Problematizing Mirativity

Tyler Peterson
Arizona State University

Abstract.

There are many excellent descriptions of mirativity in various language grammars, and more recently there has been a flurry of research refining mirativity to include how languages linguistically realize surprise and related concepts such as 'unexpectedness' and 'new information'. However, there is currently no commonly accepted set of independently motivated diagnostics for testing mirativity that utilizes the best practices and first principles of semantic and pragmatic investigation. As such, the goal of this paper is to go back to basics and examine mirativity from the point of view of a field linguist who has been given the task of discovering and documenting how a speaker of a language linguistically expresses her surprise. This approach rests on two premises: first, mirativity is about surprise in the psychological sense. The second premise is that we take seriously that mirativity involves a kind of meaning, and that all languages have the linguistic resources for communicating mirative (surprise) meaning. The outcome is a set of tests that can be used to probe mirative meanings in any language.

Keywords. Surprise; implicature; entailment; weak and strong mirativity; semantic and pragmatic fieldwork; Gitksan

1 Introduction

The phenomenon labelled *mirativity* – broadly defined as the linguistic expression of surprise – is the subject of a relatively recent resurgence of research activity.[1] This is not to suggest that mirativity is a newly discovered phenomenon; on the contrary: one can find many descriptions of what is often (but not always) labeled as mirativity in many language grammars, especially in languages that have grammatical evidentials or other grammatical features that have evidential overtones. One can also trace various threads of research on mirativity in the typological and functionalist literature, where its categorial status is debated. Indeed, much progress has been

---

made in cataloguing detailed descriptions, which has lead to a number of generalizations of what mirativity is. However, even a cursory evaluation of the literature on mirativity can leave one with the sense that the goal of explaining mirativity is still a work in progress, perhaps even an elusive one. I suggest there are a number of reasons for this. Firstly, a major generalization is that mirativity has the notion of *surprise* at its core, which is fundamentally a psychological concept. Linguistically, the word 'surprise' itself in English is a vague predicate. Some event is surprising according to whom? Some action is surprising under what circumstances and in which context? This indicates that surprise is both indexical – it is attached to the speaker of a utterance that expresses surprise (Celle and Lansari 2014) – and it is subject to degrees or scales determined by contextual factors, much like other vague predicates such as *tall* or *happy*:

(1) *Degrees of surprise*
     a. 'I'm a little surprised.'
     b. 'I'm surprised but not *that* surprised'
     c. 'That's totally surprising!'

It can be argued that treating mirativity as surprise is an overly simplistic approach; as such, many researchers have shown that mirativity encompasses many more nuanced or specialized meanings, such as, for example, the linguistic response to 'new information', or to an event that is 'out of control'. However, these descriptions are also potentially vague and can ultimately lead to circularity in our descriptions. Indeed, there are many definitions of mirativity in use. While these definitions seem to be compatible to a certain degree, this multiplicity ultimately weakens the cross-linguistic descriptive adequacy of the term 'mirativity'. Secondly, if we accept this basic definition of mirativity – the linguistic coding of surprise and related notions – we will quickly find that there is considerable intra- and cross-linguistic diversity in this coding. Consider English, which has a multitude of linguistic options for registering the surprise of the speaker:

(2) 'You made it!!'
     'I don't believe you made it!'
     'Looks like you made it!'
     'Wow, you're here!'
     'I'm amazed you made it!'
     'That can't be who I think it is!'
     'What a surprise!'
     etc.

In addition to this diversity, there is another issue that is often overlooked in studies of mirativity: are the sentences in (2), for example, really the speaker verbalizing an emotional state resulting from an immediate experience (i.e. being surprised 'in the moment'), or are they simply different ways a speaker can *talk about* some previously surprising event? These are not the same thing, and this mirativity-as-surprise vs. mirativity-as-talking-about-surprise distinction is often overlooked or equivocated in descriptions of mirativity.

I suggest that one of the reasons why linguists are still grappling with mirativity is because there is a lack of methodology for testing and documenting it. As mentioned above, there are many excellent descriptions of mirativity in various language grammars, and more recently there has been a flurry of research dedicated specifically to how languages linguistically realize surprise and related concepts such as unexpectedness and new information. However, there is no

commonly accepted set of independently motivated diagnostics for testing mirativity that makes use of the best practices and first principles of semantic and pragmatic investigation. As such, the goal of this paper is to address this gap by going back to basics and examining mirativity from the point of view of a field linguist who has been given the specific task of discovering and documenting how a speaker of a language linguistically expresses her surprise. This approach rests on two premises, which I make explicit: first, mirativity is about surprise in the psychological sense. Even in light of the issues outlined above regarding the indexical properties and vagueness of the notion of surprise, as well as the more nuanced meanings that label 'mirativity' covers, it is still a suitable null hypothesis. The second premise is that we take seriously that mirativity involves a kind of *meaning*, and that all languages have the linguistic resources for communicating mirative (surprise) meaning.

This approach is motivated by the three necessary (but not always sufficient) components that guide any investigation of primary language data: (i.) a hypothesis (or hypotheses) which can be tested empirically, (ii.) inductive reasoning that allows us to formulate stable generalizations of some linguistic phenomenon from specific observations in a given language, and (iii.) a set of tests that probe meaning, which, in this paper, are specialized to probe the kinds of meanings attributed to the label 'mirativity'. As such, the main outcome of this paper is a set of tests that can be deployed in a field situation, targeting the mirative meanings in any given language. If it can be shown that these tests are effective, the results they produce will directly bear on the issues raised above, and will ultimately provide an empirically supported foundation built upon primary language data for defining and explaining mirativity.

In the following section I review and evaluate the 'state of the art' of research on mirativity. In this section I also identify a number of the problems and issues currently facing these approaches. In section 3 I develop in detail the kinds of empirical tests for probing mirative meaning. Section 4 concludes by exploring how the results of the empirical tests determine what kinds of theoretical tools can be used to explain mirativity.

2   State of the art

This section is a brief review of the state of the art of mirativity. While not exhaustive, it shows how our understanding of the phenomenon has advanced, especially from descriptive, functional, and typological perspectives. I contribute to the typological perspective by showing how mirativity can be organized into two general classes: *parasitic mirativity*, and *non-parasitic mirativity*. I also critically evaluate the current state of progress on mirativity, and argue for the necessity of developing tools that specifically target mirative meaning.

2.1   A brief history and synthesis

Much of the relatively recent research into mirativity has focussed on its categorial status from various descriptive, typological and cognitive scientific perspectives.[2] The roots of these research

---

[2]For example, the reader is referred to a relatively recent special issue of *Linguistic Typology* (2012, Vol. 16, No. 3) and the special issue of *Review of Cognitive Linguistics* "Expressing and Describing Surprise" (2015, Vol. 13, No. 2).

streams can traced back to the landmark papers of Slobin and Aksu (1982) and Aksu-Koç and Slobin (1986), where they describe the extended semantic uses of the Turkish evidential *-miş*:

(3)   Turkish (Aksu-Koç and Slobin 1986: 159)

Kemal gel-*miş*
Kemal came-EVID

EVIDENTIAL TRANSLATION: 'Kemal apparently came'
MIRATIVE TRANSLATION: 'Kemal came!'[3]

The syntax and semantics of *-miş* are complex.[4] However, what is relevant here is how a speaker can use *-miş* in two different speech contexts, resulting in the two different translations in (3): in a context where a speaker observes Kemal's coat hanging on the door the speaker can use *-miş* to express the inference that Kemal came, based on this information. However, in a context where the speaker observes the event of Kemal actually coming through the door, (3) can also be used to express the speaker's surprise at this event – its mirative translation. Slobin and Aksu (1982) and Aksu-Koç and Slobin (1986) cast these observations in psychological terms; the alternation in (3) reflects the conscious experience of the speaker: the use of *-miş* represents an experience for which the speaker lacks what they call 'premonitory awareness'.

In another seminal work on mirativity, DeLancey (1997) picked up on these observations and connected them to similar phenomena he observed in two unrelated languages, Lhasa Tibetan and Hare. DeLancey also describes mirative meaning in psychological and cognitive terms:

> [Mirativity] marks both statements based on inference and statements based on **direct experience** for which the speaker had **no psychological preparation**... What these apparently disparate data sources have in common ... is that the proposition is one which is **new to the speaker**, not yet integrated into **his overall picture of the world** (DeLancey 1997: 35-36, emphasis mine).

In more recent work, Aikhenvald's (2012, 437) cross-linguistic study synthesizes the various descriptions of mirativity into five major subtypes of meaning:

(4)   a. Sudden discovery, sudden revelation or realization by the speaker, the audience (or addressee), or the main character
      b. Surprise of the speaker, the audience (or addressee), or the main character
      c. Unprepared mind of the speaker, the audience (or addressee), or the main character
      d. Counterexpectation of the speaker, the audience (or addressee), or the main character
      e. Information new to the speaker, the audience (or addressee), or the main character

The mirative use of evidential *-miş* in (3) is one example of the robust connection between grammatical evidentiality and mirativity. However, the meanings in (4) are manifested in a myriad of ways intra- and cross-linguistically. For example, in certain contexts the use of the imperfective aspect in Magar can also be used to express the speaker's surprise at the state, event, or action described by the sentence in (5):

---

[3]Language example and contexts were adapted from Aksu-Koç and Slobin (1986: 159) and confirmed with three native speakers of Turkish. Also, throughout this paper I interpret the use of the exclamation mark '!' in the various translations in the secondary sources as the orthographic representation of surprise.

[4]See, for example, Temürcü (2007) for an in depth study on the syntax and semantics of *-miş* and how it functions within the overall TAM system in Turkish.

(5) Magar (Grunow-Hårsta 2007 cited in Aikhenvald 2012)

boi-e   chitua-ke   ngap-o   **le**
father-ERG leopard-DAT shoot-NMLZ IMPF.MIR

[I realise to my surprise that:] 'Father shot the leopard!'

In the Tibeto-Burman languages, DeLancey (1992, 2012) claims that mirative meaning can be expressed through the obligatory morphology on verbs, the primary meaning of which is to encode the speaker's control and volitionality over some event or action. Example (6) shows how mirativity is associated with the disjunct morphology:[5]

(6) Lhasa Tibetan (DeLancey 1992: 43-44)

   a. *Non-mirative (Conjunct)*

      ngar   dngul   tog=tsam *yod*
      I:DAT money some   EXIST.CONJUNCT

      'I have some money.'

   b. *Mirative (Disjunct)*

      ngar   dngul   tog=tsam *'dug*
      I:DAT money some   EXIST.DISJUNCT

      'I have some money!'

The Turkish, Magar, and Lhasa Tibetan cases provide a small but representative sample of how different kinds of grammatical elements and meanings (grammatical evidentiality, aspect, and control, respectively) can be used to express the speaker's surprise in certain contexts. However, the expression of mirativity can also arise from the use of different kinds of structures. For example, in Kham the insertion of an inflected auxiliary *o-le-o* can be used to express the surprise of the speaker, as in the minimal pair in (7) shows:

(7) Kham (Watters 2002, p. 288-93, cited in Aikhenvald 2004, 2012)

   a. ba-duh-ke-rə
      go-PRIOR-PERF-3p

      'They already left/went'

   b. ya-ba-duh-wo   **o-le-o**
      3p-go-PRIOR-PERF.NOMN 3sg-be-NOMN

      'They already left!'

In another example, Wiklund (2009) reports that the *take*-V construction in the Scandinavian languages (or what are called *pseudo-coordinations*) have a strong surprise reading, as in the minimal pair in the Swedish example in (8) shows:

(8) Swedish (Wiklund 2009)

   a. John läste   en bok
      John read.PAST a   book

      'John read a book.'

---

[5]This analysis of conjunct/disjunct morphology in Lhasa Tibetan is not uncontroversial; for example, see Hill (2012).

    b. John **tog** **och** läste   en bok

       John take.PAST and read.PAST a   book

       [Surprisingly, unexpectedly, suddenly] 'John read a book.'

In all of the above cases the expression of mirative meaning arises from the uses of certain meanings and structures in specific kinds of contexts. Many languages also have words and morphemes that encode surprise. For example, Mapudungun and Chechen have what can be analyzed as mirative morphemes:

(9)   Mapudungun (Zúñiga 2000)

    Fey ti chi domo   kalko-**rke**
    that ART Woman witch-MIR

    'This woman turned out to be a witch [surprisingly].'

(10)   Chechen (Molochieva 2007)

    a. Zaara j-iena
       Zara j-come.PERF

       'Zara has come.' [and she is still here I expected her to come]

    b. Zaara j-iena-**q**
       Zara j-come.PERF-MIR

       'Zara has come!' [I didn't expect her to come].

Implicit in these analyses (the glosses) is the claim that mirative meanings – whichever of the specific kind(s) of meanings given in (4) – are the *entailed* meanings of morphemes such as *-rke* and *-q*. In other words, we expect that *-rke* and *-q* are part of the logical meaning of the sentence they attach to, and that they express the speaker's surprise regardless of the context they are used in. Other languages have mirative morphemes that seem to fall somewhere in between. The English word *wow* is typically used to express a speaker's surprise, as in the unexpected arrival of a colleague at a meeting in (11):

(11)   '**Wow,** you made it**!**'
    $p =$ You made it

Under the standard view, surprise-expressing interjections such as *wow* and the exclamatory intonational contour represented by the exclamation mark '!' in are not considered to be part of the propositional or 'at issue' content expressed by the sentence (cf. Potts 2005). For example, the propositional content (p) in (11) is *you made it*; this is what is asserted through the utterance of (11). Rather, surprise-expressing interjections contribute to the illocutionary (or speech act) content of the utterance. Whereas *wow* can express other meanings in addition to surprise, there are languages which have words and morphemes that express more specialized types of mirative meaning, as *bakáan* in Yucatec Maya:

(12) Yucatec Maya (AnderBois 2016: 5)

Táan **bakáan** k'áaxal ja'
PROG MIR   A3   fall water

'Oh, it is raining.'
p = It is raining

Broadly speaking, AnderBois claims that the mirative meaning of *bakáan* is not a part of the at issue content of the sentence in (12); rather, its mirative meaning arises at the illocutionary level of meaning. As such, the at issue (entailed) content of (12) is only the proposition (p) that *it is raining*, and not the surprise introduced by *bakáan*.

2.2 (Non-)parasitic mirativity

Peterson (2015: 345) suggests the various expressions of mirativity, such as those described in the examples above, can be drawn into two major classes and a number of subclasses based on the relation that holds between mirative meaning (as defined, for example, in 4), and how it is expressed through other kinds of meanings and structures. In cases where mirative meaning is not a part of the entailed meanings of the parts of the sentence, then mirativity is *parasitic* on these meanings. On the other hand, when a language possesses words or morphemes that specifically encode mirative meanings (such as Mapudungun, Chechen, English and Yucatec Maya), then mirativity is *non-parasitic*. These relations are schematized in Figure 1:

MIRATIVITY

PARASITIC

NON-PARASITIC

Meaning   Structure   Propositional   Illocutionary
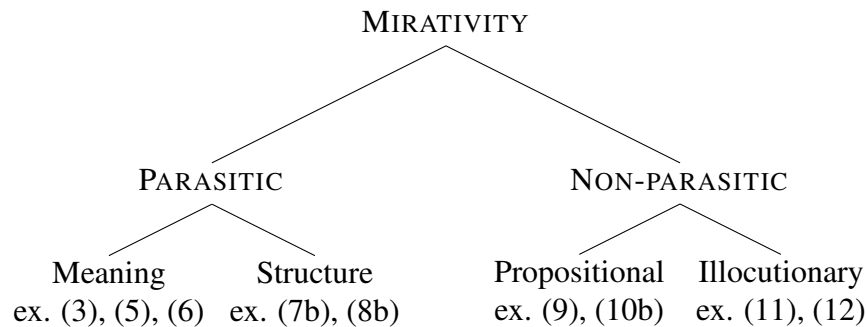ex. (3), (5), (6) ex. (7b), (8b)   ex. (9), (10b) ex. (11), (12)

Figure 1: (Non-)Parasitic Expressions of Mirativity

Both parasitic and non-parasitic mirativity can be further divided into more specific kinds. Mirativity can be parasitic on either the meanings of other grammatical elements (i.e. evidentiality, aspect, or control, etc.), or it can be parasitic on certain kinds of structure (i.e. the use of an auxiliary construction in Kham, or the pseudo-coordinations in Swedish). Non-parasitic miratives are further divided into propositional and illocutionary types. Here I am making use of a specific but widely used kind of terminology. I take 'propositional' to describe meaning that is entailed. For example, the mirative morpheme *-q* in Chechen is part of the logical content of the sentence. On the other hand, words which contribute to mirative meaning at the speech act level of the sentence, such as those found in English and Yucatec Maya, are non-parasitic miratives of the illocutionary type.[6]

---

[6]To be clear, this is my analysis of Mapudungun and Chechen secondary data, which may turn out to be wrong upon closer examination of the facts.

The advantage of this approach goes beyond simply categorizing mirativity into different types. The parasitic/non-parasitic distinction corresponds to a theoretically neutral way of categorizing different kinds of meanings. In much of the literature on mirativity words such as 'express' and 'encode' are often used; ultimately, these terms are not very precise (or at the very least their senses can vary depending on the descriptive conventions or traditions used). The typology in Fig 1 provides more precision in the following way: if we discover in a language that the expression of mirativity in that language is parasitic, as defined in Fig 1, then this predicts that mirative meaning is *implicated* and not *entailed*. The flip side of this are non-parasitic miratives, which entail but not implicate mirativity.[7] The value of these designations is that they make certain kinds of predictions with regards to how we can elicit and test these mirative meanings in any given language. I lay this out in detail in the following sections.

2.3   A critical evaluation

I suggested in the introduction that the main challenge facing these various research streams on mirativity is that we are investigating a kind of meaning, as confirmed by many of the fundamental assumptions laid out in, for example, Slobin and Aksu (1982) and Aksu-Koç and Slobin (1986), DeLancey (1997), and Aikhenvald (2012). However, there are several deeper issues and questions these assumptions invoke, none of which have been adequately addressed in the literature. To begin with, the kinds of mirative meanings very specifically laid out by Aikhenvald in (4) are *interactional* by definition: they involve a speaker and addressee (and perhaps other participants in the discourse). The interactional component comes about in the following way: first, as Aikhenvald defines it, mirativity involves, for example, the 'sudden discovery, sudden revelation or realization by the speaker, the audience (or addressee)...'. As such, it is not just about the speaker, but rather mirativity is further conditioned by what the speaker believes of the knowledge state of the participants in that speech context. However, even this is not sufficient; if the typology in Fig 1 holds, then the mirative meanings that are parasitic on other grammatical and/or semantic categories are not entailed. Taking the mirative use of *-miş* as an example, this predicts that, regardless of how much the speaker is psychologically affected by the 'sudden discovery, sudden revelation or realization' of Kemal's arrival, nothing guarantees that the utterance of (3) will be understood by others in the context as an utterance of surprise at this event. A clue pointing to the importance of the context is found on the accompanying description of the mirative use of the aspectual morpheme in Magar in (5), as "[t]he "surprised" 1st person speaker is typically omitted, as it is *understood from the context*" (Aikhenvald 2012: 441, emphasis mine). In other words, what guarantees that the speaker's utterance of (5) is understood by the other participants in the speech context as one expressing her surprise that Father shot the leopard? In the cases of parasitic miratives, a speaker can have the *intention* to express surprise through these grammatical strategies (such as the use of the perfective in 4), but there is nothing that guarantees that their conversational partner will *interpret* their utterance as one of surprise. This is one of the hallmarks of *implicated* meaning, and I examine in more detail how this can be used to test mirative meaning in the next section.

---

[7]Even this is not entirely precise in cases of non-parasitic illocutionary miratives. As mentioned above, it is standardly assumed that elements (words, particles, etc.) that contribute to the illocutionary level of meaning are, by definition, not propositional. As such, they are not entailed. In these cases it may be more precise to describe non-parasitic illocutionary miratives as *expressing* mirativity.

Many descriptions of mirativity can be found in the literature; a very small sample of these was given in the examples above. There are also a number of well-articulated functional analyses of literature that take these descriptions as a foundation. Taken together, we now have a nuanced idea of what exactly mirativity is. However, at the moment we lack a methodology that specifically tests mirative meaning along the lines of the predictions made by the parasitic/non-parasitic distinction in Fig 1. I address this gap in the remainder of this paper.

3   Semantic and pragmatic fieldwork

Given the immense intra- and cross-linguistic diversity of the expression of surprise – whether of parasitic or non-parasitic kind – a practical first move is to start with working within a manageable space. For this purpose I have chosen to investigate the mirative use of grammatical evidentials, a choice motivated by the fact that typologically there is a robust connection between mirativity and evidentiality (cf 3). The goal of this section is to show how we can adapt a pre-existing and independently motivated battery of semantic and pragmatic tests that are *independent* of mirativity or surprise. The reason for restricting the scope of this investigation in this way is so the tests are not fixed to a particular language and do not presuppose any particular characteristics of mirativity. Rather, the observations and generalization on the mirativity data should *follow* independently from the tests, thus making them applicable to other languages that have grammatical evidentials.

In a nutshell, the function of a grammatical evidential is to give a speaker a way of talking about states, events, or activities they haven't personally seen, heard, or otherwise taken part in. Rather, grammatical evidentials lexicalize specific kinds of information that a speaker then uses to make inferences about the world (see for example Aikhenvald 2004). For example, the context in (13) is a typical *indirect evidence* context: the grammatical evidential *n'akw* in Gitksan is used to encode that a speaker has acquired information of a sensory nature (i.e. sight, smell, touch) for an activity that they did not witness directly, in this case, Bob smoking fish:

(13)   Context: Alvin and his friend drive by Bob's place; they can smell and see smoke coming out of the smokehouse.

n'akw=hl se-hon-(t)=s   Bob
EVID=CD CAUS-fish-3=CD Bob

'Bob must be smoking fish.'
'Looks like Bob is smoking fish.' (Peterson 2010: 245)

However, if we adjust the context slightly such that the speaker actually witnesses the activity or event expressed by the sentence, the speaker will simply assert that Bob is smoking fish, just as in English:

(14)   se-hon-(t)=s   Bob
CAUS-fish-3=CD Bob

'Bob is smoking fish.' (Peterson 2010: 12)

Because the speaker directly witnesses this activity, (14) is both necessary and sufficient for the purposes of meaningful conversation. It is also predicted that the indirect evidential *n'akw* will be infelicitous. However, in certain contexts it is not infelicitous:

(15) Context: Gwen is preparing a surprise birthday party for Alvin; the guests are arriving one
      by one. Holly and Gwen are preparing the table inside, when Alvin walks through the
      door, unexpectedly. Gwen exclaims

      n'akw=hl witxw=s   Alvin
      EVID=CD arrive=PD Alvin

      'Alvin's here!' (Peterson 2010: 252)

Example (15) is a *direct evidence* context: Gwen witnesses Alvin's arrival, yet the indirect
evidential *n'akw* can still be used. There are pragmatic consequences for 'misusing' an indirect
evidential in a direct evidence context, especially as the speaker has the linguistic means – the
assertion in (14) – available to them. The consequence of this is the expression of surprise, or
what we label as mirativity. As such, in addition to its evidential meaning, in certain contexts
n'akw can be used miratively: it can be used to express a speaker's surprise at an unexpected
state, event or activity in a specific context. Based on these preliminary observations the two
generalizations on the meanings of *n'akw* can be formed in (16):

(16) The meanings of the sensory indirect evidential *n'akw* in Gitksan
         a. **Meaning 1:** *n̓akw* encodes sensory information for a proposition
         b. **Meaning 2:** in certain contexts *n̓akw* can be used to express surprise

These two meanings were discovered through the practice of semantic and pragmatic field-
work (Faller 2002; Matthewson 2004; Peterson 2010; Bochnak and Matthewson 2015, a.o.),
which probes the meanings of words and utterances along two complementary lines:

(17) **Semantics:** The 'fixed' or 'stable' meanings of utterances, or parts of utterances (Meaning
      1 in 16).

      Pragmatics: How these utterances, or parts of utterances, are used in specific speech
      contexts (Meaning 2 in 16).

What the semantics-pragmatics distinction gives us is a very basic way of talking about the
different 'levels' of meaning that all utterances and parts of utterances have. It should be clear
to the reader that these are simply convenient labels for observations about meaning; they do not
presuppose any theoretical orientation. Nonetheless, this distinction is a fundamentally important
one, and the observations in (16) will guide our thinking in the tools we use in our investigation
of mirativity.

Before proceeding with this task, it is useful to consider some of the challenges that face the
researcher conducting semantic and pragmatic fieldwork. First of all, the meanings of words are
often not directly accessible by native speaker intuitions. For example, even in English one can
imagine how awkward it would be for a language consultant to answer the following question
posed by the linguist: "How do you say *might*?" This is difficult because modal auxiliaries in
English require specific kinds of contexts in order to determine their meaning. Asking questions
that target surprise are similarly challenging:

(18)   a. "How do you express surprise in your language?"
         b. "Well, I can say I'm surprised!"

I touched upon this issue in the introduction: is the utterance of (18b) really one expressing surprise, or simply talking about surprise? Our intuitions tell is that these aren't the same things (and that the response in (18b) likely involves the latter). This further motivates the goal stated above: we want to show how we arrive at the generalizations in (16) in a principled way using standard field tests that probe semantic and pragmatic meanings that control for contextual factors – especially when we are documenting meanings that are not accessible through standard direct elicitation.

3.1 Tests for mirative meaning

In this section I present a basic methodology for probing meaning in general, which can then be utilized for testing mirative meaning. The outcome of this should lead us to the kinds of generalizations (i.e. (16) above) that any theoretical or functional analysis of mirativity will ultimately rest on. It is important to keep in mind that this is based on the documentation practices one follows when investigating any kind of linguistic phenomena. For example, it is common practice in the first steps of documenting an unknown language to determine the phonemic inventory and the major phonological rules that operate on it. The basic empirical tests include constructing minimal pairs in order to discover the phonemes of a language and the possible allophonic variants of them. In another domain of language, it is well known that before one can develop any kind of analysis of the syntax of nominals in a language, it is necessary to determine the constituency of potential noun phrases (i.e. DPs or NPs) in that language. Tests for constituency include, movement, deletion, substitution, and coordination etc. The same holds true for documenting meaning: just as there are diagnostics that target sound and structure, there are empirical tests for probing meaning, which, for the present purpose, can be specialized to probe for surprised (mirative) meaning specifically. These are summarized in (19):

(19)   Empirical tests for surprised meaning:

       a. *Entailment:* Does surprised meaning affect the truth conditions of the sentence?

       b. *Presupposition:* Is surprised meaning presupposed?

       c. *Implicature:* Can the surprised meaning be targeted for cancellation (i.e. a cancellable implicature)?

       d. *Challengeability:* Can the surprised meaning be targeted for assent or dissent?

       e. *Embeddability:* Can the surprised meaning be semantically embedded?

       f. *Displacement:* Can the surprised meaning be displaced in time and space?

The empirical tests for meaning in (19), along with the questions they ask, provide the foundation of an elicitation plan that can probe mirative meaning in a systematic way that can test the hypothesis laid out in the previous section. It should be noted that the tests in (19) are not necessarily intrinsically nor extrinsically ordered, but for practical purposes starting with the fixed meanings of words or utterances (entailments) is generally considered to be the most stable place to start. This is sensible considering that contextual meanings of words and utterances are often (although not always) rooted in the fixed meanings they have – as we observed in (13), (15), and (18).

3.2 A test case: grammatical evidentials in Gitksan

Peterson (2010, to appear) claims that evidentials in Gitksan, given in Table 1, are epistemic modals that grammatically encode different kinds of information sources.

	Gloss	**Type of information source**
=ḵat	REPORTATIVE (REP)	Reportative
=ima	MODAL (MOD)	not specific
n'akw	EVIDENTIAL (EVID)	Inferential

Table 1: The grammatical evidential system in Gitksan

To begin with, testing entailments and the contradictions (cf. 19a) that arise from this can tell us about the truth conditional meaning of words such as, for example, using the negation complex in Gitksan, *nee(=dii)*:

(20) # [hla yukw=hl tim wis] ii   [**nee=dii**   hla yukw tim wis]
       INC PROG=CD FUT rain CONJ NEG=CONTR INC PROG FUT rain

    # "It is starting to rain and it is not starting to rain."
    p = It is starting to rain

Example (20) is a sentence that conjoins a clause with its negated counterpart. Speakers of both English and Gitksan clearly judge this to be a contradiction. Given that the core proposition expressed by the sentence is *It is starting to rain*, this contradiction can be symbolized as ($p \wedge \neg p$). Thus, we discover the meaning of the word *nee=dii*, since it is the only element that is minimally different in the coordinated clauses expressing the same proposition p. This is relevant for modals; consider the contingencies and contradictions in (21) that arise in English when a modalized sentence is coordinated with its negative counterpart:

(21)   a. CONTRADICTION: "It **must've** start raining, and it **might not** have."
      b. CONTINGENCY: "It **might've** start raining, and it **might not** have."

What (21a) shows is that a 'strong' modal auxiliary such as *must* cannot be coordinated with its negated counterpart (a contradiction of the form $\Box p \wedge \Box \neg p$), while a 'weak' modal such as *might* can be in (21b) (a contingency of the form $\Diamond p \wedge \Diamond \neg p$). The example in (22) – a minimal pair with the sentence in (20) – shows that this contradiction does not arise with evidential *=ima* in Gitksan:

(22) [hla yukw=*ima*=hl   tim wis] ii   [**nee=***ima* hla yukw tim wis]
     INC PROG=MOD=CD FUT rain, CONJ NEG=MOD INC PROG FUT rain

    "It might start raining, and it might not start raining."
    p = It is starting to rain

Testing the entailments that give rise to contradictions and contingencies are the cornerstones of semantic fieldwork and provide a replicable way of discovering the meanings of words and utterances. The propositional logical representations (p and q) used above provide a technical means for documenting the generalizations, much in the same way the IPA is a technical alphabet

for transcribing a language's sounds – neither carry any theoretical commitments. Using this test at the sentence level, we can form the generalization that =*ima* is a modal with weak modal force.

Along with entailment, presupposed meanings are abound in every language encoded in some form or other. A classic example of presupposition are factive verbs in English. Negation can also used to test presupposed meaning, as example (23) shows:

(23)   a. 'John stopped smoking.' (presupposes John used to smoke)

          b. 'John **didn't** stop smoking.' (also presupposes John used to smoke)

What this classic test using negation shows is that presupposed meanings always take wide scope over negation, as they are not a part of the logical, asserted content of the utterance. The application of the negation test in (25) shows that =*ima* presupposes indirect evidence, as the negation of an =*ima*-sentence does not negate the evidence, but rather the asserted content of the sentence:

(24)   a. siipxw=*ima*=t Mary

            sick=MOD=PD Mary

            "[I have indirect evidence] Mary is sick."

          b. nee=*ima*=hl   siipxw=s Mary

            NEG=MOD=CD sick=PD Mary

            "[I have indirect evidence] Mary **is not** sick."

            Does not mean "[I do **not** have indirect evidence] Mary is sick."

The same test can be applied to reportative =*kat*, which shows that the reportative evidence is presupposed and not asserted:

(25)   a. siipxw=*kat*=t Mary

            sick=REP=PD Mary

            "[I have evidence in the form of a report that] Mary is sick."

          b. nee=*kat*=hl   siipxw=s Mary

            NEG=REP=CD sick=PD Mary

            "[I have evidence in the form of a report that] Mary **is not** sick."

            Does not mean "[I do **not** evidence in the form of a report that] Mary is sick."

By looking at entailed and presupposed meaning – as revealed by the use of negation – we have discovered the core aspects of the meanings of two of the evidentials in Gitksan. Mirativity (or surprise) has yet to arise in the restricted space we set out for ourselves (grammatical evidentials). Nonetheless, even with these basic observations we can already make specific predictions about mirativity in at least two ways: if mirative meaning is part of the entailed semantic content of an evidential, then this predicts that surprise is always a part of the meaning of a grammatical evidential in Gitksan such as =*ima*; this is not the case. Presupposition would be even more problematic: broadly speaking, presupposed meanings represent the shared assumptions of the participants in a particular discourse context. From another perspective, presuppositions can be thought of as 'old information'. This seems conceptually at odds with what it means to be surprised at a state, event or action in a particular context: one cannot be surprised at old information, or at least information that has already been integrated into the knowledge state of the

speaker. As such, on these conceptual grounds we may rule out presupposition as a relevant test for mirativity.

However, example (15) from above showed how mirativity can be associated with the third evidential in the Gitksan system, *n'akw*: in direct evidence contexts *n'akw* can express mirative meaning. We can also test this using negation to probe what kind of meaning this is. This involves targeting the surprised meaning and negating it, as in (26):

(26)   Context: John is standing in the doorway; his arrival was unexpected.

   n'akw=hl witxw=t   John
   EVID=CD arrive=PD John

   "John's here!"
   "Look who's here!"
   "I see John's here!"

   a.   "...not that I'm surprised or anything..."

   b.   "...not that I wasn't expecting you..."

Note that the evidential meaning of *n'akw* is presupposed and not asserted, just as the evidential meanings of =*ima* and =*k̲at*. This is not what we are testing in (26); rather, the test based on (19c) is targeting the surprised meaning expressed using *n'akw* and reveals that, in this context, the surprised meaning is not entailed (no contradiction arises when the surprised meaning is negated) nor presupposed, but rather implicated.

The application of the first battery of tests (19a-c) reveals the following set generalizations on the meanings of Gitksan modal evidentials:

1. *Entailed meaning:* indirect evidential =*ima* entails weak modal meaning ('might' and not 'must' modal force).

2. *Presupposed meaning:* the individual evidential meanings of =*ima* and =*k̲at* are presupposed and not asserted.

3. *Implicated meaning:* in addition to its evidential meaning, *n'akw* can also implicate surprise in certain contexts; this surprised meaning is not a part of the asserted content, nor is it presupposed.[8]

It is the last generalization that is of interest to us, as this is where mirative meaning arises in the use of a grammatical evidential in a specific context. I will examine more closely the ingredients of this context in the next section.

At this point it is useful to show how the Gitksan data connects to a wider phenomenon that has been observed in many languages with indirect evidentials similar to *n'akw*: the use of an indirect evidential to express the surprise of a speaker is cross-linguistically robust. Thinking inductively, and coupled with the tests from (19a-c), we can be more precise as to what it means for indirect evidentials to 'express' mirativity in other languages with evidentials in the following way:

---

[8]Interestingly, mirative meaning cannot be expressed by the other evidentials in Gitksan, =*ima* and =*k̲at*. If a language has more than one grammatical evidential, Aikhenvald (2004) and Peterson (2015) note the cross-linguistic tendency for the evidential that encodes the most specific kind of information to express mirativity. The Gitksan facts support this observation, as the information encoded by *n'akw* is more specific than =*ima* or =*k̲at*.

Premise 1: Grammatical evidentials can implicate – but not *entail* nor *presuppose* – surprise (mirativity).

Premise 2: Language X has grammatical evidentials.

Conclusion: Grammatical evidentials in language X can also *implicate* surprise (mirativity).

This argument provides us with the logically motivated reasoning for discovering the mirative use of an indirect evidential, and we can use the independently motivated tests for this purpose. As a demonstration, let us re-examine Turkish example from (4) above. We can now show that the mirative use of the indirect evidential -*miş* does not result in a contradiction when the surprised meaning is cancelled (i.e. 'negated'):

(27)   Mirative context: Upon seeing Kemal walking through the door

[Kemal gel-*miş*]$_{surprise\ implicated}$,
Kemal came-EVID

[ama ben o burada sürpriz değilim]$_{surprise\ cancelled}$
'Kemal came, but I'm **not surprised** he's here.'

The result of this test shows that the surprise meaning of the indirect evidential -*miş* in a direct evidence context is implicated, not entailed, just as it is Gitksan.

A key feature in the description of these contexts that provide a crucial clue as to what licenses the mirative use of an indirect evidential: a *direct* evidence context. Let us examine more closely what this means, with the aim of generalizing its features.

3.2.1   The Witnessing Heuristic

So far we have a promising methodology to test for one way mirative meaning arises: specifically, the tests show that mirative meaning can be implicated (but not entailed nor presupposed) in languages that have indirect evidentials. But we still need a way of isolating the features of the contexts that license the mirative use of an indirect evidential. What we already independently know about implicated meanings in general can guide us: they involve both the intention to express a certain meaning, and requires a non-logical inference to be performed on the part of the addressee. We can use the following research questions to guide us: *what exactly determines the conditions of the mirative use of an evidential*? Or, *what are the conditions on the context that give rise to the mirative use of an evidential*? Evidence from Gitksan and Turkish above show that the speaker *sees* or has direct experience or perception of the context that sentence containing the evidential talks about (a *direct* evidence context). This can be confirmed in many languages where the description and context were rich enough.

In Tsafiki (Barbacoan) the indirect evidential suffix -*nu* encodes 'information inferred from physical evidence' and mirativity in certain contexts (Dickinson 2000). However, in (28a) the speaker knows the proposition the proposition is true because the speaker sees that it is true:

(28)   a. tse   lowa=bi ne=chi   keere-i-i-*nu*-e
         1FEM bed=LOC from=LOC throw-become-NCONGR-EVID-DECL
         "I must have fallen out of bed." (I'm on the floor). (2000: 412)

b. moto   jo-*nu*-e
   motorcycle be-EVID-DECL

   "It's a motorcycle!" (I see the motorcycle approaching) (2000: 411)

Similarly, the evidential suffix *-k* in Qiang (LaPolla 2003) encodes an inference based on evidence obtained visually or by some other sense:

(29)   Context: the speaker knew the person was supposed to go to Chengdu, but wasn't sure when, and then saw the person luggage gone, so assumed he had left for Chengdu

   theː ʐdʑytɑː   ɦɑ-qi-*k*
   3sg chengdu.LOC OR-go-INFER

   "He went to Chengdu."

If we adjust the context such that the speaker actually sees the door in the state of being open, (30) expresses the speaker's surprise.

(30)   Context: the speaker sees that the door is open, but doesn't know who opened it

   dʑy de-ʐge-ji-*k*
   door OR-open-CSM-INFER

   "The door is open!"

In another case, the morpheme *lõ* in Hare (Athabascan) (DeLancey 1997: 38-40, 2001: 375-378) is a described as a grammatical evidential. If the context is adjusted such that the speaker actually witnesses 'the guy sitting in the tree'; as such, *lõ* in (31) expresses the speaker's surprise.

(31)   heee, gúhde   daweda!   ch'ifi dachída *lõ*
       hey, up.there SG.sit.3sg.IMPERF. guy   sitting   EVID

       "Hey, he's sitting up there! The guy is sitting up there!" (DeLancey 2001: 376)

In each of the cases above the crucial observation is that the speaker knows the proposition embedded under the evidential is true because the speaker sees that it is true, or has direct knowledge that it is true, typically using the sense of vision.[9] In other words, the speaker 'witnesses' the event, state, or action denoted by the proposition p embedded under the evidential. These observations can be captured in the following way as the *witnessing heuristic*:

(32)   *The Witnessing Heuristic*
       If a speaker uses an *indirect* evidential in a *direct* evidence context (i.e. the speaker knows that the proposition p embedded under the evidential is true), then the evidential *implicates* (not entails nor presupposes) surprise (mirativity).

From a practical methodological point of view, (32) is a heuristic by definition – it is not a test in and of itself; rather, it is simply a means for discovery. There are challenges unique to discovering and testing mirativity, even guided by (32). This is because surprise – the assumed core

---

[9]However, there is no *a priori* reason to exclude other senses and the grammatical evidentials that encode them from implicating mirativity, such as auditory, olfactory or tactile information.

of what we label 'mirativity' – involves is a fundamental human emotion (for example Meyer and Niepel 1994; Meyer et al. 1997; Reisenzein 2000; Peterson 2016). In a field situation the challenge is two-fold: first, a context that must be created that is truly surprising to the language consultant. Secondly, we can only hope that the surprise felt by the consultant is actually linguistically expressed. This may seem obvious, but in nearly all of the documented and analyzed cases of mirativity, this part of the methodological picture is often missing. The importance of this was shown in example (18), repeated here:

(33)   a.   "How do you express surprise in your language?"
            b.   "Well, I can say I'm surprised!"

An elicitation session is (usually) not a surprising context, so we can't expect that the response of the language consultant in (33b) can tell us anything about the linguistic realization of surprise in her language.[10] I have not been able to develop a replicable field test or context that can reliably elicit emotional surprise and its linguistic response from a language consult. Nonetheless, we can still make progress within our workspace (grammatical evidentials) and use the generalizations that emerge from the tests to predict what a surprising situation *should* look like.

In order to do this, let us return to what the tests above show us about evidential and mirative meaning, and how what we know about implicature can inform our descriptions of the mirative use of *n'akw*. Implicated meanings are distinct from entailed or presupposed meanings but they still rely on the entailed or presupposed meaning of an utterance. Implicated meanings are also distinct in that they are an intention to express a particular kind of meaning that may or may not be interpreted by other participants in that speech context. For example, the speaker of the sentence in (34) asserts the proposition that Alvin is here and presupposes that she has indirect evidence (of the sensory kind) to support that assertion:[11]

(34)   *n'akw*=hl witxw=s   Alvin
       EVID=CD arrive=PD Alvin

       "Alvin's here"
       p = Alvin is here
       $\text{EVID}_s(p)$ = the speaker has sensory evidence for p

This is how other participants in the speech context normally interpret the utterance of (34). However the utterance of (34) in a direct evidence context – one where the speaker witnesses (sees) Alvin's arrival, the speakers intention now is to implicate surprise (given the witnessing heuristic). However, what guarantees that the other speech participants interpret this intention to express surprise? Strictly speaking, nothing guarantees it. This is also precisely where the interactional component of mirativity arises, as discussed in section 2.3: speech participants are likely to understand (34) as an expression of surprise because they can also see that the proposition embedded under *n'akw* is true, while those who do not have access to this information should not be able to interpret the utterance of (34) as one expressing the surprise of the speaker. This was tested in a field experiment, schematized in Figure 1 on the next page.

---

[10]This is not to suggest that a language consultant cannot provide meaningful insight or guidance on where to 'look for' mirativity in her language; indeed, I have found this kind of introspection and guidance very valuable.

[11]The indirect evidential meaning of *n'akw* is presupposed in the same way as with =*ima* and =*kat*. However, there are certain complications (not relevant to the current study) that arise with applying the negation test to *n'akw* to show this. See Peterson (2010) for details.

Alvin's arrival (inferential evidence)

Kitchen: Hallway:

Holly   Sheila
                           S

Leiwa   Fern

Evidential   *Mirative*
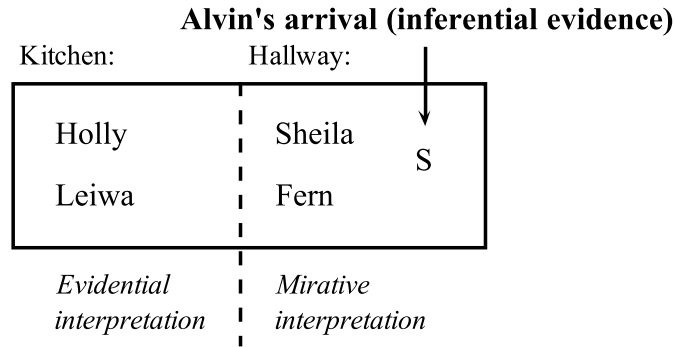*interpretation*   *interpretation*

Figure 2: *Split mirativity* (adapted from Peterson 2015).

The kinds of contexts in Figure 1 involve what I call *split mirativity*, where the same utterance of an evidential sentence can be 'split' in its interpretation among the participants in that speech context. More specifically, the dotted line in Figure 1 represents a wall that separates two rooms. There are four speech participants in this context: Holly and Leiwa are in a room separate from Sheila and Fern, who are in the same room as the speaker S of the sentence in (34), which is uttered upon the sudden and unexpected arrival of Alvin. Crucially, Holly and Leiwa can *hear* S's utterance of (34) but because of the wall separating them from this event they cannot actually witness Alvin's arrival. As such, they cannot have a mirative interpretation of S's utterance of (34); it retains its evidential (presupposed) meaning. However, because Sheila and Fern can see Alvin's arrival, they interpret S's utterance of (34) as one of surprise at the event described by p.[12]

What this experiment shows is that it is not sufficient to talk about mirativity as simply the expression of surprise. More specifically, it involves the *intention* to express surprise, at least in the mirative use of an evidential which implicates surprise.[13] This is an application of the witnessing heuristic in (32).

3.2.2 Challengeability in English

The previous section laid the groundwork for a methodology for testing for the mirative use of an indirect evidential through the application of the first three rules in (10) above: entailment, presupposition, and implicature. A major generalization emerged from this: in many languages that have indirect evidentials mirativity is implicated and not entailed, as guided by the witnessing heuristic (while presupposition is inapplicable on conceptual grounds). Using the same battery of tests we can investigate if a language has entailed mirativity. Assuming as I have throughout this paper that mirativity is about surprise, an obvious place to look in a language such as English

---

[12]To be precise, a speaker is not surprised at the actual proposition expressed by the sentence containing the evidential; rather, the speaker is surprised at some event in the context, which happens to be linguistically realized through the utterance of the sentence expressing p. This distinction is also often equivocated or not clear in the literature.

[13]It is important to note that although the term 'implicature' can have a theoretical use, as in Gricean implicature. However, this is an analytical step that I am not taking here, which would involve how the mirative implicature is calculated etc. Rather, I use the term 'implicature' or 'implicated meaning' as a description of a specific type of meaning only.

is the verb 'surprise', as in (35):

(35) [I'm *surprised* Alvin's here]$_{surprise\ expressed}$,
       #[Not that I'm surprised or anything...]$_{surprise\ cancelled}$

This clearly involves lexical entailment (as the contradiction shows), which can also be used to probe surprise in other mirative-like words, such as, for example, the verb of amazement in (36):

(36) [I'm *amazed* Alvin's here]$_{surprise\ expressed}$,
       ?[Not that I'm surprised or anything...]$_{surprise\ cancelled}$

English has a variety of linguistic options for expressing surprise, a sample of which was given in (2), and in (37):

(37)   a. *Exclamation (information structure marking):* 'Alvin's here!'
        b. *Wh-exclamative:* 'What great timing you have, Alvin!'

However, the same issue arises in the English data as it did with the Gitksan above: do these really involve the elicitation and expression of surprise, or simply the expression of surprise alone? The verbs of surprise and amaze in (35) and (36) seem to only involve the latter and not necessarily the former. I leave it further research to address this question. Nonetheless, the value of this test is that it makes certain predictions, and it can also lead to the formulation of other, more specific questions about mirative meaning that we might not have come across otherwise.

Along with this intra-linguistic diversity there are a number of interesting complications that tell us more about the nature of exactly what is being expressed, what level of meaning it arises on, and how surprise is grammaticized. Assuming that we have constructed context that elicits the actual surprise of the speaker, there are a number of observations in (35) and (36) that suggest that we are dealing with a different level of meaning than we observed with grammatical evidentials. First, it is not clear that verbs such as *amaze* or nouns such as *amazement* entail surprise. What I focus on instead is the second issue: when we apply the cancellation (negation) test that targets surprise it is also not clear that surprise is implicated in these examples (the '?' label reflects these mixed judgments). Even using more strongly illocutionary words such as *wow heey!* and exclamatory intonational contour ('!') that expresses surprise, judgments seem to indicate that surprise is not really entailed nor implicated:

(38) Context: Gwen has been planning a surprise party for Alvin, and the guests are arriving one by one. They don't expect Alvin home for another hour. Holly and Gwen are preparing the table inside, when Gwen suddenly exclaims

      [Wow heeey, Alvin's here!]$_{surprise\ expressed}$,
      ?[Not that I'm surprised or anything...]$_{surprise\ cancelled}$

Here, too, the surprise expressed does not seem to lead to a contradiction when cancelled, yet it also seems not to be a cancellable implicature.

What we know about the behaviour of illocutionary adverbs and expressives is that their meanings can be described as at a level 'above the proposition'. Linguistic elements can contribute either to the propositional content of an utterance, or to its speech act (or illocutionary

19

force). Recall that this was used to distinguish two different subtypes of non-parasitic miratives in Fig 1. As such, illocutionary words typically resist tests for both entailed and implicated meaning. A further complicating factor – which needs to be tracked – is that illocutionary meaning in general is not entailed nor implicated. Consider the speech act of a threat in the context of a bank robbery in (39):

(39)   'The gun is loaded...
       #not that I'm threatening you or anything...'

The propositional content of (39) is *the gun is loaded*; however, the speech act of this sentence is not the assertion of this proposition but rather the threat of violence to motivate the bank teller to hand over the cash. Speech act meaning is not implicated, as shown by the infelicity of the follow up to the threat in (39), where the speaker attempts to target the threat as a cancellable implicature. This observation motivates a fourth level of meaning, in addition to entailed, presupposed and implicated meanings: the speech act level.

A well known test that targets this level of meaning involves assent and dissent, or *challenge-ability*. For example, we cannot directly challenge the speech act content of an expressive such as *damn!* or illocutionary adverbs such as *frankly* and *surprisingly*: responses of *No! That's not true* only target the propositional content in the examples in (40), and cannot function as a dissent of the expressive or illocutionary content of these sentences:

(40)   a. A: Damn! Barbara forgot to put gas in the car again!
             B: No! That's not true. ($\neq$ you are not upset)

         b. A: Frankly, my opinion is that Bruce should do it.
             B: No! Not true ($\neq$ you are not being frank)

         c. A: Surprisingly, Steve has improved his attitude.
             B: No! Not true ($\neq$ you are not surprised)

Challengeability targets speech act meaning, the fourth level of meaning we can expect to find mirativity on. Imagine, again, the surprise birthday context involving the unexpected arrival of Alvin. Let's assume that this is truly a surprising experience for the speaker, A. As such, A's utterance in (41) using the expressive word *wow* along with exclamatory intonational contour ('!'), directly challenging the speech act of surprise leads to infelicity:

(41)   A.   Wow, Alvin's here!

        B.   That's not true ($\neq$ you are not surprised)

One aspect that makes challengeability perhaps unique from other tests is that it can be used to reveal the strength of the mirative speech act. All of the examples in (2), repeated in (42), could be considered mirative speech acts in a surprising context:

(42)   'You made it!!'
       'I don't believe you made it!'
       'Looks like you made it!'
       'Wow, you're here!'
       'I'm amazed you made it!'
       'That can't be who I think it is!'
       'What a surprise!'

However, each of these mirative speech acts could be plausibly challenged, depending on various contextual factors and the attitude of the speaker in that particular speech context. This highlights both the vague nature of surprise and how it is indexical. Imagine a variation on the birthday context where Gwen is truly surprised at Alvin's unexpected arrival. This context elicits actual surprise, but also the linguistic expression of surprise through the use of (strongly) exclamatory intonation contour ('!!'). Because the mirative speech act in (43) is strong, it resists challengeability:

(43) *Strong mirative:*
      'You made it!!'
      ?'Not that I'm surprised or anything...'

However, in a different context, one where Gwen has at least some expectation of Alvin's arrival, the mirative speech act can be challenged to some extent. Example (44) has the same propositional content, but its utterance still registers the surprise of the speaker, albeit weakly:

(44) *Weak mirative:*
      'You made it.'
      'Not that I'm surprised or anything...'

(43) and (44) are minimal pairs, differentiated only by the exclamative intonational contour (orthographically represented by '!!'). The challengeability test reveals that mirative speech acts are gradable to some degree into what I call *strong* and *weak* miratives. There may be other degrees between these two ends of the scales, and changeability can be used to probe this.[14]

Looking beyond English, Rett and Murray (2013) and AnderBois (2016) show how grammatical evidentials and other lexical elements express mirativity on the speech act level of meaning. A speaker of Yucatec Maya uses the word *bakáan* to express that some information is 'new, surprising, and unexpected', as in example (12), repeated in (45):

(45) Context: We are inside the library. I suddenly look out the window and notice it is raining, which it hadn't been before, and say:

      Táan bakáan k'áaxal ja'
      PROG MIR   A3   fall water

      'Oh, it is raining.' (AnderBois 2016: 5)

This is translated into English using the interjection *oh*, which is not a part of the logical content of the sentence. Rather, both *bakáan* and *oh* express their meanings at the speech act level.

3.2.3 Embeddability and displacement

The emotion of surprise is an immediate experience. As mentioned above there are several experimental challenges to both recreating a truly surprising experience for the language consultant, and hoping that this feeling of surprise is linguistically realized in a field situation. However, there

---

[14]Note that this is very close to scalar implicature; the examples in (1) above would be suitable candidates to explore this option. I leave this to future research.

are two ways to test for this immediate experience form a different angle. One is to look at semantic embeddability: we expect that once the immediate experience of surprise is semantically embedded within, for example, indirect discourse or any other kind of propositional attitude verb, that the immediate experience of surprise will become reported surprise. Example (46) shows the embedding of surprise in indirect discourse:

(46)   a. Gwen: 'Wow, Alvin is in a good mood again!'
       b. Sheila later that day to a friend:
           '[Gwen said that [wow, Alvin is a good mood again!]]'

(46a) is a mirative speech act using the illocutionary word *wow!*; it is the immediate surprised experience of Gwen, who was perhaps expecting Alvin to be in a bad mood. At best, Sheila's utterance of (46b) is reporting the surprise of the matrix subject, Gwen. Crucially, it is not a mirative speech act but rather an assertive speech act.

This brings us back to the implicated mirativity of grammatical evidentials. Not surprisingly, implicated mirativity also cannot be embedded; for example, the speaker of (47b) is not surprised, rather, this sentence can only report Granny's surprise at their arrival:

(47)   a. ***n'akw***=hl bakw=diit
           EVID=CD arrive.PL=3pl

           "They're here!"
           "Look who's here!"
           "I see you're (pl) here!"
       b. #[diya=t nits'iits'   wil   [***n'akw***=hl bakw=diit]]
           say=PD grandmother COMP EVID=CD arrive.PL=3pl
           #"Granny said look who's here(!)"

The other way to test for the immediacy of the surprising experience is temporal displacement. A speaker can use a verb of surprise to displace her surprise in time:

(48)   Context: Two friends talking about Alvin showing up – uninvited – to a party last night

       'I **was** surprised Alvin was there.'

Again, the speaker is simply reporting her previous experience of surprise; thus, (48) is not an example of mirativity. Speakers of Gitksan and Turkish report that indirect evidentials in these languages cannot be used at any other time than in the immediate speech context. In (49) the temporal adverb *t'ahlaakw* displaces the event time of the sentence to the past:

(49)   Context **last night**: two friends talking about Alvin showing up – uninvited – to a party

       n'akw=hl witxw=s   Alvin t'ahlaakw
       EVID=CD arrive=PD Alvin yesterday

       'Looks like Alvin showed up yesterday.'
       p = Alvin arrived last night
       $\text{EVID}_s(p)$ = the speaker has sensory evidence for p

As such, the use of nakw in (48) can never be interpreted miratively.

22

4 Summary and moving forward with mirativity

The goal of this paper is to fill a gap in the existing literature on mirativity: currently, there is no field methodology that is specialized for probing mirative meaning. The basic strategy that underpins this goal is to approach the investigation of mirativity from the perspective of a field linguist engaged in semantic and pragmatic fieldwork. Guided by the best practices and first principles in these areas, a set of independently motivated tests commonly used to document semantic and pragmatic meaning were innovated for the purposes of probing mirativity. The null hypothesis of this paper is that mirativity is about surprise and applied the tests to determine what level of meaning we find surprise on.

The advantage of this approach is generally three-fold: first, the application of the tests in (19) provide an independently motivated means for probing mirative meaning that does not presuppose anything about what mirativity is claimed to be in the literature; the observations and generalizations follow from the tests. However, this is not to suggest that it would be wrong to proceed this way. Indeed, we could test any number of hypotheses this way. For example, we could test whether the core of mirativity is about unexpectedness – another often described characteristic of mirativity – rather than surprise.

Secondly, the application of the tests led us to other semantic qualities of mirativity in an orderly way that we may not have discovered through other elicitation or documentation methods (such as working with corpora or free form elicitation). Given the established levels of meaning (entailed, presupposed, implicated, and speech act) we can look for mirative meaning at each of these levels.

Thirdly, and more broadly, the tests in (19) are part of the semanticist's field 'toolkit', and using these tests allows us to talk about mirative meaning in a way that serves as a foundation for theoretical explanations of the phenomenon. That step was not taken here, but a few hints were given as to what kinds of theoretical analyses mirativity would be amenable to. For example, if mirative meaning is implicated by indirect evidentials, the natural next step would be to treat this as conversational implicature in the Gricean sense. A mirative implicature is cancellable, as shown in the Gitksan and Turkish data. But exactly how is a mirative implicature calculated? What is the link between evidence and surprise in calculating this implicature? This opens up to another level of investigation that would involve testing the predictions of this kind of analysis.

Lastly, the (non-)parasitic distinction in classifying the intra- and cross-linguistic expressions of mirativity is rooted in fundamental assumptions of how meanings are classified. I claim that this is an essential step, as mirativity is essentially a kind of meaning – regardless of how we describe its various nuances (cf. 4). As explained in section 2.2 the utility of typology is that it can act as a guide as to where to 'discover' mirativity in any given language: each node in Fig 1 corresponds to a set of tests that can be used to determine where a mirative element belongs in this organization of meaning. It also leads us to a number of other interesting questions in an orderly way that we may not have asked otherwise. For example, a commonly held assumption that meanings can arise on either the propositional or illocutionary level.[15] Given that a mirative utterance involves the linguistic expression of a speaker's psychological state (i.e. surprise) in response to new information in a specific speech context, it is essentially always expressive in nature. As such, can mirativity ever be propositional (i.e. entailed)? There are two possible

---

[15]This is somewhat simplified: propositions are expressed by sentences, which are utterances that involve a speech act (i.e. assertion, etc.). As such, an utterance involves both levels of meaning.

ways to approach this question: first, we can expand our definition of mirativity to include cases where a speaker can talk about surprise without actually being surprised, as the verb of *surprise* in English does. This would also affect mirative morphemes in Mapudungun (*-rke*) and Chechen (*-q*), which were classified as non-parasitic propositional miratives in section 2. Under this view, the psychological nature of surprise is not essential to the definition of mirativity. This in turn predicts that *-rke* and *-q*, for example, can be used to talk about surprising events that are not tied to the current speech context. Alternatively, the typology is Fig. 1 can be revised such that non-parasitic miratives are defined as illocutionary only; there are no propositional (entailing) miratives; this would more closely reflect the inherently psychological and expressive features of mirativity. Either way, a closer examination of the mirative morphemes in Mapudungun and Chechen, guided by the typology in Fig. 1 and using the semantic and pragmatic tests developed here, will help us answer this question.

References

Aikhenvald, Alexandra Y. 2004. *Evidentiality*. New York: Oxford University Press.

Aikhenvald, Alexandra Y. 2012. The essence of mirativity. *Linguistic Typology* 16:435–486.

Aksu-Koç, A., and D. Slobin. 1986. A psychological account of the development and use of evidentials in Turkish. In *Evidentiality: The linguistic coding of epistemology.*, ed. W. Chafe and J. Nichols, Advances in Discourse Processes XX, 159–167. Norwood, N J: Ablex.

AnderBois, Scott. 2016. Illocutionary mirativity: the case of yucatec maya *bakáan*. In *Proceedings of SULA 9: Semantics of Under-Represented Languages in the Americas*, ed. Bui Thuy and Ivan Rudmila-Rodica. Amherst, MA: GLSA Publications.

Bochnak, M. Ryan, and Lisa Matthewson. 2015. *Methodologies in semantic fieldwork*. Oxford: Oxford University Press.

Brown, Jason. 2010. *Gitksan phonotactics*. LINCOM Europa.

Celle, Agnès, and Laure Lansari. 2014. 'I'm surprised' / 'Are you surprised?': Surprise as an argumentation tool in verbal interaction. In *Les émotions dans le discours / emotions in discourse*, ed. Novakova Iva Blumenthal Peter and Siepmann Dirk, 267–279. Bern: Peter Lang.

DeLancey, Scott. 1992. The historical status of the conjunct/disjunct pattern in Tibeto-Burman. *Acta Linguistica Havniensia* 25:39–62.

DeLancey, Scott. 1997. Mirativity: The grammatical marking of unexpected information. *Linguistic Typology* 1:33–52.

DeLancey, Scott. 2001. The mirative and evidentiality. *Journal of Pragmatics* 33:369–382.

DeLancey, Scott. 2012. Still mirative after all these years. *Linguistic Typology* 16:529–564.

Dickinson, Connie. 2000. Mirativity in Tsafiki. *Studies in Language* 24:379–422.

Faller, Martina. 2002. Semantics and pragmatics of evidentials in Cuzco Quechua. Doctoral Dissertation, Stanford.

Grunow-Hårsta, Karen. 2007. Evidentiality and mirativity in Magar. *Linguistics of the Tibeto-Burman Area* 30:151–194.

Hill, Nathan. 2012. "Mirativity" does not exist: *ḥdug* in "Lhasa" Tibetan and other suspects. *Linguistic Typology* 16:389–434.

LaPolla, R. 2003. Evidentiality in Qiang. In *Studies in evidentiality*, ed. A. Y. Aikhenvald and R. M. W. Dixon, Typological Studies in Language 54. Amsterdam/Philadelphia: John Benjamins.

Matthewson, Lisa. 2004. On the methodology of semantic fieldwork. *International Journal of American Linguistics* 70:369–415.

Meyer, W-U., and M. Niepel. 1994. Surprise. In *Encyclopedia of human behavior*, ed. V. S. Ramachandran, volume 3, 353–358. California: Academic press.

Meyer, W-U., R. Reisenzein, and A. Schützwohl. 1997. Toward a process analysis of emotions: The case of surprise. *Motivation and Emotion* 21:251–274.

Molochieva, Zarina. 2007. Category of evidentiality and mirativity in Chechen. Hand-out for a talk given at the *Conference on Languages of the Caucasus*, MPI-EVA, December 9-12, 2007.

Peterson, Tyler. 2010. Epistemic modality and evidentiality in Gitksan at the semantics-pragmatics interface. Doctoral Dissertation, University of British Columbia.

Peterson, Tyler. 2015. The semantics of grammatical evidentiality and the unprepared mind. *Review of Cognitive Linguistics* 13(2).

Peterson, Tyler. 2016. Mirativity as surprise: Evidentiality, information, and deixis. *Journal of Psycholinguistic Research* 45:1327–1357.

Peterson, Tyler. to appear. Evidentiality and epistemic modality in Gitksan. In *Handbook of Evidentiality*, ed. Alexandra Aikhenvald. Oxford University Press.

Potts, Christopher. 2005. *The logic of conventional implicatures*. Oxford University Press.

Reisenzein, R. 2000. The subjective experience of surprise. In *The message within: The role of subjective experience in social cognition and behavior*, ed. H. Bless and J. Forgas. Philadelphia, PA: Psychology Press.

Rett, Jessica, and Sarah E. Murray. 2013. A semantic account of mirative evidentials. In *Proceedings from Semantics and Linguistic Theory (SALT) XXIII*, ed. Todd Snider, 453–472. Ithaca, NY: CLC Publications.

Rigsby, Bruce. 1986. Gitksan grammar. Unpublished manuscript, University of Queensland, Australia.

Slobin, D., and A. Aksu. 1982. Tense, aspect, and modality in the use of Turkish evidential. In *Tense-aspect: Between semantics and pragmatics*, ed. P. J. Hopper, Typological Studies in Language, 397–405. Amsterdam: John Benjamins.

Temürcü, C. 2007. A semantic framework for analyzing tense, aspect, and mood – an application to the ranges of polysemy of *-xr*, *-dir*, *-iyor* and *-∅* in Turkish. Doctoral Dissertation, Universiteit Antwerpen.

Watters, David E. 2002. *A grammar of Kham*. Cambridge University Press.

Wiklund, Anna-Lena. 2009. The syntax of surprise: Unexpected event readings in complex predication. In *Working Papers in Scandinavian Syntax 84*, 181–224.

Zúñiga, Fernando. 2000. *Mapudungun*. Lincom Europa.