent work has pointed out that these different properties conventionally associated with at-issueness may not always co-vary; theories of at-issueness based on different properties do not always make identical predictions regarding other properties. Thus, in modeling these different discourse properties, the notion of at-issueness should be fine-tuned to specify what type of property is in question.

Along this line of work, Koev (2018) proposes to distinguish three notions of at-issueness, which he terms Q-, P- and C-at-issueness, each reflecting a different theoretical characterization: QUD-addressing capability, proposalhood and anaphoric accessibility, and coherence. We will be concerned with the former two notions. (141) gives Koev's definitions for Q-at-issueness and P-at-issueness, respectively.

(141) a. A proposition is *Q-at-issue* just in case:

   (i) it is RELEVANT to the QUD in context; and
   (ii) it is appropriately conventionally marked relative to the QUD. (ibid.: def. 2)

   b. A proposition is *P-at-issue* just in case:

   (i) it is a proposal in the discourse context; and
   (ii) it has not been accepted or rejected. (ibid.: def. 9)

In light of this distinction in character, Koev suggests diagnostics for Q- and P-at-issueness. Q-at-issueness is diagnosed by being a felicitous answer to an overtly-stated QUD, both in terms of relevance, *and* in terms of being in an appropriate conventional form as required for all answers.

The former criterion (relevance), shown in diagnostic examples such as (142), is straightforward: an answer proposition may be a partial answer, an informative attitude statement, or simply a contextually relevant fact, as long as it is informative with respect to the QUD.

(142)   Diagnostic 1 for Q-at-issueness: RELEVANCE   (Koev, 2018: exs. 4-6)

  a.   Q: Where is Xavier right now? - A: ✓He is not in Peru.   ...Relevant partial answer

  b.   Q: Is Miley's favorite color lime green? - A: ✓Liam doesn't think so.

                ...Relevant attitude statement)

  c.   Q: Is Avi old enough to drink? - A: ✓He is twenty-two. ...Relevant contextual fact)

By the latter criterion (appropriate form), Koev refers to the fact that a Q-at-issue proposition must not only contain *relevant* information to the QUD, but must also not be presented in certain linguistic forms which are conventionally inappropriate as answers. For instance, Koev provides the sample diagnostic (143) to show that information contained in English parentheticals, even if relevant to the QUD, will always be Q-not-at-issue because parentheticals in English are ill-formed as answers to questions.

(143)   Diagnostic 2 for Q-at-issueness: APPROPRIATE FORM   (ibid.: ex. 7)

  Q: **What happened** after the spacecraft sent back the first pictures?

  A: # There was water on Mars, **NASA announced**.

          ...Relevant but inappropriate conventional form

On the other hand, P-at-issueness is diagnosed by felicity in being targeted by direct as-

sent/dissent. This is shown in (144).

(144) Diagnostic for P-at-issueness: direct assent/dissent (Koev, 2018: ex. 10)

A: Edna, a fearless leader, started the descent.

B$_1$: That's not true—Edna has not started the descent.

B$_2$: # That's not true—Edna is not a fearless leader.

The distinction between Q- and P-at-issueness is non-trivial for the Shanghai Wu evidential-mirative pair. As will be shown below, though both parenthetical *yi kaon* and mirative *yikaon* contribute "not-at-issue" propositions, they differ specifically in their P-at-issueness.

7.3.2   Parenthetical *yi kaon* encodes Q-not-at-issue, P-at-issue information

A declarative utterance *p-yi kaon*, containing parenthetical *yi kaon*, contributes two meanings: the prejacent proposition p, and a reportative-like evidential proposition that the a third-party has made a speec report whose content entails p. I show that the evidential proposition is Q-not-at-issue, but P-at-issue, whereas the prejacent proposition p is always at issue.

In *p-yi kaon*, the prejacent p is always Q-at-issue, whereas the evidential proposition is not (145b). This is shown by the overt QUD test: while the prejacent p can always address the QUD (145a), the evidential proposition cannot: (145a), adapting Koev's appropriate-form diagnostic (143), shows that the reportative-like evidential proposition contributed by *yi kaon* cannot address the QUD even if it is relevant content-wise.

(145) a. Prejacent p is Q-at-issue

A: yautsan kāonkaon fah thōntsy kaon-lah faon syka

  principal just.now issue announcement say-PFV dismiss summer.break

  校長 剛剛 發 通知 講了 放 暑假

  gheh zenkuaon.

  GEN time

  個 辰光。

'The principal just issued an announcement talking about timing for summer break.'

B: sazenkuaon faon syka la?

  when dismiss summer break

  啥辰光 放 暑假 啦？

'So when does summer break start?'

A: cīnnie ditsau ih-gheh lipa faon, yi kaon.

  this.year push.forward one-CL week dismiss 3SG say

  今年 提早 一個 禮拜 放 渠 講。

'Summer break will start early this year, he said.'

b. Parenthetical *yi kaon* is Q-not-at-issue: not appropriately conventionally marked

B: yautsan cihtau zylishian gheh thōntsy tsȳ.gheu lah

  principal receive municipal.authority GEN announcement after LOC

  校長 接到 市裡廂 個 通知 之後 辣

  ciaukung.dawe kāudeu nanen la?

  faculty.meeting on how LE+Q

  教工大會 高頭 哪能 啦？

'So what happened in the faculty meeting after the principal received the announcement from the municipal authorities?'

A: cīnnie ditsau ih-gheh lipa faon syka, yi kaon.

cīnnie	ditsau	ih-gheh	lipa	faon	syka,	yi	kaon.
this.year	push.forward	one-CL	week	dismiss	summer.break	3SG	say
今年	提早	一個	禮拜	放	暑假	渠	講。

'Summer break will start early this year, he said.'

<div align="right">(modeled after Koev, 2018: ex.7)</div>

On the other hand, both the prejacent p and the evidential proposition can be P-at-issue: as shown in (146a-146b), either can be targeted by direct dissent with *Not true!* or *That's not true!*[7]. The latter, in particular, contains an overt propositional anaphoric element *geh.gheh* "this thing/one."

(146) Follow-up discourse to (145a)

a. ✓ B: veh-te / geh.gheh veh-te. zylishian kaon tsenzan

veh-te	/	geh.gheh	veh-te.	zylishian	kaon	tsenzan
NEG-correct		this.one	NEG-correct	municipal.authority	say	regular
弗對	/	辮個	弗對。	市裡廂	講	正常

zenkuaon	faon	gheh.
time	dismiss	VERUM
辰光	放	個。

'Not true/that's not true. The municipal authority said it would start at the regular time.'

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[7]Note that with a felicitous follow-up that directly dissents from the speech report meaning (146b), whether the SPKR independently commits to the prejacent proposition is not implicated: (146) can be further followed up with either "... Though I happen to know independently that summer break *will* start early this year, the principal did not say that" or "I know for a fact that summer break will start at the usual time. The principal definitely did not say that it would start early." This further shows that the evidential proposition is independently p-at-issue. (Thanks to Scott AnderBois for pointing this out.)

b. ✓ B: veh-te / geh.gheh veh-te. yi zonle mmeh gehnen kaon-ku.
  NEG-correct / this.one NEG-correct 3SG ever NEG this.way say-EXP
  弗對 / 辯個 弗對。 渠 從來 嘸沒 辯能 講過。

'Not true/that's not true. He never said so.'

Thus, parenthetical *yi kaon* contributes a Q-not-at-issue, but P-at-issue evidential proposition. As for the content of this evidential proposition, recall from the diagnotics presented in §7.2.3 that the speech report parenthetical meaning is *eventive* and *anaphoric*. Thus, I formulate the at-issue and not-at-issue contributions, and definedness condition, of a declarative utterance *p-yikaon* as in (147). This plain-English formulation will be formalized in §7.3.3.

(147) A declarative sentence p-*yi kaon*:

a. Is defined iff. the discourse context contains a speech report event by a third-party source SRC to the SPKR as a recipient.

b. If defined, contributes the {Q, P}at-issue proposition p

c. If defined, contributes the Q-not-at-issue, P-at-issue proposition that the content of the speech report entails p.

7.3.3 A formal implementation

Modeling the contribution of parenthetical *yi kaon* in the Farkas-Bruce-style framework of the discourse context, I adopt a modification to that framework proposed by Rudin (2018), which is capable of accounting for the Q- vs. P-at-issueness distinction.

The original Farkas and Bruce (2010) discourse model keeps track of *both* the QUD *and* the at-issue proposals using a single element $Table$: specifically, the Hamblin-set denotation Q of

the at-issue part of a sentence, which is added to $Table$ together with the syntactic structure S representing the sentence, as the ordered set $\langle S; Q \rangle$, can either represent the raising of a current QUD (Q-at-issueness) if the current sentence is interrogative, or the singleton (P-at-issue) proposition being proposed for consideration for acceptance/rejection if the current sence is declararive. Instead of mixing up Q- and P-at-issueness properties in this way, Rudin proposes to have two separate elements: $Table$ exclusively keeps track of the at-issue proposals, whereas a new element QUD exclusively keeps track of the current QUD. Thus, a modified definition of discourse context structures under this proposal would be as in (148).[8] This definition differs minimally from the Farkas-Bruce(-Rett) framework in having an additional component: the QUD (148e).

(148) Modified Farkas-Bruce(-Rett) framework (Rudin, 2018: def. 11)

A context structure K of a conversation between a SPKR and an ADDR is a sextuple $\{T, CG, DC_{\text{SPKR}}, DC_{\text{ADDR}}, ps\}$, where

a. T (**Table**) is a *stack* of issues under discussion, each of which is an ordered set $\langle S; Q \rangle$ where S is (the syntactic structure representing) the sentence uttered and Q the Hamblin set of propositions denoting the sentence;

b. CG (**Common Ground**) is a set of propositions which all discourse participants are committed to for the purpose of the conversation;

c. DC_{SPKR} and DC_{ADDR} (**Discourse Commmitment sets**) are sets of propositions which the SPKR and the ADDR, respectively, have publicly committed to.

d. ps (**Projected set**) is a set of future (projected) CGs (=a set of sets of propositions) that are being considered as the new CG.

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[8]This definition is a slightly simplified version of Rudin's original definition, in not containing a Context Set (which is defined purely mechanistically as the set-intersection of CG), and not counting the set of discourse participants as a tuple element. Nothing of theoretical significance hinges on these differences, of course.

e. QUD (**Question Under Discussion**) is a contextually salient question.

There are many substantial implications of this modification (for instance, we would need a dedicated operation for raising a new QUD), which I will not consider here; see Rudin (2018) for details. What directly concerns the current study is the benefit that, with reference to $Table$ and QUD separately, we are now able to model Q- and P-at-issueness distinctly.

P-at-issueness as update to $Table$**.** P-at-issueness is modeled as that part of the semantic contribution of the sentence that gets added to $Table$. Thus, since a declarative utterance *p-yi kaon* in SHW encodes the entire evidentialized proposition *p*-according-to-what-SRC-said-to-SPKR as P-at-issue, I analyze it as contributing the following update to $Table$ (149):

(149) $S = $ *p-yi kaon*: P-at-issue update   *first pass*

    a. Defined iff. $\exists e_1 \in E$ s.t. $\text{SAY}(e) \wedge \tau(e) < \text{TIME}(i) \wedge Ag(e_1) = g(0) \wedge Goal(e_1) = \text{SPKR}$
            where E is an appropriate domain of eventive discourse referents, g is an assignment function from indices to individuals

    b. If defined: add $\langle S; \{Content(e_1) \models p\} \rangle$ to $Table$

(149a) says that the P-at-issue update of *yi kaon* is defined just in case there is a speech report event by a source agent $g(0)$, directed towards the SPKR as the $Goal$, which has already been introduced in prior discourse. This formulation captures the eventive-anaphoric nature of speech report parentheticals. If defined, then (149b) adds to $Table$ the proposition that the content of the anaphorically-referenced speech report entails p. This formulation utilizes Bary and Maier's (2021) $Content$ function, which relates certain types of eventualities that have propositional content (e.g. speech, belief) to their propositional content, in effect an implementation of Kratzer (2006). Together, (149) models the fact that the P-at-issue contribution of *yi kaon* is that "the content of that speech report mentioned before, which the SPKR heard

from the SRC, entails p," thus accounting both for the evidentialized P-at-issue proposition and for eventive anaphoricity.

Q-at-issueness as relevance to QUD & appropriate form. On the other hand, with a separate QUD element in the discourse model, we can now directly implement Koev's definition of Q-at-issueness (141a). A proposition that is Q-at-issue must satisfy two necessary conditions: RELEVANCE, and APPROPRIATE FORM.

The ability to model RELEVANCE explicitly is an intended consequence of Rudin's separation of QUD from $Table$. Building on Roberts's (2012) definition of relevance in terms of the ability to answer the QUD (or form a strategy to answer the QUD), Rudin states RELEVANCE as in (150):

(150) A discourse move m is RELEVANT in a context iff. a resolution to the Issue it raises would answer the QUD.   (Rudin, 2018: def. 62)

Without needlessly digressing into the specific mechanism of Issue-raising, it suffices to observe that a Q-at-issue proposition q in the declarative would raise the issue $\{q, \neg q\}$. Thus, for instance, in the context of the what-happened-next diagnostic (145b), the evidential proposition contributed by *yi kaon* is indeed RELEVANT. This is because it raises the Issue of whether "the principle said that summer break will start early this year," which does address the QUD in that context "What happened on the faculty meeting after the principle got the announcement from the authorities."

APPROPRIATE FORM is a condition on the conventional linguistic *form*, and not on semantics. We have seen that *yi kaon*'s evidential proposition cannot felicitously address even a RELEVANT QUD. Therefore, the only remaining viable account of the Q-not-at-issueness of *yi kaon*'s evidential contribution is (151):

(151) The evidential contribution of speech report parenthetical *yi kaon* in $S = p$-*yi kaon* is Q-not-at-issue because the parenthetical in SHW is not an appropriate conventional form for content to address the QUD.

Although (151) is a ultimately a non-semantic explanation, it is at least potentially cross-linguistically general: parenthetical content appears to be unable to address the QUD across the board.

Denotation of parenthetical *yi kaon*.   Putting everything together, I propose the following denotation for parenthetical *yi kaon*, in the modified Farkas-Bruce-Rett discourse model outlined in (148).

(152)   For input context $K_i = \langle DC_{\text{SPKR},i}, DC_{\text{ADDR},i}, T_i, CG_i, ps_i, QUD_i \rangle$ and output context $K_o = \langle DC_{\text{SPKR},o}, DC_{\text{ADDR},o}, T_o, CG_o, PS_o, QUD_o \rangle$, assignment function g from indices to individuals, world-time indices $\langle w_u, t_u \rangle$ a declarative $S = p$-*yi kaon*:

a.   Is defined iff. $MAX(T_i)$ entails or presupposes $\exists e_1 = E$ s.t. $\textsc{say}(e) \wedge \tau(e) < \textsc{time}(i) \wedge Ag(e_1) = g(0) \wedge Goal(e_1) = \textsc{spkr}$

b.   If defined, $S = p$-*yi kaon*$(K_i) = K_o$ s.t.

(i) $DC_{\text{SPKR},o} = DC_{\text{SPKR},i} \cup \{\text{believe}_{g(0)}^{w_u, t_u}(p)\}$ ... third-party commitment only

(ii) $T_o = \textbf{\textit{push}}(\langle S; \{Content(e_1) \models p\} \rangle)$ ... evidentialized proposition is P-at-issue

(iii) $ps_o = ps_i \bar{\cup} \{p, Content(e_1) \models p\}$ ... both prejacent and evidential propositions are proposed to be accepted

c.   The update (152) is well-formed w.r.t. Q-at-issueness just in case $Content(e_1) \models p$ is not relevant to QUD_i.

Three things are worth noting in this analysis. First, in the definedness condition (152a),

the domain of eventive anaphora, originally represented schematically with E in (149a), is now formally identified as the uppermost element on the $Table$ ($MAX(T_i)$), i.e. the set of propositions that is (P-)at-issue right before the current update. The definedness condition states that the *p-yi kaon* update is defined as long as the current at-issue proposition entails (i.e. overtly introduces) or presupposes (i.e. continues, or accommodates) the existence of an appropriate speech report event e_1, involving a third-party source and the SPKR as the $Goal$, etc.

Second, the update to the Projected Set ps (152b-iii) includes both both the prejacent proposition p and the evidential proposition $Content(e_1) \models p$. This is a necessary consequence of the fact that both propositions are P-at-issue: both are *proposals* to be accepted or rejected by the ADDR, rather than e.g. directly added to the CG without being open to negotiation.

Third, I formulate the Q-not-at-issueness of the evidential proposition as a well-formedness condition of the *p=yi kaon* update (152c), which essentially excludes the case where the evidential proposition happens to be relevant to the QUD. This well-formedness condition captures the (extra-semantic) constraint which stipulates that parentheticals in Shanghai Wu are inappropriate conventional forms to address a QUD that is relevant to it.

Let us see how this update semantics derives the semantic properties of parenthetical *yi kaon* as summarized in (140). First, this semantics straightforwardly specifies obligatory eventive anaphoricity and reportative evidence: both the definedness condition and the DC, T and ps updates explicitly require a speech report event by a third-party source to the SPKR regarding p, which must be already introduced in prior discourse.

Second, in (152b-i), I propose that the DC update consists of adding $\text{believe}_{g(0)}^{w_u, t_u}(p)$, a third-person (specifically, the source's) epistemic attitude towards p, to DC_{SPKR}. This means that in uttering *p-yi kaon*, the SPKR is publicly committing herself just to the proposition that "my *source* is committed to p[9]." This proposal essentially follows AnderBois's (2014) analysis of evi-

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[9]Strictly speaking, the SPKR is committed **for the purposes of this current conversation** to the evidentialized proposition "my source represents him/herself as being committed to p." The specification of "for the purposes

dential assertions as what he calls *asymmetrical* assertions—assertions which consist of different DC_{SPKR}-update and CG-proposal components. According to AnderBois, evidential assertions propose to add p (the at-issue, prejacent proposition) to CG, but updates DC_{SPKR} only with $\text{EVID}(p)$ (the evidential proposition). For reportatives, then, this precisely derives variable SPKR commitment to the prejacent p: the SPKR only publicly commits herself to the fact that *someone else* has said p, which, depending on contextual factors, may or may not be sufficient evidence for the SPKR herself to be committed to p. I adopt the overt attitude predicate believe as the specific semantic value of AnderBois' EVID, in line with the approach which analyzes evidentials as epistemic attitudes (Korotkova, 2016, a.o.) and, specifically, of reportative evidentials as third-party epistemic attitude ascriptions (Bhadra, 2020). This approach has the added benefit of permitting straightforward technical congruence with the Rett-ian modification that introduces overt predication of attitudes in DC updates.

Third, even though I do not provide a detailed analysis of speech report parentheticals embedding supra-propositional prejacents such as speech acts (embedded force/"reported question" readings) or even direct speech, I note that Bary and Maier's (2021) neo-Davidsonian analysis of eventive speech report elements, which I have adopted here, is designed to be in principle adaptable to a variety of prejacents. For instance, apart from the $Content$ function, which is formulated to return just the propositional content of the eventuality, Bary & Maier also invoke a $Quot$ function, proposed by Maier (2020), which returns the *form* of the embedded speech in the eventuality, to account for direct speech cases. One could conceivably define content-returning functions which take illocutions as arguments. On the other hand, the neo-Davidsonian analysis provides an interface with vP- (and TP-)level syntax, allowing for the various modification posibilities of the parenthetical speech report.

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of this current conversation" is important: Scott AnderBois (p.c.) points out that if one considers the *original* discourse where the speech report was made, as long as our current SPKR (then ADDR or recipient) did not contest that information in **that** discourse, then she would have represented herself as publicly committed to the truth of p (unevidentialized) **for the purposes of that conversation**. Of course, one may choose to not publicly dissent from (or otherwise convey reservation about) a piece of proffered information in one particular discourse, but choose to do so later in a different discourse with a different discourse participant; the Stalnakerian provision for all CG components to be ultimately relativized to the purposes of particular conversations bears this out here.

Finally, the bottom line of this analysis is that parenthetical *yi kaon* is a distinct element from mirative *yikaon.* This, unlike any analysis under the SYNCHRONICITY ASSUMPTION, advantageously permits differences both in semantic value and in formal features, both phonological and morphosyntactic, between the two markers.

7.3.4 Interim summary II: from synchrony to diachrony

In this section, I have presented a semantic analysis of parethetical *yi kaon* as a distinct element from mirative *yikaon*, and I have shown that distinguishing the two elements synchronically allows for a straightforward account of the full range of empirical differences between the two markers, despite their identical etymological origin and apparently (nearly) identical contemporary form.

This establishment of distinct synchronic identity thus occasions a re-framing of the EVIDENTIAL-MIRATIVE AFFINITY question: this question has a diachronic dimension, at least as it pertains to reportative evidential-mirative pairs of the SHW type. If the affinity is not explained by synchronic mechanisms, then what kind of diachronic processes would cause one meaning to shift towards the other? Are such processes merely incidental changes over time, or do they in fact reflect any general principles of semantic change? I turn to address these questions in the next section.

7.4 From reportative to mirative

I propose that the reportative evidential-mirative affinity reflects a common diachronic process of semantic reanalysis. Specifically, it consists in reanalyzing a **conversational implicature** (CI) about the SPKR's attitudes (particularly, evaluative/emotive attitudes) towards the

prejacent proposition p as the lexically-encoded **semantic** value of the erstwhile reportative-like element. This type of diachronic reanalysis thus instantiates the pattern of conventionalizing pragmatically-implicated meaning, in a well-known proposal by König and Traugott (1988 (2011)) and Traugott and Dasher (2001)

Crucially, the fact that it is often reportative-like elements which undergoes this reanalysis into SPKR-attitudinal elements is not a mere accident: I argue that reportative-evidentialized utterances are especially susceptible to SPKR-attitude CIs fundamentally because their semantic contribution to the common body of shared information and to the SPKR's public epistemic commitments are *asymmetrical*. I further propose that discourses are generally guided by an EPISTEMIC TRANSPARENCY PRINCIPLE, which bends towards all discourse participants transparently aligning their individually-anchored epistemic commitments with the information proposed to the shared body of information. This general principle, I argue, is the underlying drive for the higher propensity for reportative-like elements to generate attitudinal CIs about **the SPKR**.

7.4.1 Reportatives give rise to SPKR-attitude implicatures

Asymmetrical assertions motivate SPKR-attitude CIs. I return for a moment to Ander-Bois's (2014) idea of *asymmetrical* assertions. AnderBois builds upon a crucial conceptual bifurcation: on the one hand, there are the actual beliefs (or, for our matter, any epistemic attitude) held by the discourse participants, either publicly or privately. On the other hand, there is the Common Ground for particular discourses, which is definitively construed by Stalnaker (1978, 2002) as nothing more than mutually *presumed*-to-be-true information for the purpose of the conversation. These two types of information are captured in various formal models of discourse by different components: DC for the former, CG (and Projected Set ps, representing what CGs look like after the current proposal is accepted) for the latter. It is by design

that the information contained in CG and individual DC's may diverge: it is entirely possible for participants to conduct a conversation *presuming*, or *acting as if*, certain propositions were true, with or without necessarily themselves committing to (believing) them, either publcly or privately—and at the same time, keeping track separately of

Ordinarily, an assertion of p encodes a *symmetrical* update to both CG and DC_{SPKR}: in ordinarily asserting "it is raining," the SPKR both publicly commits to the belief that it is raining, and proposes *the same* proposition to be added to CG. AnderBois' crucial insight is that certain illocutionary elements in language may conventionally encode *asymmetrical*, or *different*, updates to DC and CG. One such illocutionary element, he argues, is evidentials: while they propose the *at-issue*, prejacent proposition p to be added to CG, they only publicly commit the SPKR to the evidential proposition ("SPKR has x type of evidence for p). Thus, reportative evidentials manifests asymmetrical assertion in a particular epistemic effect: because the reportative evidential proposition is merely that the SPKR *heard* p from a third-party source, she may have any level of public commitment (belief) in p herself.

Under this picture, any inference about the *particular* level of SPKR belief in a *particular* context in which a reportatively-marked assertion is uttered, is essentially a Conversational Implicature: such inferences are *indeterminate*, since they are heavily dependent on particular contexts, and they are *cancellable*. Simple examples with English *reportedly* (153) showcase these properties.

(153)   SPKR belief inferences from reportative assertions are CIs

    a.   INDETERMINATE:

       It is reportedly raining in Shanghai.

     (i)   [The authoritative weather agency in Shanghai tells me it is raining there.]
        ↦ SPKR believes that it is raining in Shanghai.

(ii) [My honest friend, who works the whole day in a windowless cubicle in Shanghai, tells me over the phone that it is currently raining there.]

↦ SPKR doesn't fully believe or disbelieve that it is raining in Shanghai.

(iii) [A fake weather app, which regularly mixes up weather data from different cities and which I completely distrust, tells me it's raining in Shanghai.]

↦ SPKR does not believe that it is raining in Shanghai.

b. CANCELLABLE:

It is reportedly raining in Shanghai, ✓and I believe it is / ✓but I don't believe it / ✓though I'm not sure whether it is raining or not.

SPKR-attitude CIs of reportatives are multiflavored. The variability of SPKR-belief CIs associated with reportative asssertions is a well-studied fact, in no small part due to the fact that canonical theories of illocutionary force and of discourse commitment are primarily concerned with a particular epistemic attitude, namely, belief. However, it is not necessary that reportatives should *only* trigger CIs about SPKR *belief.* The empirical picture is again more complex. Reportative markers are commonly associated with CIs of a variety of other attitudes as well.

I illustrate this with English, which is a language that has multiple elements with reportative-like semantic values. What is interesting is that different elements may be conventionally (or semi-conventionally) associated with a different profile of flavors when it comes to SPKR-attitude CIs.

Consider the parenthetical expression *so s/he says.* Very roughly, let us say that *so s/he says* has a certain reportative-like semantics in that it marks that the SPKR has heard a report from a third person which entails the prejacent proposition. However, its usage can be associated with a broader range of attitudes than belief/disbelief. The following examples (154), taken from the Corpus of Contemporary American English (COCA, Davies, 2008), show that *so s/he says* can convey a primary SPKR attitude of *noteworthiness* (154a), or reservation about the original

manner of speech (154b).

(154) a.   [Someone writes in a post that she has struggled with arguments with her boyfriend about whether and who to move to the same city to keep the relationship going, but that, despite this, the guy has said he wants both parties to be in each other's lives. In response, the SPKR writes:]

… I know how hard it is… but this guy obviously wants you in his life forever, **so he says**. That's a pretty definite statement, you know, and with that in mind I am sure things can be worked out should you both be so inclined.

b.   [In a TV documentary about John Dean's decision to cooperate with prosecutors:] (Narrator:) … While Dean was up there, he had an epiphany, which was that he was in deep trouble, or **so he says**. (John Dean:) Well, it was clear—it was much clearer after the fact, but I suspected at the time I was being set up… And I just wasn't going to be part of that. [10]

In (154a), *so he says* conveys to the ADDR that the SPKR finds what the boyfriend said *noteworthy*. This attitude becomes very clear in subsequent context, where the SPKR calls the boyfriend's statement "serious" and advises the ADDR to work things out. In (154b), *so he says* conveys that the SPKR has reservations about the manner in which the source has put the at-issue information (perhaps that it was an "epiphany"). (Incidentally, in both cases, the SPKR appears to believe the truth of the prejacent.)

The multiflavoredness of SPKR-attitude CIs across reportative structures is also cross-linguistically established: in varieties of Latin American Spanish, the embedding verb of speech *diz que* (lit. 's/he says that'), while in a majority of instances still maintaining its semantic value of referencing a speech report, has developed semi-conventional associations with a variety of

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[10]https://blog.havetherelationshipyouwant.com/after-a-year-and-a-half-now-you-find-out-he-doesnt-want-a-serious-relationship-ever/; http://www.pbs.org/wgbh/americanexperience/features/transcript/nixon-transcript/

SPKR-attitudes. For Colombian Spanish, Travis (2006) shows that a small number (4%) of corpus examples of *dizque* conveys that the SPKR finds the prejacent has connotations of "false beliefs, unachievable goals, and uncontrollability." For Mexical Spanish, Olbertz (2009) shows examples where *dizque* conveys a SPKR attitude of disbelief (or, in my reading, light ridicule):

(155) [On the Mexican festival of All Saints Day]

Claro que no faltó quien intentara llevar pulque o mezcal *dizque* para el difuntito. (*Excélsior, 1 Nov. 1996*)

'Of course there were also people who would try to bring pulque or mezcal, *supposedly* (lit. *s/he says*) for the dear dead.'

Thus, reportatives should be thought of as being able to trigger SPKR-attitude CIs in general, and not just SPKR-belief CIs.

7.4.2 The EPISTEMIC TRANSPARENCY principle

CIs ought to be calculable. How do reportative elements trigger SPKR-attitude CIs, and in this apparently wide variety of flavors? I suggest that the mechanism lies in a principle of discourse, which I call the EPISTEMIC TRANSPARENCY principle, that governs how *hearer*s resolve asymmetries between updates to individual DC on the one hand, and the informational demands of the "communal" components of the discourse model (CG proposals, ps, $Table$, QUD) on the other hand—in particular, the QUD.

Following Roberts (2012) et seq., I take QUDs to be the organizing element which guides the direction of any discourse towards its general goal of "communal inquiry... i.e. to share information about our world." Particular QUDs set down as the goal of particular discourse instances what is (objectively) true about particular aspect(s) of the actual world. Discourse moves must satisfy a basic requirement of being RELEVANT to the current QUD in order to be

felicitous.

Participants of discourse work towards the goal of QUD-directed communal inquiry by making public the information that they desire to contribute to the Common Ground, the body of shared, presumed-true information. Though the Common Ground by definition need not be grounded solely in genuine beliefs of the discourse participants, in canonical, sincere scenarios, participants assert propositions based on *some* sort of non-trivial epistemic grounds for those propositions. The default, and strongest type of assertions in terms of SPKR's epistemic grounds, are AnderBois' *symmetrical* assertions, which are grounded in the SPKR's (publicly shared) *belief* in the asserted proposition, and are proposed as candidate objects of *belief* (relativized to the purposes of the conversation) from all participants.[11] Thus, on the part of hearers, symmetrical assertions place the least amount of cognitive burden, in terms of working out under exactly what epistemic attitude the proposed proposition is to be accepted, as part of the strategy towards answering the QUD. This is because symmetrically-asserted propositions are proposed to address the QUD, and be mutually accepted, under *exactly the same epistemic attitude* as the attitude under which the same propositions are publicly committed to by SPKR, namely, belief. This is what I call EPISTEMIC TRANSPARENCY.

Reportative assertions deviate from this picture: the attitude under which the SPKR is publicly committed to the asserted proposition is different from the attitude under which the same proposition is proposed to address the QUD and be mutually accepted. In other words, reportative assertions have a degree of EPISTEMIC OPACITY in discourse: if the hearer wants to accept the reportatively-asserted proposition on the same epistemic grounds as the SPKR, she needs to do additional mental work to figure out what attitude the SPKR herself has towards that proposition.

Crucially, I consider EPISTEMIC TRANSPARENCY to be a general principle governing the

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[11]Indeed, in modeling such canonical scenarios, Rudin (2018: p. 15) observes that the components of the discourse model are "to be interpreted *doxastically*" (emphasis original).

mechanism of accurate mutual uptake in discourse: I argue that there is a global constraint that tends towards making and interpreting assertions as epistemically transparent. I formulate this principle as in (156).

(156)   The EPISTEMIC TRANSPARENCY principle of discourse: repeated from (131)

   Make, and assume others make, epistemically transparent assertions.

I argue that the strong and cross-linguistically consistent tendency to generate various SPKR-attitude CIs from elements with reportative literal semantic values constitutes empirical support that the EPISTEMIC TRANSPARENCY principle is at work. In particular, it fills an explanatory gap concerning the manner in which the *hearer* is supposed to take up an asymmetrical evidential assertion, which AnderBois' original account leaves behind:

> "[In making an evidential assertion, t]he speaker publicly commits herself to having a certain type of evidence for p, but avoids having to make a public commitment to p itself. Although the speaker does not publicly commit to p, the conventional effect of the evidential assertion is to propose that the conversational participants should continue the conversation acting **as though p were true**."
>
> (AnderBois, 2014: p. 250, emphasis mine)

If we merely take at face value the conventional semantic value of evidential assertions, which updates individual (DC) and communal (CG proposal, ps, addressing QUD) components asymmetrically—the former with the evidential proposition, and the latter with p—then we are left with only one epistemic uptake of p on the part of the hearers, namely, under full belief (for the purposes of the conversation). This analysis fails to accord with our intuition. Consider, for illustrative purposes[12], a context like (157), where the SPKR makes a reportative

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[12]Admittedly, judgments with the English evidential adverb *reportedly* are vague at best. Scott AnderBois and Sarah Murray (p.c.) suggest that "true" reportative evidentials, which English *reportedly* more closely resemble, might actually differ from reportative-like elements that have their origins in speech report parentheticals, such as SHW *yi kaon* and Mexican Spanish *dizque*, in being less tolerant of strongly flavored SPKR-attitude CIs (i.e. those which implicate evaluative/emotive attitudes about p). AnderBois further hypothesizes that, if true, this lower

assertion but conversationally implicates that he does not believe p, the theory should certainly not predict that a competent hearer who correctly takes up the meaning of the reportative assertion will always continue the conversation acting as if p were true.

(157) [It is past A's scheduled time for a call with his Shanghai-based parents, but they are not online yet. B and A both wonder why. Knowing that A's parents always go grocery shopping before the call, B and A think that the weather is a factor that can delay their arrival, and thus wonder what the weather is like in Shanghai right now. A fake weather app, which regularly mixes up weather data from different cities and which A completely distrust, tells him it's raining in Shanghai. A turns to B, still with this app on my phone.]

A: It is reportedly raining in Shanghai.

B: # Oh, so your parents are delayed by traffic then.

B: ✓ Oh, so your parents must be delayed by something else then.

Rather, I suggest that an integral part of the full interpretation of reportative assertions must consist in a pragmatic principle which (as long as there are sufficient contextual clues) drives the hearer towards figuring out, and accepting, the epistemically transparent meaning. In the case of reportatives, it means that, more often than not, the hearer will be compelled to accept the SPKR-attitude CI, as part of the meaning contribution of the reportative to the QUD-driven discourse. In (157), for the discourse to felicitously go in the direction set forth by the larger QUD "why are my parents delayed," it is essential that both participants arrive at the correct proposition that addressed the sub-QUD "what is the weather like in Shanghai." This

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tolerance might be attributable to (i) the eventive nature of elements of speech report origins, and/or (ii) the diachronic, or sometimes even contemporary, possibility for elements of speech report origins to occur in quotative (direct or indirect) contexts. The rough idea is that either the richer structure of eventive meaning or the more speech-form-focused (rather than information content-focused) function of quotatives, or both, might condition greater interpretative liberty, especially for pragmatic enrichments involving evaluative/emotive SPKR attitudes. This is an attractive hypothesis for future exploration. It will require cross-linguistic studies of a wider range of evaluative/emotive attitudinal elements (mirative or otherwise) which have diachronic origins in reportative evidentials or speech report elements.

correct proposition, crucially, is neither the at-issue proposition ("it is raining in Shanghai")
nor the evidential proposition ("I heard from a report that it is raining in Shanghai") in A's
reportative assertion, but the SPKR-attitude CI by A's utterance, which B can only arrive at if
she figures out the epistemically transparent commitment on A's part:

> "*A proposes 'it is raining in Shanghai' as the proposition relevant to addressing the factual*
> QUD, *but is publicly commited to 'I heard a report that it is raining in Shanghai.' It is thus*
> *unclear from the literal semantic value of the utterance what A's epistemic commitment*
> *is towards the proposition, and it would be unclear under what epistemic attitude I should*
> *accept that proposition, if I were to interpret the utterance by its literal semantic value only.*
> *I see that A's reportative source is the fake app, which I know he distrusts; thus, by using*
> *"reportedly" in this context, A must be conversationally implicating that he distrusts the*
> *content of this report. (Otherwise he could have just asserted plainly 'it is raining.')*"

Identifying SPKR-attitude CIs of reportatives as arising from a principle-governed prag-
matic mechanism that is built-in to a conventional semantic feature of reportatives (namely,
asymmetric update) has an important implication. It suggests that reportatives are in a sense
exceptional, in that their interpretation, especially as it concerns the epistemic teleology of
discourse, is more intimately tied with a certain kind of CIs than any other element is tied
to any type of CI it may generate. This constitutes the essential underlying condition for re-
portatives cross-linguistically to be prone to "acquiring," or be reanalyzed as conventionally
encoding, SPKR-attitude meaning. In the next section, I propose an account of the reanalysis
of SHW parenthetical *yi kaon* into mirative *yikaon* which relies on the facilitation by precisely
this condition.

7.4.3 The reportative-to-mirative reanalysis as conventionalizing CIs

I propose that the reportative-to-mirative reanalysis, as instantiated by the SHW speech report parenthetical/mirative pair *yi kaon/yikaon*, is an instance of reanalyzing conversationally implicated meaning as conventionally encoded meaning (König and Traugott, 1988 (2011); Traugott and Dasher, 2001). Specifically, for the SHW case, I propose that the reanalysis is precipitated by a conspiracy of three conditions: (i) a "generalized" association of the reportative element with a certain SPKR-attitude CI; (ii) opacity/cognitive load in maintaining the pragmatic conditions of eventive anaphoricity, and (iii) a pivotal form.

Three conditions of reanalysis. The first condition (generalized association with a certain SPKR-attitude CI) represents a proliferated state of the effect of the EPISTEMIC TRANSPARENCY principle: more and more instances of the reportative element are ones in which the hearer is compelled to interpret a SPKR-attitude CI alongside the literal reportative semantics, which, in turn, drives up the frequency and generality of the *active, SPKR-side* use of the reportative element in association with the same attitude CI. This condition is by nature probablisitic; it does not involve categorical changes either in the type of meaning in question, or the mechanism by which it is generated: the SPKR-attitude meaning remains a CI, generated by the principles which guide the interpretation of implicatures. At this prodromal stage, it is by nature difficult to capture the generalized-association condition in offline linguistic data records: so long as the associated meaning remains a CI, its generation and salience will largely be dependent on context, and on the momentary interpretative decisions by particular hearers. Traugott and Dasher (2001) cautions on principle against prematurely identifying implicated meanings (which they call "invited inferences," or IINs) on textual data:

> "How do we as historians of a language know when an IIN is beginning to be exploited? This must always be a matter of interpretation, on the assumption that IINs are cross-linguistics. Sometimes an IIN may be inferred because the later his-

tory by hypothesis requires an earlier stage in which the IIN has operated, but we must always exercise utmost care in projecting such IINs on the textual data. As a working principle, as long as the original coded meaning is accessble, we should assume that the invited inference is just that, a meaning derivable from the semantics in combination with the discourse context." (§1.6)

How does a meaning get from being merely a statistically associated CI to being conventionalized meaning? Or, put simply, what is the nature of the process that underlies categorical changes whereby one meaning (type or content) becomes another? There are two schools of thought on this question. Functional-grammaticalization approaches tend to attribute meaning change to internal, cognitive processes operating on the source meaning itself to change it to the target meaning: Traugott and Dasher, for instance, consider metaphorization and metonymization to be the two fundamental mechanism of semantic change. On the other hand, a countervailing approach is to attribute meaning change to a discrete moment in the grammar of the hearer, who reassociates the same linguistic form with a new meaning, driven by some general, external principle of linguistic communication. A prominent proposal along this line of thought is Eckardt's (2006; 2009) Avoid Pragmatic Overload (APO): in this view, semantic change consists in the *moment* when the hearer, faced with the choice between an old semantic value that is pragmatically more burdensome to interpret felicitously in the current context, and an innovative meaning that is more transparent and avoids the "pragmatic overload," reanalyzes the linguistic construction in question as conventionally denoting the latter meaning. (See also Lightfoot (1979) for a view of syntactic reanalysis along similar lines.)

I suggest that in cases like SHW, the reportative-to-mirative reanalysis consists in a discrete, hearer-side reanalysis process driven by an APO-like force. In particular, I suggest that this reanalysis is driven by a second condition: an avoidance of referential opacity of the discourse-anaphoric parenthetical element. One important difference between the meaning of the parenthetical [(158), the source] and that of the mirative [(159), the outcome] is that the former,

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but not the latter, requires that the hearer be able to identify the antecedent of the eventive anaphora. That is, the defineness condition of the parenthetical (158a) specifies that the parenthetical can only be interpreted felicitously if the hearer can successfully identify the speech report event involving the SPKR as the $Goal$, and a third-party source as the $Agent$, and resolve the reference of the pronominal element *yi* '3SG' in the parenthetical to that third-party source.

(158) For input context K_i and output context K_o, assignment function g from indices to individuals, world-time indices $\langle w_u, t_u \rangle$, a declarative $S = $ *p-yi kaon*:

a. Is defined iff. $MAX(T_i)$ entails or presupposes $\exists e_1 = E$ s.t. SAY$(e) \wedge \tau(e) <$ TIME$(i) \wedge Ag(e_1) = g(0) \wedge Goal(e_1) = $ SPKR

b. If defined, $S = $ *p-yi kaon*$(K_i) = K_o$ s.t.

(i) $DC_{\text{SPKR},o} = DC_{\text{SPKR},i} \cup \{\text{believe}_{g(0)}^{w_u,t_u}(p)\}$

(ii) $T_o = \textbf{\textit{push}}(\langle S; \{Content(e_1) \models p\}\rangle)$

(iii) $ps_o = ps_i \bar{\cup} \{p, Content(e_1) \models p\}$

c. The update (152) is well-formed w.r.t. Q-at-issueness just in case $Content(e_1) \models p$ is not relevant to QUD_i.

(159) For input context K_i and output context K_o, world-time indices $\langle w_u, t_u \rangle$, a mirative declarative utterance p-**textityikaon**$(K_i) = K_o$ s.t.

(i) $DC_{a,o} = DC_{a,i} \cup \{\text{believes}_{\text{SPKR}}(p),$

$\neg\text{expect}_a^{w_u,t_u}(p \cap CG_i)\} \wedge \forall t \leq t_u \neg\text{know}_{(}^{w_u,t}\text{SPKR})(p \cap CG)\}$

(ii) $T_o = \textbf{\textit{push}}(\langle S, P_R \rangle, T_i)$

(iii) $ps_o = ps_i \bar{\cup} P_R$

(iv) $CG_o = CG_i \cup \{q\}$

Though discourse anaphoricity is not a complex interpretative requirement in theory, in actual discourse such co-references can frequently be opaque, leading to the eventual development of distinct, conventionalized uses where referentiality is lost. The fact that many instances of third-person pronouns having impersonal (referring to generic external entities or forces), or even expletive (having fully vacuous reference) uses instantiates this type of change; English *it* is a good example. In the SHW case, given that the first condition (generalized association) already obtains, the hearer, encountering parenthetical *yi kaon*, will very frequently end up interpreting the SPKR-attitude CI meaning. Thus, she will frequently be faced with the choice of interpreting the marker *yi kaon/yikaon* either as (158), or as (159). However, in many contexts, the antecedent speech report event may have been introduced many turns ago, and have already become opaque and non-salient to the point of becoming harder to retrieve, while the SPKR-attitude meaning may well be the more salient meaning in helping the hearer grasp the epistemic teleology of the (QUD-driven) discourse, as I have argued in §7.4.2 and illustrated with examples like (157). Thus, a version of APO that leans towards reducing the pragmatic burden of identifying a distinct antecedent speech report event antecedent is what compels the hearer to reanalyze *yi kaon/yikaon* as conventionally encoding the SPKR-attitude meaning (159). The alternative is much less straightforward: it is unclear how a speech report is *functionally* connected to a mirative SPKR-attitude, either through a metaphoric relation or through metonymy.

Finally, I point out that this reanalysis relies on a pivotal form—that is, the form of the parenthetical *yi kaon* on which the semantic reanalysis into the mirative takes place. Crucially, it is clear that this pivotal form must have been the rapid-speech form of the parenthetical involving just the 3SG pronoun and the verb: only *yi kaon*, not with any other pronouns or event modifiers, subsequently gets the mirative meaning, and only *yi kaon* in rapid speech, and not in slow/careful speech, displays the exact same set of formal properties as the mirative *yikaon* outcome: regressively contracted prosodic phrasing (and thus complete loss of lexical tones through tone sandhi), and suppression of parenthetical "pause." These fine formal differences

between the parenthetical and the mirative in SHW are not merely accidental, but turn out to provide just enough resolution for us to discern that the reportative evidential-mirative connection is a diachronic reanalysis, happening to just one sub-form (the pivotal form) of the source construction.

A naturally-occurring example.　I provide a naturally-occurring example to illustrate how the three conditions create an environment which compels reanalysis of the parenthetical into a SPKR-attitude marker. Though SHW is not a language with historical corpus data, we benefit from the fact that the pivotal form is still preserved in contemporary SHW. Thus, the kind of semantic and contextual environments in which the reanalysis has occurred is still retrievable in the contemporary language.

Our example is taken from the Shanghai Spoken Corpus (SSC) (Mao and Newman, 2015), which consists of a series of monologues, conversations, one-on-one interviews, scripts of SHW-dubbed media content and local songs, totaling 124,069 words. The context for our particular example is an interview in which the interviewee (A) talks, among other things, about her two children, who are being taken care of by her mother. The target utterance containing the parenthetical/mirative element is shown in full gloss in (160b), with the pretext and post-text shown in translation in (160a) and (160c) respectively. All speech report elements ("she says" and "I say")[13] are **bolded**. Content which is clearly identifiable as reports of A's mother's speech are underlined, whereas that which is clearly identifiable as A's own speech are not underlined. Each point where a shift of source perspective takes place is marked with //. dotted lines indicate content with an ambiguous source.

(160)　[A relates an extended account by A's mother of an earlier episode of the elder child's unruly behavior:]

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[13]Note that even though the English translations of the pretext contains various renditions such as "She**'d** say" and "I**'d** say," the SHW form makes no overt distinction between indicative and subjunctive moods.

a. ⟨Pretext⟩

A: ...And then, my mother, she likes the younger child. **She'd say**, (1 sentence).// **I'd say**, (1 sentence). // **She says**, <u>with the elder one</u>—// say if I had gone outside (right?), and (in the house—) leave the two kids—leave the two kids just to her alone, she would get angry. // **She'd say**, <u>it's way to hot</u>; **she says**, <u>it's impossible to keep track (of the kids)</u>. <u>As for the elder one, he just does whatever—spilling water all over the floor—</u>

b.

...	yi	'ih	viau	chih	mehzy,	zieu	(no)	'eu	('eu)	lah	**yi**
	3SG	as.soon.as	NEG.want	eat	stuff	then	PRT	throw.up		PFV	**3SG**
	渠	一	覅	吃	物事	就	(嗼)	嘔	(嘔)	了	渠

kaon.
say
講

'... as soon as he (the elder son) didn't want to eat, he threw up, she said.'

(Spoken Shanghai Corpus A.Inter002:l.572)

c. ⟨Post-text⟩

In fact, he was not really throwing up; he just didn't want to eat, (so) he behaves like this. Because he felt-felt that every time he throws up, he could (be allowed to) not eat, so he throws up every single time. But sometimes he would throw up for real. When he throws up, "plop," he would throw up the stuff before—stuff that took so much work to put into him—without digesting it...

The pretext (160a) of this excerpt provides a brilliat example of the rapidity of perspective shifts using speech report constructions in naturalistic speech, as well as the oftentimes highly ambiguous nature of the scope of each speech report. Therefore, in a prolonged narrative involving a mixture of perspectives, these two features conspire to give rise to segments which are perspectively ambiguous. The dotted-lined sentence in (160a) is one such instance: evi-

dentially, such segments might very well still be reported information, as is most likely the case here (A, having "left the two kids just to her (mother) alone," must have only heard about the elder child's unruly behavior from her mother). However, due to being far enough removed from the initial introduction of the speech report event and source, and being interrupted often enough with assertions made from the SPKR's own perspective, for the hearer, retrieving the antecedent for the parenthetical becomes both more strenuous and increasingly marginal for the successful interpretation of these segments themselves: the reportative nature of the information source of these segments becomes much less salient than the SPKR's own attitude towards the same information.

In fact, this is exactly what the post-text (160c) shows: A, having described the unruly behavior of her elder child when under her mother's supervision (spilling water, throwing up food whenever he doesn't want to eat food) from an already ambiguous perspective, proceeds immediately to declare exactly what *she herself* believes to be what was really happening with her elder child in such a situation.

Therefore, consider the position of the hearer, upon encountering the apparently parenthetical element in (160b). The QUD around this part of the discourse excerpt is arguably something like "what did the elder child really do (that made it impossible for the grandmother to keep track of them)." Thus, when A utters (160b), the way the hearer interprets it (and confirms her interpretation) can be caricatured into the following steps:

(161)   a.   "SPKR has raised p (='what did the elder child do') as the QUD, but her utterance (160b) only adds p-according-to-SPKR's-mother to DC, and proposes the same to be added to CG. Under what epistemic attitude should I accept the information in p as addressing the (factual) QUD, then?"

        b.   "I don't even remember whether (160b) is still part of a speech report—in any event the SPKR has consistently presented all the previous sentences as if she is commit-

ted to them herself. However, it *is* clear from the pretext that SPKR implicates that she finds such reported information to be rather deviant from expectations."

c.   The immediate post-text confirms both that the SPKR-attitude CI (161b) is true *and* that it is the salient information that addresses the current QUD.

(161a) explicates the lack of EPISTEMIC TRANSPARENCY if the parenthetical were to be interpreted for its literal reportative semantics only. The EPISTEMIC TRANSPARENCY principle then drives the shift towards the implicated, but generally associated, SPKR-attitude meaning as in (161b). These two together precipitate the reanalysis of the parenthetical as encoding the SPKR attitude. Finally, and in addition, such reanalyses can indeed receive immediate justification by the post-text, as in (161c).

7.4.4   A cross-linguistic prediction

One area that my reanalysis-of-SPKR-attitude-CI account of reportative evidential-turned miratives seems to not account for is the precise flavor of the SPKR attitude that is conventionalized: nothing predicts that the attitude to be newly associated with the erstwhile parenthetical in SHW must be one of counterexpectation. I show that this is not a weakness but in fact a desirable upshot of the theory.

If the semantic reanalysis account is correct, then, given the multiflavoredness of SPKR-attitude CIs associated with reportatives that I have established in §7.4.1, we would predict that, cross-linguistically, different flavors of SPKR-attitude CIs associated with reanalyzed reportatives. Although we do not yet have a large number of case studies of SPKR-attitude markers that are unequivocally reanalyzed from reportative elements, at least three cases are clear enough to be mentioned here, and, taken together, they turn out to support the multiflavoredness prediction. The Cantonese "noteworthiness" mirative marker *wo3* 喎 has a largely transparent

diachronic origin in the verb of speech *waa6* 話 'say' (Chao, 1947; Leung, 2010b). For Korean, Ahn and Yap (2015) shows that the complementizer-turned reportative evidential *-ta*, when co-occurring with certain mood markers, has developed counterexpectational mirative meanings that can neutralize the reportative evidence type restriction [see example (108) in §6].[14] For Turkish, Zhuang and Ótott-Kovács (2022) have argued that the "second *-mIş*," which can either indicate another layer of reportativity to a 2rd-hand report (thus resulting in a 3rd-hand reportative interpretation), or mark that the SPKR has an attitude of "incredulity" to a 2rd-hand report, also instantiates the same diachronic reanalysis process whereby a conversationally implicated SPKR-attitude is conventionalized.

What we observe from these two cases is the fact that the SPKR attitude conventionalized in an erstwhile reportative element do come in a variety of flavors. In fact, a SPKR-attitude associated with a reportative need not be mirative: in the Turkish case, the attitude involved is one of disbelief and ridicule (roughly, "I do not believe p and find p ridiculous"). Such cross-linguistic variety in attitudinal flavor is empirical evidence of the *generality* of the current account.

7.5 Conclusion

In this chapter, I have zoomed in on the reportative evidential-mirative affinity. Through a close study of the SHW speech report parenthetical-mirative pair, I have made a case for this type of evidential-mirative affinity being a diachronic connection, rather than a synchronic one. I have also argued that the nature of this diachronic connection is not a functional shift through metaphorization or metonymy, but rather a discrete semantic reanalysis of a SPKR-attitude CI associated with the reportative marker as the conventionalized meaning, driven by a general disposition on the hearer's part to avoid pragmatic opacity. I have shown that this

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[14]More recent work by Rhee and Koo (2020) in fact explicitly argues that *-ta-ni* (=*-ta* + a different mood marker *-ni*) has developed into a full mirative marker.

diachronic account is capable of capturing the multiflavoredness of conventionalized SPKR-attitude meanings associated with reportative elements cross-linguistically.

The larger, semantic-typological point of this study is that evidential-mirative affinities may be of a non-synchronic identity. While descriptive-typological approaches to these affinities recognizes potential diachronic relations by default as an endocentric process (shifts in function), formal approaches to semantic change may be able to reveal the more exocentric mechanistic realities of reanalysis (discrete reassociations of form-function mapping). A well-rounded prospective research program on evidential-mirative affinities will benefit from these diverse methodological perspectives.

CHAPTER 8

PROSPECTS FOR FUTURE WORK

… IN PLACE OF A CONCLUSION

In the previous pages, I have addressed three of the six research questions on mirativity that I have laid out in §1: the MIRATIVE ATTITUDE question, the MIRATIVE CONTENT question, and the EVIDENTIAL-MIRATIVE AFFINITY question. In addressing these questions, I have offered a combination of general theoretical definitions, typological reviews, particular case studies, formal semantic analyses, and intuitive hypotheses. All of these are a testament to the multi-faceted nature of mirativity as a phenomenal category.

In lieu of repeating old conclusions, which hopefully I have made with ample clarity, I conclude this dissertation with some immediate prospects for future research on the three questions which are not systematically addressed in the previous chapters.

8.1   The MIRATIVE AGENT question

Which individual holds the mirative attitude? While the identity of the mirative agent overwhelmingly defaults to the matrix SPKR in canonical declarative-form utterances, this question becomes particularly intriguing in at least two different environments: interrogatives, and environments which license wholesale context shifts.

In the SHW case presented in §4, the mirative attitude is rigidly anchored to the SPKR even in questions. However, there are certainly cross-linguistic cases that display "attitudinal Interrogative Flip" (paralleling evidential Interrogative Flip). I include two data points here.

In various Quechua varieties, the marker *-na~-ña* marks a realizatory mirative attitude, without evaluative or emotive content: Adelaar (2013) emphasizes for Tarma Quechua reflex *-na* that it "is mainly used in objective, non-emotional statements" (p.1). In interrogatives, this

mirative displays attitudinal Interrogative Flip: it marks that the SPKR assumes the ADDR has discovered the information being sought, i.e. that the ADDR holds a realizatory mirative attitude towards the answer. This is shown by one of Adelaar's examples for Paracaos Quechua.

(162) wikuña aská-s   ka-rqu-**ña**-q   o ichá-lá-s?   Paracaos Quechua
       vicuña many-Q be-PFV-**3A/S.MIR** or few-DIM-POLAR
       'Were there many vicuñas or just a few (according to what you found/realized)?'

(Adelaar, 2013: ex. 12, adapted)

In Turkish, the indirect evidential/mirative suffix *-mIş* in fact can attest a realizatory mirative attitude interpretation in interrogatives, with the mirative attitude holder *flipped* to the ADDR. Incidentally, such an interpretation has to my knowledge never been expressly discussed in the literature.

(163) [Merve and Aslı go to a restaurant, Aslı orders a steak. Aslı takes a bite, and Merve asks:]

       Biftek nasıl-∅-mış?   Turkish
       soup   how-COP-MIR.3SG?
       'How is the steak (according to what you presently find out)?'   (Ótott-Kovács, p.c.)

Note that in both of these cases, the question appears to have canonical force, that is, it is not a rhetorical, self-directed, or biased question, represents genuine ignorance on the part of the SPKR, and requires and answer from the ADDR.

In both cases, the question is also not in environments that license wholesale shift of the speech context, such as Free Indirect Speech, or empathetic uses (e.g. saying *where's your toy?* to a child who momentarily loses visual track). The existence of "attitudinal Interrogative Flip" appears to violate another one of Rett's predictions that illocutionary attitudinal markers always index the matrix SPKR.

On their own, environments that appear to license wholesale shift may also license mirative agent shifts. Miratives have routinely been observed to occur in revelative declarations or narrations, where the propositions being asserted are perfectly known and non-novel to the SPKR, but are presumed to be novel information for the addressee. The precise mechanism that governs these shifts calls for investigation: is it something akin to Eckardt's (2006; 2009) context-shift analysis of Free Indirect Discourse? Or is it something more akin to the "**alloperformative**" shift of attitude holder, seen in e.g. the child-directed example (164) below from German?

(164) [Seeing a toddler apparently lost, I, who have just caught sight of her mother in the distance, say to the toddler:]

Hej... Guck mal, wo   ist **denn**   die Mama?

Hey   look   once   where   is   WONDER   the   mommy

'Hey... take a look, where's mommy (I perform your wondering attitude on your part)?'

8.2 The MIRATIVE TIME question

What is the time at which the mirative attitude is generated? In some of the cases we have seen, the mirative marker rigidly indexes present (or very immediate past) time for the mirative attitude. However, we have also seen a number of mirative markers cross-linguistically that can, or must, index a non-immediate past time. English *it turns/turned out* is one such case: an utterance with a parenthetical *it turns out* is much less felicitous at the mirative moment, than a while afterwards. Thus, (165a), with a prejacent in the present progressive and uttered at the moment of discovery, sounds much more odd than (165b), uttered sometime after the discovery.

(165) a. [Walking out of a windowless room and seeing that it is raining hard, I say:]

         ?? It's pouring like crazy, it turns out.

     b. [Telling my mother, who is in a different city, over the phone about the heavy rain earlier today:]

         ✓ This morning I walked outside. It was pouring like crazy, it turns/turned out.

There is additionally at least one case documented in the descriptive-typological literature which incidentally attests a future mirative time. In Ecuadorian Highland Spanish (Romance, Ecuador), Hengeveld and Olbertz (2012) report that the *perfectivo* construction, morphosyntactically consisting of the auxiliary *haber* 'have' and a past participle, has developed a realizatory mirative attitude meaning. (166) exemplifies this construction with a declarative prejacent.

(166) [I look at a jam pot that you haven't seen before and don't know the contents of. Seeing that it's apricot jam, I say:]

De albaricoque ha   sido.   Ecuadorian Highland Spanish

of apricot   have.PRES.3SG be.PP

'It's from apricot (I presently realize).'   (ex.6a, adapted)

Interestingly, Hengeveld and Olbertz cite two examples where this mirative construction occurs in canonical, information-seeking interrogatives (167). In both cases, the mirative conveys that the SPKR *anticipates* the ADDR's answer to the question to be "new and noteworthy." In fact, the authors note (p. 494) that such mirative marking constitutes a particular politeness strategy whereby overtly marking the SPKR's anticipated newsworthiness towards the answer "emphasize[s] the SPKR's interest in the annswer."

(167) a. ¿De qué   parte ha   sido usted?   Ecuadorian Highland Spanish

from which part   have.PRES.3SG be.PP 2SG.HON

'Where are you from (and I **anticipate** your answer to be new and noteworthy to

me?'   (ex.2, cit. **bustamante**, adapted)

b. ¿Cómo te   ha   ido?   Ecuadorian Highland Spanish

how   2SG.DAT have.PRES.3SG go.PP

'How are you? (and I **anticipate** your answer to be new and noteworthy to me)?'

(ex.10, adapted)

Full investigations are called for to illuminate these rather interesting dimensions of variation.

8.3 The MIRATIVE UPDATE question

How does a mirative impose its meaning onto the discourse context? Vanilla attitude predicates such as *I'm surprised that* p encode at-issue propositional meaning. Parentheticalize such attitude predicates, and one gets not-at-issue propositional miratives. In §4 we have already discussed varieties of more complex non-at-issue mirative meanings which can occur at the sub-illocutionary, illocutionary, and supra-illocutionary levels. In general, mirative meaning can occur at a variety of levels.

One important area of future work on the MIRATIVE UPDATE question concerns expressivity. The canonical Kaplanian notion of expressive meaning is modeled after properties of interjections, of which mirative interjections such as *wow* or *gosh* are presumably instances. Potts (2007) further develops the Kaplanian notion of expressivity and claims that expressive meaning is a type of conventional implicature. Against this backdrop, however, it is not clear

which mirative markers encode the mirative meaning in a truly expressive manner, and which do. Rett (2021a) provides good arguments for identifying the kind of mirative attitude meaning encoded by English emotive adverbs such as *surprisingly* as non-expressive. However, as I have argued at length in §4, not all miratives pattern with Rett's "emotive content." As discussed in §2, some mirative markers seem to display a number of Potts' empirical properties of expressive meaning, in particular, IMMEDIACY and PERSPECTIVE DEPENDENCE, sometimes also DESCRIPTIVE INEFFABILITY. For instance, there is a strong intuition that exclamative intonation, as a mirative marker in itself, likely fulfills all of Potts' diagnostics for expressive meaning. It will be up to future work to investigate the expressivity of particular mirative markers, and in turn refine our notion of expressivity beyond a small class of elements (interjections, honorifics, slurs, epithets).

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